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# Poster Presentation Abstracts

제55차

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종합학술대회 및 정기총회

## CLP

## P1

## Correction of Microform Cleft Lip

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Mulliken named a unilateral incomplete cleft lip with no severe cleft as a lesser-form cleft lip and categorized it into three subgroups, Anatomically categorized subgroups are minor-form, microform, and mini-microform cleft by the extent of vermilion-cutaneous disjunction. The main phenotypic features of the microform cleft lip include a small vermilion notch, a visible band of fibrous tissue extending from the edges of the red lip to the nostril floor, and an irregularity of the ala on the side of the notch and band.

Although a mild microform cleft lip includes minimal deformities in the aesthetic factor, the clinical manifestations of a microform cleft lips may vary. In that reasons, the surgeons have to choose the modified techniques for the patients instead of stereotypical surgery techniques.

We report the cases of unilateral microform cleft lip and also discuss the various surgery strategies for the patients.

## Dentoalveolar Surgery

## P2

## Evaluation of bone healing using NOVOSIS<sup>®</sup>-Dent in ridge augmentation: a pilot study

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**Introduction:** The goal of this preliminary study is to evaluate complication and effectiveness of alveolar ridge augmentations using NOVOSIS<sup>®</sup>-Dent, a hydroxyapatite-based alloplastic bony substitute with rh-BMP2, and allow randomized prospective clinical researches in the future.

**Method and materials:** A total of 10 patients (4 males, 6 females; 58.5±8.6 yrs.) participated in this clinical research. Alveolar ridge augmentations were performed in various edentulous (4 maxillary posterior, 5 mandibular posterior and 1 mandibular anterior) regions. Bio-Oss<sup>®</sup> was used as the bone graft material in the control group (n=5) while NOVOSIS<sup>®</sup>-Dent was used in the experimental group (n=5). In order to evaluate relative changes in bone volume and resorption rate of the bone graft material, CBCT radiographs were taken immediately and at 4 months after the bone graft in all subjects. Among the 10, 8 patients received dental implants in Seoul National University Bundang Hospital, while the rest received in other clinics. Clinical evaluations were focused since it was difficult to statistically verify the validity of the two test groups with only 10 subjects.

**Results:** When CBCT radiographs were compared between immediately and at 4.07±0.13 months after the bone graft, alveolar bone widths (experimental: 1.75±0.85mm, control: 2.52±0.18mm) and alveolar bone heights (experimental: 1.57±0.28mm, control: 1.68±0.17mm) both increased in the two test groups. Resorption rates of transplanted bone graft material in the alveolar bone widths and heights were (experimental: 31.49±7.42%,

control: 29.73+8.79%) and (experimental: 52.58+6.46%, control: 39.17+21.80%), respectively. Postoperative complications were not found in all subjects.

**Conclusions:** Our study came up with following conclusions: 1) Ridge augmentations using NOVOSIS<sup>®</sup>-Dent could be clinically useful to supplement implant placements in edentulous regions. 2) Serious postoperative complications related to the graft material did not occur.

P3

## use of buccal fat pad for closure of oroantral fistula: Case report

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CBCT, Cephalo x-ray taking, impression taking and model surgery is commonly used before orthognathic surgery.

Nowadays improvement of CT imaging allows pre-surgery 3D simulation. With this simulation surgery and 3D printing of surgical wafer and surgical guide is now acceptable for clinical use.

If there is a lot of interference and big gap during orthognathic surgery procedure, the chance of relapse will increase and also will be unstable.

Through this case report, by using 3D simulation program(FaceGide module), we will report a result of comparison between conventional BSSRO method and different mandible osteotomy method of right and left side.(Using Trauner-Obwegeser method with Obwegeser-Dal method)

FaceGuide Module was used for the diagnosis and treatment plan of 3D simulation surgery.

As a result, different mandible osteotomy method of right and left side.(Using Trauner-Obwegeser method with Obwegeser-Dal method) was better in improving facial asymmetry. With this we performed the surgery to solve facial asymmetry and find the optimized movement of osteocommas, and the results were effective. So we will report about these cases.



P4

## Clinical evaluation of difficulty analysis of mandibular third molar extraction

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Extraction of mandibular molars accounts for a large volume of cases in contemporary oral surgical practice and requires much planning and surgical skill, during both preoperative diagnosis and postoperative management. Several studies have identified a plethora of factors associated with extraction difficulty, and Macgregor developed a model that describes difficulty. Thereafter, prominent models, such as Winter's Pell and Gregory's and Pederson's, were proposed.

For evaluating the difficulty of procedure, we measured the operating time and the surgeon's postoperative estimate of extraction difficulty. And we compared these results with difficulty score calculated by current difficulty analysis.

The purposes of this study were to measure difficulty of mandibular third molar extraction and to evaluate current difficulty analysis.

P5

## The injury of inferior alveolar nerve due to pericoronal and periapical lesion

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The inferior alveolar nerve is a branch of the mandibular nerve, which is the third branch of the trigeminal nerve. It enters the mandibular foramen and continues in the mandible. It is a sensory nerve that innervates the unilateral mandible, lower teeth, gingiva and lower lip. In general, it is easy to be injured during the procedure of dental implant installations or third molar extractions. In addition, the injury due to fracture of mandible, osteomyelitis as well as the iatrogenic injury of endodontic therapy were reported. The injury due to pericoronitis and periapical lesion was rarely reported. These can cause transient ischemia because of acute or chronic stress to the nerve, so that the paresthesia or painful dysesthesia of lower lip, gingiva, and chin can occur. The disorder of mastication or pronunciation also can be caused.

Authors will demonstrate the case report about the injury of inferior alveolar nerve due to pericoronal and periapical lesion.

## Esthetic Surgery

P6

## Contouring Surgery in Mild Facial Asymmetric Patients – Case Reports

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**Introduction:** Recently, several treatments have been performed in order to resolve esthetical problems of patients with mild facial asymmetry. In spite of an increasing demand for such treatments, the indication, diagnostic criteria, and surgical procedure have not been standardized yet. Therefore, the aim of the present case report is to examine pre-treatment and post-treatment results of the mild facial asymmetric patients that received contouring surgery in Pusan National University hospital.

**Case Report:** The same well-trained surgeon executed the contouring surgery on two patients with mild facial asymmetry.

Case 1– OO Choi (M/19y), Chief complaint: A prominent mandibular angle

Case 2– OO Kim (M/23y), Chief complaint: Facial asymmetry.

Facial photographs and radiographs of the patients were taken pre-operation, day of operation, and 6 months post-operation to compare and examine the surgical outcomes. A simple comparison was conducted. Additionally, 3D-computer assisted analysis program (ondemand) was adopted in order to measure the degree of asymmetry and to visualize the operative outcome by overlapping pre- and post-operation radiographs.

**Discussion:** After diagnosing and establishing treatment plan, various analyses can be administered to achieve satisfying results. However, the existing surgical apparatus and technique require a wide incision since it is difficult to approach for contouring. Therefore, various incision apparatus and sawing system should be developed and applied for contouring surgery.

P7

## Mandibular wing osteotomy for correction of the protrusive chin: a case report

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There have been various treatment methods proposed to perform the esthetic surgical correction of the deformities of the mandible. These techniques range from relatively simple to complex procedures including bimaxillary surgery associated with complex mandibular osteotomies.

In this study, the patient was treated by mandibular wing osteotomy, which was first introduced by Triaca, to correct the protrusive chin. The patient had Angle's class III relation, but was satisfied with own occlusion. Therefore the patient refused to be treated with both the orthodontic treatment and bilateral sagittal split ramus osteotomy (BSSRO). The patient wanted to correct only the protrusive chin, so the mandibular wing osteotomy was surgically planned.

The facial photographs and the lateral cephalograms were taken before and after the surgery. To compare the before and after the surgery, several landmarks in cephalograms were evaluated. The patient was satisfied with the result and the result was stable and predictable.

P8

## Treatment of keloid with intralesional triamcinolone acetonide injection : A case report.

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Keloids are unexpected outcomes in wound healing, especially incised scar after surgery or response to trauma to the skin. It is a result of an overgrowth of granulation tissue at the site of a healed skin injury. Keloids are firm, rubbery lesions or shiny, fibrous nodules, and can vary from pink to the color of the patient's flesh or red to dark brown in color. A keloid scar is benign, non-contagious and sometimes accompanied by severe itching, sharp pain, and changes in texture. And keloids extend beyond the original wound borders. Therefore, keloids should be treated with various therapeutic approaches.

Many techniques have been reported to manage the keloids including massage, pressure garments, adhesive tape support, silicone gel sheeting, intralesional corticosteroid injections, laser therapy, cryotherapy, fluorouracil, botulinum toxin A and surgery. The choice of treatment depends on the case. Of these, intralesional corticosteroid injections improve scar pliability, diminish its volume and height and reduce scar related itching and pain. The most used current protocol involves insoluble triamcinolone acetonide, alone or better in combination with lidocaine, weekly, biweekly, or monthly.

In 2013, we treated a 41-year old male who had suffered from pleomorphic adenoma on right parotid gland. He underwent superficial parotidectomy through preauricular and retromandibular approach under general anesthesia. There were no specific finding in healing process. After 3 years, retromandibular incision line had altered keloids. Therefore, we treated keloids with intralesional triamcinolone acetonide injection. We obtained favorable results and we report the results with literature review.

P9

## Esthetic rhinoplasty for a patient with short and upturned nose: Case report

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The shape of the nose of Asians is have the anatomical features that it is a low dorsum height, short columella and nose length, and blunt nasal tip compared to the other races. However, it is very difficult to correct the short nose, and is a limit to increase the tissue. So far, the implantation or overlap graft of cartilage was carried out mostly for the correction of short nose, however, the case that had good results to correct the short nose through the operation or movement of the cartilage is reported recently.

In this case report, the patient had the low dorsum height, short and upturned nose, and columella retraction also was observed. The patient wanted the more aesthetically improve the appearance of the nose, so we underwent esthetic rhinoplasty.

After an inverted V-shaped incision, we have enough dissection and elevation of skin flap so that the organization can increase well. We completely separate and relax the lateral lower alar cartilage from pyriform ligament and nasal hinge area, and the caudal rotation and advancement of lateral lower cartilages has been done freely. We extend the length of the nasal septum through the nasal septal cartilage graft, and underwent the spreader graft using ear cartilage. And then, the both lateral lower alar cartilages that were completely separated from the pyriform ligament were derotated to the caudal and were fixed to the grafted septal cartilage. In addition, we underwent the nasal tip augmentation using a piece of ear cartilage in order to improve the appearance of the nasal tip of patient. Finally, we performed the nostril sill resection of left nostril for the correction of asymmetry of both nostrils.

As above, because we gained the more esthetic results through the derotation of lateral lower cartilage and the extension graft of nasal septum, report the results along with the associated literature.

P10

## Iliac bone graft on fibrous dysplasia: case report

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**Introduction:** Fibrous dysplasia is caused by alteration of the gene GNAS-1 during embryogenesis. If the GNAS-1 gene function is lost later in embryogenesis, it only affects one localized site and results in monostotic type of fibrous dysplasia. The clinical symptom first becomes apparent between the ages of 5 and 15 years, and usually it does not develop after the age of 20 years. Diagnosis of fibrous dysplasia should note an expansion of bone, and the radiograph and CT scan should show bone ground-glass appearance pattern. Generally, there is no need for treatment of fibrous dysplasia. However, in craniomaxillofacial area, patients usually want facial contouring surgery for the purpose of esthetics. In such cases, late teenage years, when the facial bone growth almost decreased, is ideal time to first accomplish surgery. However, the fibrous dysplasia will likely recur with a facial contour expansion and need additional contouring surgery.

**Methods:** In the case of two patients with monostotic fibrous-dysplasia in maxilla, we removed fibro-osseous bone lesion and grafted iliac bone.

**Results:** At 6 months and 1-year follow-ups, no bony expansion was observed, and normal bone pattern was restored in iliac bone grafted area.

**Conclusion:** We report our cases of iliac bone graft on monostotic fibrous-dysplasia with favorable short term results and literature review.

Implant

P11

## Clinical outcome of implants and sinus bone grafts in the case of maxillary sinusitis: Retrospective clinical study

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**Purpose:** To evaluate the clinical outcomes of implant in patient received maxillary sinus bone graft with sinusitis.

**Patients and Methods:** This study included 59 implants of 29 patients who contracted maxillary sinusitis before or after sinus bone graft or implantation at the Seoul National University Bundang Hospital, South Korea, between March 2004 and August 2016. We divided 3 groups into the time of maxillary sinusitis treatment, the bone graft and implantation; Group I : Maxillary sinusitis treated before bone graft and implantation, Group II : Maxillary sinusitis treated after bone graft and before implantation, Group III : Maxillary sinusitis treated after bone graft and implantation. We evaluated marginal bone loss, survival rate of implant, sinus membrane perforation at bone graft, relationship with smoke, primary and secondary stability of implant among the group.

**Results:** The implants were included 18 in group I, 22 in group II and 19 in group III. The implant overall survival rate was  $82.14 \pm 0.39\%$ . The survival rate of Group I ( $94.44 \pm 0.24\%$ ) and Group III ( $89.47 \pm 0.32\%$ ) were significantly higher than that of Group II ( $63.16 \pm 0.50\%$ ). ( $P < 0.001$ ) Maxillary sinus membrane perforation at sinus bone graft was much more occurred on Group II than Group I and III. ( $P < 0.001$ ) Smoke were significantly much in Group III ( $P < 0.001$ ) but showed no significantly relationship with survival rate. ( $P > 0.05$ ) The average observation period was 70.58 months and average marginal bone loss was  $0.06 \pm 0.35\text{mm}$  at one

year after loading and  $0.28 \pm 0.81$ mm at the last observation and show significant difference among the groups; Group II was 0.18mm at one year after loading and 0.65mm at the last observation, Group III showed no marginal bone loss at one year after loading but 0.17mm at the last observation, Group I showed no marginal bone loss. ( $P < 0.05$ )

**Conclusion:** The survival rates of Group I and III were higher than that of Group II. Marginal bone loss was highest in Group II and sinus membrane perforation was also high compared to the other groups. Therefore, early diagnosis and treatment of maxillary sinusitis before or after the graft and implantation showed good clinical outcomes of dental implant.

## P12

### Effect of a perforated sinus membrane on implant survival and bone grafting during a lateral window approach

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**Purpose:** The aim of this study was to evaluate the clinical outcomes of implants that were placed with sinus bone grafting in a perforated sinus membrane by a lateral window approach.

**Patients and methods:** Medical records of patients who had implants placed in a perforated sinus membrane by the lateral approach were examined at the Department of Oral & Maxillofacial Surgery of Chonnam National University from January 2009 to December 2015. There were forty-one patients (male:female = 28:13). Mean age of patients was  $57.2 \pm 7.2$  years at operation (range: 20–76 years). Mean follow-up duration was 2.1 years (range : 5 months to 5 years) after implant placement. Regarding the method of sinus elevation, only the lateral approach was included in this study.

**Results:** Ninety-nine implants were placed in 41 patients whose sinus membranes were perforated. The perforated sinus membranes were repaired with resorbable collagen membrane. Simultaneous implant placements with sinus bone grafting were performed in 37 patients, while delayed placements were done in 4 patients. Residual bone height ranged from 0 to 9.7 mm (mean =  $3.4 \pm 1.0$  mm). The average residual bone height was  $3.4 \pm 2.0$  mm in simultaneous implant placement and  $0.6 \pm 0.9$  mm in delayed placement. Maxillary bone graft, together with implant placement, performed on the patients with a perforated maxillary sinus membrane did not fail and the cumulative implant survival rate was 100%.



P13

## Sinus membrane elevation and simultaneous implant placement without bone grafts through crestal approach

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**Purpose:** To evaluate the aspects of healing around the implants placed with sinus floor elevation without bone grafts through crestal approach.

**Patients and Methods:** This study included 7 patients who received implant surgery and 9 implants (3 Osstem Implant IS III SA, 6 CA) with crestal approaching sinus elevation at the Seoul National University Bundang Hospital, South Korea, between May 2014 and December 2014. We took a CBCT (Kodak 9500 Cone Beam 3D system, Carestream Health, France) and measured the Gray value in right after surgery, 3 months after surgery, prosthesis loading. We measured the Gray value using the OnDemand's softwares made by Cybermed (Korea). We selected the implant which is the same size with the implant placed in implant library made by OnDemand, overlapped both implants, and measured the Gray value around implant 2mm.

**Results:** Among the 9 implants, 1 implant (CA) has failed. The implant's success rate without bone grafts for 16 months follow-up period was 89%. Although changing patterns are inconsistent, the same patient's implants showed a similar Gray value changing pattern. We confirmed a clear bone gain in 1 patient (CA). Mucosal thickness and haziness seen in the immediate postoperative period were mostly reduced after 3 months. **Conclusion:** Sinus membrane elevation and simultaneous implant placement without bone grafts through crestal approach technique seem to be good results.

**Conclusion:** In patients with perforations of the sinus mucosa, sinus elevation and implant placement are possible regardless of location and size of membrane perforation. Repair using resorbable collagen membrane is predictable and reliable technique.

P14

## Comparison of Condylar Displacement between Single-jaw and Double-jaw Surgery-first Orthognathic Surgery in Mandibular Prognathism with Facial Asymmetry

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**OBJECTIVE:** The aim of this study was to compare the postoperative positional change of the condyle between single- and double-jaw orthognathic surgery via surgery-first approach (SFA) in mandibular prognathism with facial asymmetry.

**METHODS:** A retrospective study of 18 mandibular prognathism (12 men and 6 women; mean age, 21 years) with facial asymmetry, who underwent orthognathic surgery via SFA, was conducted. Patients were divided into two groups: single-jaw group (n = 12; mean age=21.3 years) and double-jaw group (n = 6; mean age=21.0 years). Using serial 3D facial computed tomography, which was taken preoperatively (T0), 2 weeks postoperatively, and 6 months postoperatively, time-course changes of the condylar position were analyzed.

**RESULTS :** The condyle exhibited lateral bodily displacement and inward and inferior rotation 2-weeks after surgery in both single- and double-jaw groups. There was no significant difference between two groups. Although the condyles in both groups showed a medial return during the postoperative retention periods, the double-jaw group showed more obvious returning movement than the single-jaw group ( $p < 0.05$ ). Both groups showed no significant difference, compared with preoperative condylar position. Regarding rotational movement, both groups showed inward and inferior rotation 2-weeks after surgery. Although condyles in both groups rotated to its original condylar axis during the retention periods, they still showed inward rotation at 6 months postoperatively, compared with preoperative condylar axis.

**CONCLUSION:** This study suggests that the postoperative condylar positional changes are similar between the single-jaw and double-jaw orthognathic surgery via SFA.

P15

## Assessment of clinical effectiveness of IAN repair with nerve sliding technique

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**1. Background :** In case of inferior alveolar nerve injury, surgical interventions often include resection of nerve defect making it difficult to anastomose primarily because of increased tension between nerve stumps. So additional nerve graft should be done bringing several problems. We introduced a new IAN repairing method called nerve sliding technique enabling direct closure of nerve segments with minimal tension without performing a nerve graft. An incisive nerve is intentionally severed and a mental foramen is moved to posteriorly so that nerve stumps can be sutured directly.

**2. Objectives :** The purpose of this study was to evaluate the long-term clinical effectiveness of the technique.

**3. Patients and Methods :** Among 13 patients who underwent surgery using the technique from April 2012 to March 2016, 11 patients with more than 1 year of periodic follow up were included. Neurosensory mapping results, length of resected nerve and others were studied retrospectively. Pre-operative and postoperative changes in the degree of pain and discomfort was interviewed via telephone survey(VAS). Neurosensory mapping results were statistically analyzed. Sensory recovery evaluation was done by applying Medical Research Council Scale.

**4. Findings and Conclusion :** Subjective improvement in the symptoms was made in 8 patients. 9 patients reached FSR with average 144.33 ( $\pm 89.20$ ) postoperative day. Neurosensory mapping results (CT, DD, PP, TT) showed significant improvement after surgery. The average length of excised nerve was 9.18( $\pm 3.82$ ) mm, with its maximum length was 15mm. None of the patients complained discomfort associated with lower anterior teeth where incisive nerve innervates. So sequelae caused by incisal nerve cutting seems insignificant..

P16

## Bone formation following Osteotome Sinus Floor Elevation technique without grafting material

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The placement of dental implants in the edentulous posterior maxilla often presents difficulties as a result of insufficient bone quantity caused by increased pneumatization of the maxillary sinus and bone resorption after extraction of teeth.

sinus elevation with a lateral approach is the most common procedure to recreate a sufficient volume of bone. Through buccal window, the membrane is elevated and a bone grafting material is placed in the created space. However, this procedure is considered invasive, time consuming and expensive. Summers (1994) later described another transalveolar approach, the osteotome-technique for sinus floor elevation (OSFE). In this technique, the membrane is elevated using a set of osteotomes of varying diameters through a crestal approach and implants are simultaneously inserted. In OSFE, grafting is not a prerequisite for bone formation in the atrophic maxilla because of the potential for healing and bone formation beneath the sinus membrane with 'tent effect'. As installed implant apex serves as a tent pole for the sinus membrane, fibrin clot that has the potential to stimulate bone formation can be stabilized under the membrane. In this study, to evaluate the long-term stability of peri-implant bone formation following implant placement with OSFE without grafting into resorbed posterior maxilla, bone levels change were evaluated at 3 years using panoramic radiographs.

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P17

## Atypical Facial Neuralgia (AFN) after placing dental implants on the posterior maxilla

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**Background :** After placing implant on posterior maxilla, some patients complained about atypical facial pain. The cause of this symptom is not yet understood and reliable consensus among the clinicians on the treatment protocol is yet to be established.

**Objectives :** The object of this study was to examine specific patient characteristics of their unusual pain after placement of implant and to assess the effectiveness of conservative and surgical treatment.

**Methods :** Patients who experienced AFN symptoms after implant placement on posterior maxilla were examined from 2008 to 2016 at Seoul National University Dental Hospital. Through chart-review and patient-interview with questionnaires, demographic and clinical data were retrieved. For the evaluation of the treatment effectiveness, visual analogue scale(VAS) of the patients before and after the treatment course was compared. Also, each treatment was categorized into 2 groups. One is the group where treatment is done only with conservative support by medications or removal of prostheses. The other group is treated with conservative support and surgical intervention.

**Findings and Conclusion :** Patient age ranged from 41 to 71(mean age of 56.2, 7 males and 9 females). Average elapsed time after placing concerned implants was 5.3 years(7 months to 15 years). Placement site of the concerned implants was mostly in the maxillary molar region (77.78%). Symptom of AFN started within 1 week after implant fixture installation (10 patients), within 1 month after implant fixture installation (1 patient), after uncovering fixture for healing abutment connection (2 patients) or during prosthetic treatment (3 patients).

Eleven patients reported continuous dull pain, such as burning, tearing or throbbing sensation, and 5 patients reported continuous sharp pain, such as prickling or

shooting pain.

In surgically treated group of 11 patients (surgical curettage in 1 patient, removal of concerned implants and surgical curettage in 1 patient, removal of concerned implants in 9 patients), 4 subjects reported complete alleviation of pain, 4 considerable alleviation of pain, 1 slight alleviation of pain (VAS decreased less than 50%), and 2 reported no change. In the group of patients who showed complete alleviation of pain, elapsed time from surgery to cure was 12.06 months (1 week to 2 years).

In the group of 5 patients that underwent conservative treatment (4 patients treated with medication therapy only, 1 patient treated with prosthesis removal and medication), none reported complete alleviation of pain, 4 considerable alleviation of pain, and 1 reported no change.

Considering the results of treatment, surgical intervention can be a trial solution.

P18

## Retrospective Clinical Study of an Implant with a Sandblasted, Large-grit, Acid-etched Surface and Internal Connection: Analysis of Short-term Success Rate and Marginal Bone Loss

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**Purpose:** The purpose of this retrospective study was to evaluate the clinical utility of an implant with a sandblasted, large-grit, acid-etched (SLA) surface and internal connection.

**Materials and Methods:** Six patients who received dental implants in the Department of Oral and maxillofacial surgery, Chonnam National University Dental Hospital, were analyzed by factors influencing the success rate and marginal bone loss. Factors included patient's age, sex, implant installation site, whether bone graft was done, type of bone graft materials, approaching method if sinus lift was done, and the size of the implant fixture. In addition, the marginal bone loss was analyzed by using a radiograph.

**Results:** All implants were successful and the cumulative survival rate was 100%. Average marginal bone loss of 6 months after the installation was 0.52 mm, and that average 20 months after the functional loading was 1.06 mm. Total marginal bone resorption was 1.58 mm on average. There was no statistically significant difference in mesial and distal marginal bone loss.

**Conclusion:** The short-term clinical success rate of the implant with an SLA surface and internal connection was satisfactory. Moreover, the marginal bone loss was also consistent with the implant success criteria.

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## Removal of Dental Implants Displaced into the Maxillary Sinus and Simultaneously Implant Placement: Case Reports

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Rehabilitation of edentulous jaws with implant-supported prosthesis has become a common practice in the last three decades. Though this treatment presents a very low incidence of complications, several complications can occur intra- and postoperatively and one of the common complications in maxillary implant placement is the displacement of dental implants into the maxillary sinus. Because displacement of dental implants into the maxillary sinus, such as any other foreign body into the maxillary sinus, can lead to maxillary sinusitis, displaced dental implants should be removed. For removal of displaced dental implants and treatment of the associated infectious complications, two main treatment modalities have been proposed: an intraoral approach with the creation of a window in the anterior-lateral wall of the maxillary sinus and a transnasal approach with functional endoscopic sinus surgery. Although, to our knowledge, the migration of dental implants into the maxillary sinus and removal of that dental implants are frequently reported, removal of dental implants from maxillary sinus and simultaneous implant installation are rarely reported. The purpose of this study is to report two cases where removal of dental implants displaced into the maxillary sinus and simultaneous implant placement were performed.

P20

## Sinus lift without graft material

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Because there are maxillary sinus the implant of posterior maxillary edentulous patients present there are several difficulties. Sinus lift has become a treatment that can help solve the difficulties in these implants.

But during sinus lift it has been reported occurrence of various complications due to infection, such as maxillary sinusitis. These infections are often the cause of graft material

In Dong Hospital in Oral and Maxillofacial Surgery was performed Sinus lift without graft material in order to prevent infection in the sinus. When the next observation, It was created bone as a graft material graft that will exist within maxillary sinus.

## Infection

P21

**Cervical necrotizing fasciitis  
: Report of a case**

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Because of Antibiotics and attention for oral hygiene, incidence rate of odontogenic infection has been decreased compared with the past. However, cellulitis, abscess and necrotic fasciitis due to severe odontogenic infection still threaten from patient's quality of life and health to patient's life.

Necrotic fasciitis is infectious disease that can threaten one's life in a short time. It can invade deep subcutaneous lesion and fascia. Besides, The cause of disease is mostly the teeth that have unfavourable prognosis.

In this case, 57-year-old male patient who has schizophrenia. Uncontrolled diabetes mellitus and hyperthyroidism, visited our clinic due to both Right and left submandibular swelling and pain. His long admission period and dynamic progress of post-operative condition can be a good reference data when we meet the patients having odontogenic infection.

P22

**Uncertainty of current algorithm  
for Osteonecrosis of the jaw  
in Population-based studies**

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**Introduction:** To assess the relevance of previous epidemiologic studies on osteonecrosis of the jaw (ONJ), systematic review of large population-based observational studies was conducted first, and then the validity of claims-based algorithm for ONJ identification were evaluated.

**Methods:** Studies containing primary observational epidemiologic data with bisphosphonates exposure and outcome of osteonecrosis of the jaw were systematically reviewed. Using surrogates for identifying potential BRONJ cases from population-based hospital registry, validation was performed through medical chart review. Positive predictive value (PPV) was estimated for each diagnostic code, and for overall algorithm. Various strategies to increase PPV was performed.

**Results:** Seventeen studies were included in systematic reviews presenting varied study quality and inconsistent findings. Moreover, there was a high level of heterogeneity of methodology in source population, study design, definition of exposure and outcomes, and confounding control. A total of 1,920 patients were identified through ICD-10 algorithm as potential BRONJ cases, and 109 patients were confirmed as BRONJ, corresponding to an overall PPV of 5.68% (95% CI, 4.68-6.81). Among the empirically employed ICD-10 codes, most showed PPV values under 5%. Only K10.2 (inflammatory conditions of jaws) presented relatively high PPV of 26.18%, and increased up to 74.47% after the confinement of denominator into BPs users among potential ONJ cases. Other strategies to increase PPV value were not effective.

**Conclusion:** Our findings showed that the overall PPV

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## Infected thyroglossal duct cyst ; A case report

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**Objective:** The thyroglossal duct is an embryological anatomical structure forming an open connection between the initial area of development of the thyroid gland and its final position. A thyroglossal duct that fails to atrophy is called a persistent thyroglossal duct, a condition that may lead to the formation of a thyroglossal duct cyst. Incomplete obliteration of the duct gives rise to thyroglossal duct cysts, which are the most common congenital neck mass with a 7% population prevalence. Most commonly, they present in the first decade of life. However, they are also seen in adults. Of these, 30% are discovered by the age of 10; 20% from 10 to 20 years, 15% in 30's; and 35% after 30 years. The most common clinical presentation of thyroid glossal duct cyst is a gradually enlarging painless mass in the midline of the neck in children or young adults. The cyst is usually 2 to 4 cm in diameter. Thyroid glossal duct cyst are usually non-tender and mobile. On this case, I intend to study treatment procedure after recurrent and method to decrease recurrent rate by reference.

**Methods:** The patient is 34 year, male. His chief complain was swelling neck and pain. Ten years age, pus forming at his neck was removed after drainage and antibiotic medication. And 3 months ago, his mandible was broken and open reduction and internal fixation. He took sonography and enhance CT to diagnosis. And we planned to infection control and surgical removal to treat thyroglossal duct cyst infection.

**Results:** 3 months later after removal the cyst, there was occurred fistula on the skin. Fistula doesn't close even though medication and irrigation.

**Conclusion:** Thyroid glossal duct cyst should be treated surgically as described by Sistrunk. He described

was very low, indicating low validity of currently used algorithm to identify BRONJ, and possible overestimation of ONJ occurrence. There is an urgent need to develop more reliable and specific way of operational definition to identify BRONJ cases in large population database.

his procedure by excision of the cyst in continuity with the central part of the body of the hyoid bone and a core of tongue muscle up to the foramen cecum. This form of the Sistrunk procedure remains the treatment of choice for thyroglossal duct cysts up to date. The recurrence rate with this procedure drops to 3% to 5%. Recurrences most often result from incomplete removal of thyroglossal duct remnants at the suprahyoid region. Other areas of recurrence include perihyoid, infrahyoid, and tongue base regions. Consequently, an extended or wide local excision is recommended for management of recurrent disease.

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## Death due to bacterial meningoencephalitis after zygomaticomaxillectomy : Case report

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Meningoencephalitis is an acute inflammation of the brain and meninges. Typical neurologic signs and symptoms include fever, headache, nausea, vomiting, delirium, and seizures. CNS infections after maxillofacial surgery may not manifest for many days after surgery and very rarely happen. But when they do occur, these infections have potentially serious consequences and poor outcomes with high mortality rate.

Through this case report, we are reporting the case of forty-nine-year-old woman who died because of meningo-encephalitis after zygomaticomaxillectomy to resect recurred osteosarcoma in her zygomaticmaxillary complex. We discuss its post-mortem diagnosis, reminding oral & maxillofacial surgeons of the possibility of CNS infection after oral & maxillofacial surgery.



P25

## Treatment of osteomyelitis and cystic lesions using sagittal split osteotomy

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Various cystic lesions have prevalence on mandibular body, angle, ramal area and the mandible is the most vulnerable bone to infection in human body. When the lesion is small or average size, the acceptable treatment is enucleation and sequestrumectomy with curettage through intraoral approach. The probability increases with large lesions, the removal of which involves sacrifice of large amounts of bone, potential of mandibular fracture and damage to the inferior alveolar nerve. To avoid these complications on removing large lesion in the mandible, sagittal split ramus osteotomy (SSRO) can be utilized.

The purpose of this presentation is to describe a case of two cystic lesions and osteomyelitis in 3 patients in the body-ramus region of the mandible that was removed via sagittal split of the mandible and to discuss the benefit compared with other surgical approaches

P26

## Case report: A rare case of anterior chest wall cellulitis spread from submandibular space abscess due to neglected BRONJ of mandible

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Bisphosphonates, which are prescribed to patients with osteoporosis, multiple myeloma, and cancer patients that are subject to bone metastasis, inhibit osteoclastic activity and induce apoptosis of osteoclasts, thereby decreasing resorption and degradation of bone matrix. However, the same mechanism serves as primary cause of disease entity known as bisphosphonate related osteonecrosis of the jaw (BRONJ). Herein, we present a rare case of an elderly female with history of long-term bisphosphonate intake who presented initially with bilateral submandibular space abscess and cellulitis of anterior chest wall, which seemed to be life-threatening without immediate intervention. Defying our common understanding of pathway of abscess spread in oral and maxillofacial region, submandibular space abscess spread to superficial neck and anterior chest wall, rather than to parapharyngeal spaces. Review of patient's medical history and complete physical and radiologic evaluation lead us to conclude BRONJ of mandible as culprit of infection. Under unstable vital signs, patient had undergone several incision and drainage, a month long IV antibiotic therapy, periodic CT follow ups, and scrupulous post surgical treatments. Patient regained stable vital signs and systemic health, and no signs of inflammatory relapse have been observed thus far.

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## Endoscopic sinus surgery combined with surgical curettage for treatment of advanced maxillary BRONJ (bisphosphonate-related osteonecrosis of the jaw) involving maxillary sinus

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Long-term bisphosphonate therapy is known to be associated with serious complication of bisphosphonate-related osteonecrosis of the jaws (BRONJ). The mandible is more commonly affected than the maxilla. In approximately one quarter to one third of the cases BRONJ occurs in the maxilla. Involvement of the maxillary sinus is frequent when advanced BRONJ affect the maxilla, which is reported frequently resistant to therapy. Different treatment strategies of BRONJ with involvement of the maxillary sinus might be necessary. The aim of this study was to evaluate the outcome of advanced BRONJ involving maxillary sinusitis treated by endoscopic sinus surgery combined with surgical curettage. Maxillary sinusitis and oroantral fistulae associated with maxillary BRONJ was detected in fourteen patients. All patients were treated by surgery including removal of bony sequestra and granulation tissue combined with endoscopic sinus surgery. After bone morphogenetic protein or platelet rich fibrin was inserted into the alveolar bone defect, oroantral fistula closure was performed using local flap. Surgical sites were evaluated at least 4 months after the surgery with clinical and radiographic examination including cone beam computed tomography. Thirteen patients showed good treatment response to surgery with full mucosal coverage, absence of bone exposure and symptoms associated with sinusitis. One patient showed bone exposure and sign of inflammation, so revision surgery was needed. Endoscopic sinus surgery restoring the ostium patency natural sinus clearance may play a role in increases faster healing of the maxillary BRONJ involving maxillary sinus. Surgical curettage combined with endoscopic sinus surgery might be an effective and reliable method for treatment of advanced maxillary BRONJ involving maxillary sinus.

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## Surgical Treatment of Bisphosphonate Related Osteonecrosis of the Jaws with rhBMP-2 and Bone density assessment using Cone beam computerized tomography

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**Abstract:** Even though various treatment modalities have been proposed, the ideal approach still remains to be debated. rhBMP-2 stands out among treatments because of its favorable effect on bone regeneration. The aim of this study is to evaluate and report on rhBMP-2 supported medical surgical treatment outcomes of patients with bisphosphonate related osteonecrosis of the jaws (BRONJ) lesions. Patients diagnosed with BRONJ were included in the study. Patients received rhBMP-2 applications in addition to medical and surgical treatment. Method was that bone density on operation area measured by in cone beam CT was compared with control group in about 7 month after operation.

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## A Case Report of Descending necrotizing mediastinitis

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**Introduction:** Acute mediastinitis is a fatal infection which occurs related to connective tissue of mediastium, in the thoratic organs. Occurrence of mediastinitis dueto craniocervical infection is very rare, and is defined as descending necrotizing mediastinitis. In the present example, a case of tonsillitis by treating the transition is induced descending necrotizing mediastinal salts occurred in the 77-year-old man case report with review of literature.

**Case:** 77-year-old male patient presented herein from a sore throat symptoms was four days ago was diagnosed with tonsillitis at a private hospital. Then the symptoms are worsening was admitted to the emergency room by neck pain and voices change. CT findings were confirmed a number of deep neck abscesses on the left, the patient complained of breathing and swallowing difficulty with systemic weakness. Descending necrotizing mediastinitis was only after the antibiotic therapy and hyperbaric oxygen therapy combined with continuous dressing after incision and drainage performed under general anesthesia.

**Results:** Left cervical incision and general anesthesia combined antibiotic therapy and hyperbaric oxygen therapy performed after drainage seem to be improving, but supply patients with neck and right Asan Hospital in the spread of abscess in the lower sternum.

**Conclusion:** Descending necrotizing mediastinitis is a rare but well-known, rapidly fulminant polymicrobial infection of subcutaneous tissues. It is characterized by progressive destruction of fascia and adipose tissue, with sparing of the overlying skin and muscle in the initial stage. CNF may rapidly spread into the thorax along fascial planes, and the associated diagnostic delay makes this descending necrotizing mediastinitis, the most lethal form of mediastinitis, with a mortality of approximately 40 per cent. So aggressive multidisciplinary-

therapy with surgical drainage is mandatory. Progression of inflammation is known to be promoted by a negative pressure within the chest cavity of the gravity force during hyperventilation. Descending necrotizing mediastinitis is the most dangerous and unusual symptoms of infection that can occur in the oropharynx. Descending necrotizing mediastinal salt if it occurs, is fast, accurate diagnosis and aggressive surgical intervention is necessary, in order to increase the survival rate of patients. Appropriate treatment includes include a prayer maintenance and management, rapid incision and drainage. In a recent study, by a high-pressure oxygen treatment (hyperbaric oxygen therapy) used in combination with vancomycin, it was reported that a significant therapeutic effect can be obtained

P30

## Osteonecrosis of the jaw and bone healing in a patient with chronic myelogenous leukemia receiving imatinib : A case report

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This report presents osteonecrosis of the jaw and bone healing in a patient with CML receiving imatinib (Gleevec<sup>®</sup>).

In this case, a patient who is the 77 years-old female visited to the department with the chief complaint of pain and swelling of left midface area.(2015.1) Exposed bone in the left maxillary first premolar area was seen in oral examination and irregular alveolar bone destruction in the left posterior mandible area was observed in the radiographic image. She had been received imatinib for CML (2011-2015) and alendronate (Posa-ronin<sup>®</sup>) for osteoporosis.(2010-2015) She was diagnosed with MRONJ. Imatinib was interrupted temporarily and alendronate was completely interrupted. The patient underwent sequestrectomy operation of the left maxillary and mandible posterior area and teeth extraction of #22,23,24,35,36.(2015.4) During the follow-up check she underwent additional tooth extraction of #47 root rest. Because the healing state of the left posterior mandible area was poor, She was treated by curettage. Bone necrosis was observed in the #47 root rest extraction site for reasons of delayed healing state. In the radiographic image radiolucency with radiopacities compatible with bone sequestrum was seen in non-healing curettage site. She needed to undergo additional sequestrectomy operation. However, she was not able to interrupt imatinib immediately due to the possibility of deterioration of CML. After discussion with the department of hemato-oncology, We decided to do re-operation with interrupting imatinib (2016.5) So far, healing state is good after the operation. Taking imatinib resumed After 3 month layer from the

operation.

Imatinib that is a tyrosine kinase inhibitor associated with Bcl-Abl oncoprotein is an approved agent for the first-line treatment of patients with diagnosed CML,

However, Osteonecrosis of jaw was associated with imatinib combined with the previous use of bisphosphonate drug.

With the increase use of imatinib that have an effect for CML patients who have been used bisphosphonate drug, clinicians need to do a detailed evaluation of the possibility of ONJ and bone healing in addition to clinical and radiographic examination.

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## Brain abscess after implant surgery : Case report

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**Objective:** Brain abscesses are suppurative infections of the brain parenchyma that surrounded by a vascularized capsule. Bacterial brain abscesses have three main etiologies. The most common cause is contiguous spread of infection from the oropharynx, middle ear, and paranasal sinuses. Brain abscesses can also arise from hematogenous dissemination of bacteria. Some researcher reported that brain abscesses, albeit rarely, could result from dental or maxillofacial infections. The aim of this report is to present a rare case of a brain abscess suspected to intraoral infection after dental implant with adjacent bone graft in a old-aged woman.

**Methods:** A previously healthy 61-year-old woman visit to emergency department in Asan medical center(AMC) with 2days history of hemiplegia. Patients underwent dental implant surgery and bone graft on the Lt. maxilla before 10 days of visit to AMC. After dental implant surgery in a local clinic, she had a fever and her dentist prescribed antibiotics. The patient referred from infection department to finding origin of pathogen. Dental examination revealed intraoral infection at maxillary area. Panorama x-ray and CBCT images revealed erosion around bone graft area. Typical signs of infection were noted like swelling, purulence and tenderness. The patients diagnosed with foreign body infection due to dental implant and bone graft material. Immediately, incision and drainage was carried out under local anesthesia; pus was collected and sent for culture and sensitivity test. Stereotactic aspiration of brain abscess was done by neurosurgery and antibiotic treatment started by infection department.

**Results:** One week after intraoral I&D and aspiration of brain abscess, the patients improved verbal output and dysarthria. POD 2weeks, the patient began to improving of sensor and motor ability. Lastly, the patient was transferred to department of Rehabilitation

medicine to treat residual motor function inability.

**Conclusions:** Brain abscess due to intra-oral infection is very rare. But it is extremely aggressive and life-threatening. Therefore early diagnosis and adequate treatment in time are critical for its management. If a patient has infection in the head and neck area as well as showing neurologic symptoms, brain abscess should be included in the differential diagnosis list.

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## Correlation between alveolar bone loss and MRONJ stage.

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Bisphosphonates (BPs) are medications used to treat bonecancer, as well as osteoporosis. Although BPs improve bonemineral density, reduce fracture risk, some patients develop medication related osteonecrosis of the jaws (MRONJ). Several previous studies reported patients receiving BP showed a significant association between the incidence of MRONJ and alveolar bone loss. Aim of this study was to evaluate correlation between periodontitis and MRONJ stage.

We reviewed 93 patients who were diagnosed as MRONJ in Department of Dentistry, School of Medicine, Ajou University from October 2006 to September 2016. Panoramic radiographs were obtained and mesial and distal bone height were determined as a proportion of tooth length. A full-mouth bone score was computed by averaging these proportions from all measurable teeth. MRONJ stage was decided 2014 AAOMS MRONJ position paper.

We report correlation between full-mouth bone score and prognosis.

Orthognathic Surgery

P33

## Clinical evaluation of the Temporomandibular joint disorder after surgical correction of skeletal class II malocclusion

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TMJ dysfunction caused by orthognathic surgery is controversial. Changes of fossa-condyle disk relationship can be caused by orthognathic procedures. Postoperative TMD can be caused by pressure increase and remodeling of TMJ. TMD relief can be achieved by occlusal stability and reducing pressure in TMJ. The objective of this study is to evaluate of the temporomandibular joint disorder after surgical correction of skeletal class II patients

Patients who underwent orthognathic surgery for correction of dentofacial deformities at Mok-dong hospital, Ewha Womans university between 2000 to 2016. Patients underwent Bilateral sagittal split ramus osteotomy for Mandibular Advancement. Previous TMD symptom was checked, and radiographic finding for TMJ were also checked To evaluate for condylar resorption, remodeling, Disc displacement, or arthritic change. Follow up period is more than 12 months including Orthodontic follow-up. Surgeries included 1-jaw surgery and 2-jaw surgery. All operation were performed by one surgeon, monocortical plate was used for bilateral sagittal split ramus osteotomy fixation

Patients with TMJ symptom with or without TMJ noise, and limitation of mouth opening were improved in TMJ pain aspect. Controversies remain with regard to the effect of orthognathic surgery on TMD, so there should be further studies on that.

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## Surgical and Orthodontic Treatment of Treacher Collins Syndrome : A Case Report

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Treacher Collins syndrome(TCS) is a rare autosomal dominant disorder with a severe and complex craniofacial malformation affecting the facial skeleton and soft tissues. This morphology imparts both aesthetic and functional consequences including poor chin projection, a convex facial profile, and glossoptosis with airway obstruction.

TCS exhibits a clockwise rotation of mandibular body with a steep mandibular plane and retrognathia. In conjunction with the abnormal mandible, temporomandibular joint(TMJ) malformation is a complex deformity in TCS.

We present a case of the Treacher Collins syndrome with a complaint of mastication, pronunciation, and mandibulofacial deformity. In this case, we performed rib bone grafts for TMJ reconstruction, LeFort I osteotomy, sagittal split ramus osteotomy, advanced genioplasty, and distraction osteogenesis to reconstruct mandible and to restore normal occlusion, including the orthodontic treatment.

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## A case report: Maxilla-mandibular simultaneous distraction in hemifacial microsomia patient with Zurich distractor

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Hemifacial microsomia is a second congenital anomalies which occur in the maxillofacial area next to cleft lip and palate. Hemifacial microsomia mainly occurs asymmetric unilateral or rarely bilateral. Also, it shows abnormal growth in mandible, maxilla, zygoma, temporal bone, ear that results facial asymmetry.

The first consideration in the treatment of hemifacial microsomia is bone distraction using intraoral & extraoral devices. It can improve facial asymmetry.

In this case, we report maxilla-mandibular simultaneous distraction using Zurich distractor in the patient who has hemifacial microsomia.

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## Changes in the airway following 2 jaw surgery with horseshoe Le Fort I osteotomy

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**Objective:** Horseshoe Le Fort I osteotomy is selected during maxillofacial surgery when considerable superior repositioning of the maxilla is required. This method is characterized by a large posterior repositioning of the mandible due to the clockwise rotation of the occlusal plane and possible consequences involving changes to the shape of the respiratory tract have been indicated. A number of studies on the morphological changes of the respiratory tract before and after maxillofacial surgery have been reported, however none have focused on this particular method. In addition, evaluations used for most past studies only involved a 2D approach using the cephalogram and very few used a 3D approach. This study evaluated the morphological changes to the respiratory system after Horseshoe Le Fort I osteotomy using both 2D and 3D approach.

**Materials and methods:** Six patients who were diagnosed with skeletal mandibular prognathism that underwent horseshoe Le Fort I osteotomy and Sagittal Split Ramus Osteotomy (SSRO) at Tokyo Dental College were included in this study. Cephalometric radiograms and X-ray CT radiograms of patients were investigated. 2D evaluation was performed by superimposing the cephalometric radiogram before surgery and 1 month after osteotomy. 3D evaluation was performed by constructing 3D CAD data of the respiratory tract region from the X-ray CT data and comparing morphologies before and after surgery. Volume Extracter 3.0<sup>®</sup> (i-plants Systems Ltd.) was used for 3D CAD data construction and SpGauge<sup>®</sup> (Armonicos Ltd.) was used to superimpose available data.

**Results:** Data evaluation after surgery demonstrated slight narrowing of the respiratory tract in the hypopharyngeal region however no changes were observed in the

hyperpharyngeal region.

**Conclusion:** As a result, our study concluded that maxillofacial surgery involving Horseshoe Le Fort osteotomy has little effect on morphological changes of the respiratory tract. Future plans include increasing the number of relevant cases and extending study periods.



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## Orthognathic surgery and implant placement using virtual surgical simulation and 3D printing surgical guide in partially edentulous patient with mandibular prognathism : case reports

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A 48-year-old man presented with partially edentulous and mandibular prognathism. This patient needed implant treatment and orthognathic surgery. We prepared orthognathic and implant surgery by computer-aided virtual surgical simulation and 3D printing surgical guides. The design of surgical guides was based on three-dimensional surgical simulation, including bilateral sagittal splitting ramus osteotomy and implant surgery. Orthognathic surgery was done as planned by surgical guide. And implant surgery was also done by surgical guide. Post-operative prosthodontic treatment was performed for 7 months. Finally patient's esthetics and masticatory function were improved after surgery and treatment. Our surgical simulation and 3D printing surgical guide provide a reliable method and does not require traditional surgery preparation. So we report this case with literature review.

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## Orthognathic surgery using MiTek<sup>®</sup> mini anchor to correct facial asymmetry and condylar hyperplasia: case report

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In this study, we report a successfully treated case in a patient who has hemi-mandibular hyperplasia with facial asymmetry. Developmental disorder of mandibular condyle can occur congenitally or by acquired.

Condylar hyperplasia can occur at any age and can continue past the growth period. The unrestricted condylar hyperplasia can evoke various form of facial asymmetry.

Patient showed increased condylar height and width, vertical growth of mandibular ramus, decreased gonial angle, and facial asymmetry. Furthermore, the patient showed facial asymmetry and both temporomandibular joint sound and pain. She underwent orthognathic surgery with high condylectomy under general anesthesia. During condylectomy, we used MiTek<sup>®</sup> mini anchors to reposition articular disk. After surgery, patient not only recovered facial symmetry but also relieved temporomandibular sound and pain. In addition, patient showed favorable occlusion. Therefore, we report our case about orthognathic surgery using MiTek<sup>®</sup> mini anchor.

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## A questionnaire study after orthognathic surgery in patients with jaw deformities

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**Introduction:** The purpose of this study was to assess whether patients with jaw deformities were satisfied with the results of treatment.

**Patients and methods:** Questionnaires were sent to 640 patients who had undergone orthognathic surgery during the period from 2001 to 2010. One-hundred sixty five questionnaires (response rate of 26%) were returned from 34 males and 131 females with valid answers. The mean age of the patients at the time of surgery was 24.3 years, with a range of 15 to 59 years. The most common deformity was mandibular prognathism (in 112 (68%) of the patients) and the most common operation was maxillary and mandibular osteotomy (in 116 (70%) of the patients). Questions about "motivation", "appearance", "oral function" and "psychology" were answered as a threefold choice: "Yes", "No" or "Neither".

**Results:** The chief complaint in 159 (96%) of the patients was cosmetic disturbance such as facial appearance and occlusal disharmony. Dysfunctions such as masticatory disturbance, speech difficulties and TMJ signs and symptoms were the primary reasons for which 6 (4%) of the patients sought treatment. Eighty-six percent of the patients answered that they were satisfied with the results with regard to their chief complaints, but some patients were not satisfied with the results because of paresthesia of the lips and/or chin, relapse and postoperative facial appearance. Improvements in masticatory function and speech were recognized by 123 (74.5%) and 46 (27.9%) of the patients, respectively. Psychologically, 59 patients noted favorable changes in personality after the surgery.

**Conclusion:** In conclusion, orthognathic surgery has a positive influence on the psychologic status of patients with jaw deformities.

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## Three-Dimensional Analysis of Condylar Position After BSSRO for Mandibular Prognathism: Orthodontics-First Approach Vs. Surgery-First Approach

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**Purpose:** The aims of this study were to evaluate changes in condylar position after bilateral sagittal split ramus osteotomy (BSSRO) for mandibular prognathism and to compare them between orthodontics-first approach (OFA) and surgery-first approach (SFA) using three-dimensional (3D) analysis.

**Patients and Methods:** This study included 55 patients (110 condyles) who received BSSRO for mandibular prognathism. The patients were divided into two groups: OFA group and SFA group. Using computed tomographic images, which were obtained preoperatively (T0), 3 days postoperatively (T1), and at the 6-month follow-up (T2). Positional changes of the condyle were measured and calculated using the 3D coordinate system.

**Results:** After BSSRO, the condyles in both groups exhibited lateral posterior and inferior displacement with inward and forward rotation. During the postoperative follow-up period, the condyles tended to return to their preoperative positions. Finally, the condyles rotated anteriorly, with a medial and inferior shift in OFA group and an inferior shift in SFA group. There were no significant differences between the two groups in changes of the condylar position between each time point (T0 to T1, T1 to T2 and T0 to T2).

**Conclusions:** The results of this study may provide 3D information about condylar displacement after BSSRO via OFA and SFA. This study suggests that SFA may be considered as an alternative to OFA in surgical-orthodontic treatment.

P41

## A retrospective study on the incidence of post-operative complications after orthognathic surgery

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**Introduction:** Orthognathic surgery restores ideal facial anatomic relationship in patients with skeletal deformity which leads to functional and esthetic improvement. This retrospective study evaluated the incidence and risk factors of post-operative complications of orthognathic surgery performed at a single institution.

**Patients and Methods:** Medical records of patients who underwent orthognathic surgery at the Department of Oral and Maxillofacial Surgery in Seoul National University Dental Hospital from January 2013 to January 2016 were retrospectively reviewed, with follow-up at least over 6 months. All data regarding complications and patient's subjective symptoms after orthognathic surgery were gathered and analyzed.

**Results:** Post-operative complications included neurosensory deficit in the region innervated by mandibular nerve, post-operative bleeding, and refixation of bony segments, which led to temporomandibular-related symptoms.

**Discussion and Conclusion:** Despite the great variety of complications reported in the literature, there is low incidence of post-operative complications of orthognathic surgery. Therefore, with thorough treatment planning and proper management of patients, complications can be prevented and minimized.

P42

## Comparison of the tracing accuracy between IR based OTS and cost effective stereovision system for orthognathic surgery

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**Introduction:** It is important for tracking accuracy to use the navigation system for the orthognathic surgery. The purpose of this study is to compare the tracing accuracy between Infra-Red based optical tracing system (IRBOTS) and cost effective stereovision system(CESS) we designed.

**Method and materials:** We set F4 articulator installed markers of each system. Maxillary part of F4 articulator was moved in space as dictated by five surgical plans as follows:

- 1) 5mm setback.
- 2) 5mm advance.
3. 5mm shift to Rt.
- 4) 5mm Lt. down.(pivot from mid incisor)
- 5) 5mm Post. Yawing to Rt.(pivot from mid incisor).

We used NID SPECTRA product as IRBOTS and Dual CMOS camera manufactured from our Lab. as CESS.

**Results:** In Cost effective stereovision system, the most accuracy (99.92%) was in rolling movement of the maxilla and the lowest accuracy (94.64%) was in right and left movement. Also, the accuracy in setback movement (99.12%) of the maxilla was more accurate than advance movement (97.80%).

**Conclusion:** We used a new CESS with Stereocamera to develop a useful strategy. Our device appears to be accurate when used to assist in maxillary repositioning. Our results suggest that the method can potentially be extended for use with many surgical procedures on the facial skeleton. Further, our positive results suggest that it would be appropriate to proceed to in vivo testing to assess surgical accuracy under real clinical conditions.

P43

## Case report : a rare ophthalmic complications after Orthognathic surgery.

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**Objectives:** Complications after the orthognathic surgery have been incessantly intriguing theme in the field of oral and maxillofacial surgery. And there seems to be sufficient reason to believe that the new, rare complications being reported nowadays reflect the tendency of more invasive attempts to perform the procedure indiscriminately these days.

Although the old papers covered vast spectrum of complications, from hemorrhage, nerve damage, inadequate fracture, occlusal changes even to joint dysfunction, not many papers dealt with the nerve damage that deters patient's ophthalmic function.

Among the few, dry eye was the only ophthalmic complication that is not related to the visionary sensation. In this case report, we wanted to introduce a female patient whose greater petrosal nerve was severely injured after Le Fort I Osteotomy that no secretion was possible from her lacrimal sac.

P44

## New analysis method of simultaneous soft tissue and cephalometric change after cranio-maxillo-facial orthognathic surgery

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It has not been much reported on simultaneous soft tissue and cephalometric change after cranio-maxillo-facial orthognathic surgery. Because the basic reference line is different between soft tissue analysis and cephalometric analysis. Furthermore, there has been lack of analysis methods on cranial bone plasty such as fronto-orbital advancement, and Intraoral Le Fort III and II advancement between pre- and post- surgery.

Thus we developed a new analysis method of simultaneous soft tissue and cephalometric change after cranio-maxillo-facial orthognathic surgery including cranial bone plasty such as fronto-orbital advancement, Intraoral Le Fort III or Le Fort II advancement, Intraoral Vertico-Sagittal Ramus Osteotomy (IVSRO), and genioplasty. We focused on the reference point of Porion, which can be the common reference point of soft tissue analysis and cephalometric analysis. The concept of this method is that we established "true vertical line through which pass the point Porion" and horizontal reference line perpendicular to the vertical line as key reference lines. Through this methods, soft tissue and cephalometric analysis from cranium to chin can be analyzed totally. And also changes of 11 main angle of the face will be introduced with its meaning of the changes.

P45

## Surgical excision using 3D surgical stent in a case of craniofacial fibrous dysplasia : Acase report

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Fibrous dysplasia is a disorder in which normal bone is replaced progressively with fibrous tissue and immature woven bone. Approximately one-third of patients with fibrous dysplasia have craniofacial involvement and zygomaticomaxillary complex are most commonly affected. When occurred in craniofacial regions it may result in cosmetic disturbance such as facial deformity, facial asymmetry and functional impact including vision impairment or malocclusion. Fibrous dysplasia is usually asymptomatic and its proliferating course is self-limited, though clinical symptoms or discomfort may accompany the lesion and surgical intervention may be indicated.

Recently, a number of cases regarding surgical approach using 3D surgical stent has been reported. This surgical procedure takes the advantages of preoperative fabrication of surgical wafers that facilitate the prediction of operative processes, allow surgical simulation yielding higher operative precision with reduced operating time.

In these case, 3D surgical stent was designed and used during the surgical excision of a patients presenting fibrous dysplasia in zygomaticomaxillary complex. Previous case reports describe treatment protocol about surgical excision of lesion, which they have to rely on individuals on the basis of anatomical knowledge and experience of clinical skills. The purpose of this study is to report preoperative preparation of surgical stent, its placement during the excisional operation and further usage as a surgical guide for operation including the overall outcome.

P46

## Application of new analysis method of simultaneous soft tissue and cephalometric change after Intraoral Le Fort II osteotomy and Intraoral Vertico-Sagittal Ramus Osteotomy

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New analysis method of simultaneous soft tissue and cephalometric change after cranio-maxillo-facial orthognathic surgery has been developed. It can be used for analysis of cranio-maxillo-facial orthognathic surgery including cranial bone plasty such as fronto-orbital advancement, intraoral Le Fort III or Le fort II advancement, Intraoral Vertico-Sagittal Ramus osteotomy (IVSRO), and genioplasty.

In this study, 25 patients who underwent intraoral Le Fort II advancement and IVSRO by a single surgeon in department of oral & maxillofacial surgery, Seoul National University Dental Hospital from 2007 to 2016 were analyzed using this new analysis method.

The concept of this method is that we established "true vertical line through which pass the point "Porion" and horizontal reference line perpendicular to the vertical line as key reference lines, and the basic reference lines of this method are equal to those of previous soft tissue analysis and for cephalometric analysis after the surgery. We will present the polygonal profile changes and relapses using this method after intraoral Le Fort II advancement and IVSRO in 25 patients. Furthermore, the analytical characteristics of intraoral Le Fort II advancement and IVSRO will be compared with those of Le Fort I and IVSRO.

The advantages of this method are soft tissue profile analysis and skeletal analysis can be done simultaneously, it's easy and simple, and useful for treatment planning of craniofacial deformity.

P47

## A comparison of accuracy of three different methods for fusion of intra-oral scans and 3D cone-beam computed tomography scans for orthognathic surgery planning.

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**Introduction:** Cone-beam computed tomography (CBCT) is widely used in maxillofacial surgery. The CBCT image of the dental arches, however, had low quality to use in digital planning of orthognathic surgery. The aim of this study is to evaluate accuracy of several methods to augment the three-dimensional CBCT skull model with a detailed surface image of the dentition produced by intra-oral scanning.

**Method and materials:** In 15 patients who were planned for bimaxillary orthognathic surgery, 3D CBCT images were taken with modified wax bite containing radio-opaque markers. Additional images of wax bite using CBCT, laser scanner and intraoral scanner were acquired. For detailed surface image of the dentition, an intra-oral scanner and laser scanner were used. The registration method consists of two sequential steps. At first, marker-based matching procedures were performed to integrate three different images of wax bite into the 3D CBCT scan of the patient. The accuracy of these methods was assessed by measuring the distance between the marker surfaces of the registered wax bite images and that of the 3D CBCT. Second, wax bite-dentition combined images by surface-based matching algorithm were integrated into the 3D CBCT skull model. The accuracy of the three methods using intraoral scanned dentition was assessed by measuring the distance between the occlusal surfaces of the registered intra-oral scans and the that of laser scanned dentition with CBCT wax bite.

**Results:** The results of this study showed that different three methods to integrate scanned surface images of

the dentition into 3D CBCT skull model for digital planning of orthognathic surgery were highly accurate.

**Conclusion:** This report confirmed that additional CBCT scans of the wax bite was not necessary, and all three methods are appropriate for 3-D virtual orthognathic surgery planning.

P48

## Nasal septal deviation after Le Fort I osteotomy: Correlation of septal deviation and the amount of maxillary superior movement

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**Introduction:** The purpose of this study was to investigate the incidence of nasal septal deviation following Le Fort I osteotomy, and to evaluate the correlation of nasal septal deviation and the amount of maxillary superior movement.

**Patients and methods:** The 50 patients who underwent 2-jaw surgery performed by one surgeon in SNUDH and took 3D CT preoperatively and postoperatively were included in this retrospective study. The amount of curvature of nasal septum was measured through the reference points and reference planes. Correlation of Changes in curvature of nasal septum and maxillary superior movement was evaluated by statistical analysis.

**Discussion:** It is common that nasal deformities and maxillary deformity coexist. Nasal septal deviation may cause respiratory and esthetic problems by resulting in one-sided obstruction. There are few studies related to the nasal septal deviation after Le Fort I osteotomy. This study suggests that it is required to decrease the possibility of nasal septal deviation by management such as removal of inf. border of septal cartilage when maxillary superior movement by Le Fort I osteotomy is performed.

P49

## Postoperative changes in mandibular position after mandibular setback surgery via surgery-first approach in relation to the increase of vertical dimension and amount of mandibular setback

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**Objectives:** This study aimed to compare preoperatively predicted rotational relapse with actual posttreatment mandibular position after mandibular setback surgery via surgery-first approach, and to evaluate the effect of the increase of vertical dimension (VD) on surgical occlusion and amount of mandibular setback on postoperative mandibular positional changes.

**Patients and methods:** Twenty-nine patients with mandibular prognathism who underwent bilateral sagittal split ramus osteotomy were evaluated using lateral cephalograms, obtained preoperatively, immediately postoperatively, and immediately after debonding. Increase of VD on surgical occlusion was measured preoperatively. We estimated the mandibular forward movement due to the postoperative mandibular anticlockwise rotation during postoperative orthodontic treatment and compare it to actual post-treatment mandibular position.

**Results:** The actual postoperative mandibular forward movement (2.1 mm) was significantly greater than the forward movement (1.0 mm) predicted preoperatively ( $p < 0.01$ ). The postoperative mandibular forward movement was greater in the groups with greater VD increase ( $> 1.5$  mm) or greater mandibular setback ( $> 10$  mm), even though there was no statistically significant difference.

**Conclusion:** These results suggest that additional postoperative relapse may occur with mandibular rotational relapse, and VD increase and amount of mandibular setback may affect post-treatment mandibular position in surgery-first surgical orthodontic treatment.

P50

## Surgical treatment of Hemimandibular Hyperplasia

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Anomalies of mandibular condyle are generally classified in terms of aplasia, hypoplasia, and hyperplasia. Condyle hypoplasia is caused by underdevelopment or defective formation of the mandibular condyle. It may be either congenital or acquired. According to Shafer et al, "congenital hypoplasia that is idiopathic in origin is characterized by unilateral or bilateral underdevelopment of the condyle beginning early in life." In these cases, the condyle is generally small.

Secondary or acquired condyle hypoplasia may be caused by local factors (trauma, infection of mandibular bone or middle ear or irradiation) or by systemic factor (infection, toxic agents, rheumatoid arthritis, mucopolysaccharidosis). In these cases, the condyle may be small, and the condition is frequently associated with ankylosis. The ankylosis is the result of damage to the joint structures that causes hemorrhage and inflammation with subsequent fibrosis. Either primary or secondary hypoplasia may be unilateral or bilateral.

Uni or bilateral mandibular hypoplasia can be associated with various syndromes or is acquired after early traumatic or inflammatory disease in the temporomandibular joint. Early treatment is necessary to avoid consequent impairment of midfacial growth.

The standard treatment of these malformations consists of the application of bone grafts which can lead to unpredictable growth, but the procedure of bone lengthening which presented by McCarthy et al, represents a limited surgical intervention and therefore open up a new perspective of treatment, especially in younger children with severe deformities.

In this case, we report favorable results using both distraction osteogenesis and orthognathic surgery in hemimandibular hypoplasia

P51

## Evaluation of mandibular morphology and dental arch in patients with Class III asymmetry

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**Purpose:** The purpose of this study was to evaluate mandibular body morphology in transverse, the molars inclination and arch form, in the class III asymmetry patient.

**Methods:** The study sample comprised 20 patients with facial asymmetry. The MDCT data and 3D model scan data of these sample were developed to the modeling software (Imageware). Linear and angular measurements were performed 3 dimensionally to assess and compare between deviation and non-deviation side.

**Results:** No significant difference was detected in linear measurement mandibular body width and height, mandibular between deviation and non-deviation side. In angulation measurement, the alveolar bone significantly inclined to lingual on the deviation side. The tooth axis angulation on the transverse plane, otherwise, there was no significant difference in both side. In model measurement, mandibular pre-molars and molars inclined lingual on the deviation side with significantly difference. Mandibular Arch form showed reversed S-curve in deviation side.

**Conclusion:** The result indicated that mandibular asymmetric deformation occurs not in the mandible body but the alveolar bone on the transverse plane, the teeth inclined lingual on the deviation side, in accordance with the inclination difference, the arch form distorted with reversed S curve in deviation side. Consequently, the deformation occurs in the alveolar bone area, that affects tooth inclination eventually arch form.



## Reconstruction

P52

### Reconstruction by titanium tray fabricated with CAD/CAM and iliac PCBM, block bone about maxillofacial defect of oral cancer patient : case report & literature reviews

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For patients undergoing surgery caused by oral or head and neck trauma, a large defect may occur in the maxillofacial area. This other part of the defect region may cause more problems esthetically, and also cause many functional problems such as mastication and swallowing, pronunciation. To solve these problems, local flaps, distant flap, or free flap graft can be used in a variety of reconstruction surgery. However, after reconstruction, such as infection or bone loss can lead to situation need to remove the reconstruction site.

We report fibula free flap for reconstruction of remained hard tissue defects of S.C.C. Primary tumor was excised segmental mandibulectomy, supraomohyoid neck dissection and reconstructed by use of recon plate and fibula free flap. Post-op infection results in surrounding soft tissue defect, fibula bone resorption. We have experienced a case of using a titanium tray fabricated with CAD/CAM methods and iliac PCBM, block bone reconstruction with satisfactory result, so we report it with literature reviews

P53

### The advantages of the upper-inner arm graft for repairing radial forearm free flap donor site.

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**Aim:** The aim of this study is to show the merits and demerits of the full thickness skin graft (FTSG) with upper-inner arm for repairing radial forearm free flap (RFFF) donor site.

**Materials and Methods:** Eleven head and neck cancer patients who underwent defect reconstruction with RFFF were reviewed from April 2015 to October 2016 retrospectively. RFFF donor site was repaired with FTSG from the upper inner arm. All upper inner arm graft sites were sutured primarily. Grafted RFFF sites started to stitch out after two weeks compression. Patients were followed up periodically and none of the patients were lost. Data was collected from patient records such as photographs and patients' complications, which include serous discharge, tension, swelling, pain and dysfunction of the donor site.

**Results:** Eleven consecutive patients were operated and reconstructed with radial forearm free flap. The defect size varied from 4.0X4.0 to 6.0X5.0 cm. All patients healed without complication with no appeared functional problems, except for one patient who showed mild, transient fluid discharge for 3 days. Otherwise, none of the patients showed functional problems and healed without complication. Patients expressed satisfaction in aesthetic aspects, especially in hairless thin texture and color-match in the graft site.

**Conclusion:** Using full thickness skin graft from upper-inner arm can be one of the best options for the covering of the radial forearm free flap donor site defect.

**Key words:** Upper-inner arm graft, full thickness skin graft, Radial forearm free flap

P54

## A Study on the Changes of Blood Flows and Vessels according to the Microvascular Anastomosis Types Using Computational Fluid Dynamics Models: 2. Two-Way Fluid-Structure Interaction Analysis

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**Purpose:** When the corresponding vessel sizes for the microvascular anastomosis are different, various alternative methods are sought to solve that problem and these conditions can have different blood flows.

The purpose of this study is to investigate the difference of the blood flows and vortex formations respectively according to various microvascular anastomosis methods by reconstruction of the three-dimensional modeling and analysis with two-way fluid-structure interaction (FSI) analysis

**Methods:** Three-dimensional microvascular anastomosis models were reconstructed as follows and the finite element analyses were performed: control, 1:1.5 diameter ratio, invagination, fish-mouth, oblique section, and wedge excision end-to-end anastomoses, 30°, 45°, 60°, and 90° end-to-side anastomoses.

**Results:** The oblique section model, i.e. angled anastomosis, had the biggest displacement of the vessel wall in the end-to-end anastomoses. The 30 degree, i.e. acute angled anastomosis, had the smallest displacement in the end-to-side anastomoses.

**Conclusion:** We could simulate various geometrical models for the microvascular anastomosis with two-way FSI analysis and get useful information for each situation.

P55

## Orbital superior wall reconstruction using a surgical navigation

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The orbital roof fractures are rare. Orbital roof fractures are generally encountered in males between 20 and 40 years of age owing to automobile accident mainly. The orbital roof fractures have an impact on not only the orbital volume and loss of the intraorbital contents, but also on precise anatomic reconstruction and the amount of fibrosis resultant from trauma and surgery, therefore, early diagnosis and treatment are very important.

Though these importance of the surgery, there were some limitations on the conventional surgical procedure. Due to the remodeling process, there are no obvious points of the fracture area furthermore, surgical approach does not offer direct view on the entire anatomic structures. These limitations make the displacement underestimated or overestimated and may lead to unsatisfactory surgical outcomes in function and esthetics. The advantage of a surgical navigation is that the surgeon can instantaneously determine the position of the surgical instrument on the CT images and see, during the operation. However, it takes a long time to be ready for surgery and needs expertise because the procedures are complicated

Titanium mesh is very suitable reconstructive material that allows excellent structural support, shorter operative time, and ease of molding into the planned shape.

We obtained cosmetically good results in 6 reconstruction cases of orbital roof fractures using titanium mesh via coronal approach using a surgical navigation and hereby we report the results with literature review.

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## Sectioned images and surface models of a cadaver for understanding the freevascularized anterior rib flap

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The aim of this study is to represent the anterior rib flap on sectioned images and surface models using Visible Korean for medical education and clinical training in the field of maxillofacial reconstructive surgery. Serially sectioned images of the thorax were obtained from a cadaver. The important structures in the sectioned images were outlined and stacked to create a surface model. The PDF file (8.45MB) of the assembled models is accessible for free download on [http://vkh.ajou.ac.kr/Products/PDF/Vascularized\\_anterior\\_rib\\_flap](http://vkh.ajou.ac.kr/Products/PDF/Vascularized_anterior_rib_flap). In this file, the significant anatomic structures of the anterior rib flap can be inspected in the sectioned images. All surface models and stereoscopic structures of the anterior rib flap are described in real-time. We hope that these state-of-the-art sectioned images, outlined images, and surface models will help students and trainees gain a better understanding of the anterior rib flap anatomy.

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P57

## A Retrospective Study of Orbital Inferior Wall Reconstruction Using Transantral Approach

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Nearly 40 percent of all maxillofacial traumas involve the fracture of orbital structures. The fracture mostly involves the combination of the medial wall and the orbital floor. Complications that can occur after a trauma are diplopia and visual disturbance due to changes in orbital volume, and enophthalmos due to herniation of orbital tissue. Fortunately, diplopia and visual disturbance are self-limited in the majority of cases because it is usually caused by intraorbital edema and recovered with resolution of the swelling. However, enophthalmos can be present for several weeks to months after an injury, and it should be corrected by reconstruction of anatomical structures. Therefore, the main aim of orbital reconstruction is to restore the pre-injury anatomy of the skeleton.

For reconstruction of bony orbital defects, a wide variety of approach have been used. Many methods, including transconjunctival, subciliary, subtarsal, and transantral approach, can be used for approach to orbital floor. However, procedures for applying the incision in the eyelid, as transconjunctival, subciliary and subtarsal approach are likely to cause entropion or ectropion with postoperative scarring. In contrast, transantral approach has the advantages of no particular complication with scar formation because the incision is done on oral mucosa. In addition, it has advantages to obtain a wider field of view for the orbital inferior wall area without applying pressure to the eye.

We performed inferior orbital wall reconstruction using transantral approach in 54 patients since 2000 and obtain a good result. Hereby we report the long term follow up results with a review of literature.

P58

## The use of patient-specific reconstruction-plates by CAD/CAM for mandibular reconstruction

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**Purpose:** For the recent generation of mandibular reconstruction, patient-specific reconstruction-plates (PSRP) for mandible have been developed which are milled from titanium after preoperative CAD/CAM planning with 3D-CT data of patient. After determining the resection margins and plate position, PSRP can be designed including customized shape, length and position/number of the screw holes.

**Patients & Methods:** Total 9 patients who underwent mandibular reconstruction by PSRP (Osteonic Co.) were evaluated. Indication, time of operation, fit and handling of the plates, pre-/postoperative occlusion, pre-/postoperative position of the temporomandibular joint (TMJ) and complications were assessed.

**Results:** Indication of PSRP ranged from replacement of fractured previous standard reconstruction-plate to reconstruction of mandibular contour with the use of microvascular free flap. The mean time of operation using PSRPs was lower than that using standard R-plates. The fit and handling of the PSRP were satisfied clinically. The strength of PSRP was grade 3 and the thickness was 2.6t. The postoperative occlusions and TMJ positions were stable in all cases except one. The one patient underwent condyle re-positioning surgery additionally. There was a case of complication about postoperative exposure of the PSRP.

**Conclusion:** PSRP offers several advantages in all kind of mandibular reconstructions compared with standard R-plates, therefore, it will become routine clinical practice for mandibular reconstruction in future.

Tissue Engineering

P59

## The effect of the 4-hexylresorcinol loaded silk membrane as artificial dermis on wound healing and re-epithelization in rat skin defect model; preliminary study.

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The objective of this study was evaluated the wound healing capability of the 4-hexylresorcinol (4HR) loaded silk membrane (SM) as artificial dermis on the full thickness skin defect of the rat. Full thickness skin defect (diameter: 10 mm) was created on the dorsal surface of the rat and the defects were covered with the 4HR loaded SM as experimental group. And some defects were left empty as control group. 14 days after surgery, the animals were sacrificed and the specimens were stained with hematoxylin and eosin for histological evaluation. In the experimental group, epithelial regeneration was observed beneath the SM and inflammatory reaction and skin necrosis were not observed. In conclusion, 4HR loaded SM contributed the wound healing and re-epithelization without inflammatory reaction in full thickness skin defect.

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## Hydroxyapatite synthesized from shell of *Haliotis* sp.

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This study examined the physiochemical characteristics of hydroxyapatite (HA), synthesized from abalone shell, *Haliotis* sp., to be utilized as a bone grafting material. Abalone shells were sintered to produce calcium oxide (CaO). Subsequently, calcium hydroxide was prepared by the suspension of CaO into distilled water and reacted with phosphoric acid. The precipitated ceramic composites were collected and sintered with CaO at 1230 °C for 3 h. Finally, the synthesized ceramic composites had the same chemical characteristics of commercial HA according to energy dispersive spectrometry, X-ray diffraction and Fourier transform infrared spectroscopy. These data demonstrated that HA was successfully synthesized from abalone shell. Furthermore, the results of MTT, cell live & dead assay, and DAPI staining showed that the effluents of HA synthesized from abalone shell did not affect the cell viability. These data suggest that the HA synthesized from abalone shell has biological safety for use as a bone grafting material.

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## $\beta$ -tricalcium phosphate derived from *Haliotis* sp. shells

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**Purpose:** To develop methodology for the synthesis of  $\beta$ -tricalcium phosphate ( $\beta$ -TCP,  $\text{Ca}_3(\text{PO}_4)_2$ ) from the shell of *Haliotis* sp. (abalone shell) and to verify its characterization and biocompatibility

**Materials and Methods:** Calcium oxide (CaO) was synthesized from abalone shell by sintering and was suspended in distilled water to prepare calcium hydroxide ( $\text{Ca}(\text{OH})_2$ ). For the synthesis of calcium carbonate ( $\text{CaCO}_3$ ), carbon dioxide was used to infuse  $\text{Ca}(\text{OH})_2$  at pH7.4.  $\text{CaCO}_3$  was reacted with phosphoric acid at pH 6.0 to obtain dicalcium phosphate ( $\text{CaHPO}_4$ ). Subsequently,  $\beta$ -TCP was synthesized via a chemical reaction between  $\text{CaHPO}_4$  and CaO at 950-1100 °C for 3 h. Fourier-transform infrared spectroscopy (FT-IR) and X-ray diffraction (XRD) performed to verify the physiochemical characteristics of the composite synthesized from abalone shell.

**Results:** FT-IR and XRD results showed that  $\beta$ -TCP was successfully synthesized from abalone shell. The synthesized  $\beta$ -TCP did not affect cell viability of either normal human oral keratinocytes or osteoblastic MG-63 cells. These data indicate that  $\beta$ -TCP synthesized from abalone shell is biologically safe.

**Conclusion:**  $\beta$ -TCP synthesized from abalone shell can be used as a potential source of bone grafting material.

**Acknowledgment.** "This research was supported by the Ministry of Oceans and Fisheries, Korea (entitled 'The development of synthetic bone grafting material using bioceramic processed from abalone shell for dental care')."

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## The effect of highly porous scaffold on bone regeneration ability in Rabbit calvarium

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In tissue engineering, the scaffold provided the environment for cell adhesion, proliferation, and differentiation to activate bone regeneration. To achieve successful bone regeneration, the scaffold should be reproducible, biocompatible, and bioabsorbable.

Especially, the porosity of the scaffold is an important factor for cell migration and nutrient supplementation. Because pores form a support structure for cell growth, vessel infiltration, and bone tissue development.

Therefore, the aim of this study is to evaluate the bone formation ability of the highly porous scaffold using calcium-phosphate-based composite materials. We used a rabbit calvarial defect model *in vivo* to compare their tissue response and ability to stimulate bone formation at 1 weeks, 2 weeks, 4 weeks, and 8 weeks.

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P63

## The effect of alendronate and ultraviolet treatment on bone-implant interface

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**Objective:** Rapid and stable fixation of dental implants is crucial for successful treatment. Herein, we examined whether the simultaneous treatment of titanium implants with ultraviolet (UV) and alendronate (ALN) synergistically improved the bone-to-implant contact.

**Materials and methods:** We assessed the *in vitro* effects of UV radiation-treated (UV+/ALN-), ALNsoaked (UV-/ALN+), and UV radiation/ALN-treated (UV+/ALN+) titanium implants on cell proliferation, cytotoxicity, cell adhesion, and osteoblast differentiation using MG-63 osteoblast-like cells by the assays of MTS, live/dead, scanning electron microscopy (SEM), alkaline phosphatase (ALP) activity, and alizarin red S (AR-S) staining, respectively.

**Results:** MG-63 cells cultured on UV+/ALN+ implants showed significantly higher cell proliferation, ALP activity, and calcium mineralization than those cultured on other implants ( $P < 0.05$ ). Furthermore, SEM observation showed the highest increase in cell attachment and growth on the UV+/ALN+ implants.

**Conclusions:** Treatment of titanium surfaces with UV and ALN may synergistically enhance osteoblastic differentiation and mineralization *in vitro*.

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## Physico-mechanical properties and biocompatibilities of a bacterial cellulose membrane as a non-resorbable dental barrier membrane

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This study examined the physico-mechanical properties, biological safety, and biocompatibility of a bacterial cellulose membrane (BCM) synthesized by *Gluconacetobacter xylinum* (*G. xylinum*) for use as a non-resorbable dental barrier membrane for guided bone regeneration. A non-resorbable dental barrier membrane was prepared from a BCM synthesized by *G. xylinum*. The physico-mechanical properties, biological safety and biocompatibility were examined. An *in vivo* study using rats with a calvarial defect was performed by a radiographic and histologic assessment. The BCM had nanopores, approximately  $32.9 \pm 20.1$  nm in size, with netted fibers composed of carbon (48.91%) and oxygen (51.09%). The thickness of the BCM was  $36 \pm 13.5$  and  $56 \pm 18.5$   $\mu\text{m}$  under dried and hydrated conditions, respectively. The weight of the BCM was  $15.6 \pm 1.5$  and  $63.4 \pm 5.4$   $\mu\text{g}$  under dried and hydrated conditions, respectively. The tensile strength and elastic modulus of the BCM were  $16.94 \pm 1.2$  and  $654.89 \pm 10$  MPa, respectively. The BCM had a neutral pH (pH  $6.8 \pm 0.2$ ) and did not affect the cell viability. Moreover, new bone formation of the calvarial defected region with the transplanted BCM was identified by radiographic and histologic assessments. A BCM with excellent physico-mechanical properties, biological safety, and biocompatibility can be used as a non-resorbable barrier membrane for GBR in dentistry.

**Acknowledgment.** This work was supported by the Korea Institute for Advancement of Technology (R0004064)

P65

## Fabrication of 3D printed biodegradable graft material for regenerating complex shaped bony defect in a rabbit model.

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**Background:** Bone defects were created as complex structure in clinics. Current available bony substitutes and autogenous bone are not able to fit these complicate defects in shape and structure. Therefore, to overcome this hurdle, we have already shown tissue-engineered bone repair scaffolds using 3D printing techniques in 2011. However, it was not applicable for clinical use due to several reasons. Therefore, we modified materials and technics for fabricating clinically applicable 3D printed biodegradable graft for bone regeneration.

**Materials and methods:** In this study, linked two 7-mm diameter circle shape defects were made at calvaria bone of 12 rabbits. Customized polycaprolactone (PCL) 3D printed scaffolds were created after 3D CT images of defects were acquired and remodeled, and these PCL scaffolds were grafted to the defects and evaluated with controlled architectures. Two defects were created in right and left side of rabbit calvarial bone, depending on experiment design, non-grafted group (control, A), and grafted group (3D printed scaffold grafted group (B) were divided and fabricated scaffolds were implanted after 3days. Amount of new bone formation, biocompatibility and tissue response of scaffolds were evaluated using micro CT and histological exam. after 12, 16 weeks of graft

**Results:** The average volume of new bone formaton in the group A was  $15.36 \pm 2.43 \text{ mm}^3$  after 12 weeks of graft, and  $16.61 \pm 7.50 \text{ mm}^3$  after 16 weeksof graft. The average volume of bone formation in the group B was  $33.62 \pm 3.12 \text{ mm}^3$  after 12 weeks of graft, and  $26.27 \pm 6.80 \text{ mm}^3$  after 16 weeks. Significant difference between group A and B was observed in the amount of new

bone formation( $p < 0.01$ ). Distribution of new bone is more favorable for scaffolds grafted site (B) in histological exam and CT-scan data. As the scaffolds were fabricated precisely, it fitted to the defects well without any fixation procedure and maintained in the graft position during observation period.

**Conclusions:** Clinically, 3D printed customized scaffolds for regenerating complex bony defect were feasible for enhancing the reconstruction quality of various complex bony defects, simplifying the surgical procedure.

**P66**

## The effect of Pulsed Magnetic Field on regeneration of crush-injured mandibular nerve in SD rat model in vitro, in vivo

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**Purpose:** In previous studies, difference was found in neurotrophic factor expression between Pulsed electromagnetic field (PEMF)-treated mesenchymal stem cells and non-treated cells. Therefore, this study aims to evaluate nerve regeneration when each cell was injected into SD rats with mandibular nerve crush injury.

**Material & Method:** MSCs were collected from Sprague-Dawley rats of 5-weeks-old. MSCs were confirmed by using CD29 and CD105. MSCs were divided into two groups of which one was exposed to PEMF in the condition of 50Hz, 10Gauss, 1hr/d for 5, 7, 10, 14 days, and not for the other group. S100, GFAP, NGF, BDNF expression level was compared through RT-PCR. SD rats were divided into 8 groups *in vivo*: Sham, Sham\_PEMF, PBS, PBS\_PEMF, MSC, MSC\_PEMF, PMSCs, PMSC\_PEMF. The left mandibular nerve was given crush injury and MSCs, PMSCs ( $1 \times 10^6 / 5 \mu\text{l}$ ) were injected into the nerve. The rats were exposed to PEMF on the same condition as *in vitro* One day post-surgery for 14 days. At one and two weeks post-surgery, nerve regeneration of each group was evaluated through sensory test using filaments, histomorphometry and dil-labeled neurons.

**Result:** The MSCs group that was exposed to PEMF for 10 days was higher in GFAP, NGF, BDNF expression level compared to the group that was not. Statistical significance was especially seen in NGF and BDNF. Nerve regeneration in all groups was enhanced with PEMF exposure *in vivo*. The group that was exposed to PEMF after PMSCs injection was the best in nerve regeneration in Gap and Different score of sensory test. The result of histomorphometric analysis and retrograde labelling was higher in all the PEMF-treated groups.



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## Is heparin effective for the controlled delivery of high dose bone morphogenetic protein-2?

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Sustained release of bone morphogenetic protein (BMP)-2 by heparin-contained biomaterials is advantageous for bone tissue regeneration using low dose BMP-2. However, its effect with high dose BMP-2 is still unclear and should be clarified considering the clinical use of a high dose of BMP-2 in spine and oral surgery. This study aimed to evaluate the efficacy of a heparin-conjugated collagen sponge (HCS) with high dose BMP-2 delivery by investigating in vivo initial osteogenic regulation and bone healing over 12 weeks in comparison with that of an absorbable collagen sponge (ACS). The in vitro BMP-2 release profile in the HCS exhibited a lower burst followed by a sustained release of BMP-2, while that of the ACS showed an initial burst phase only. As a result of a lower burst, the HCS-BMP group showed higher expression of bone-forming/resorbing markers and enhanced activation of osteoclasts than the ACS-BMP group within the scaffold of defect after 7 days, which is presumed to be due to retention of relatively higher amounts of BMP-2. However, the surrounding calvaria were less resorbed in the HCS-BMP group, compared to the aggressive resorptive response in the ACS-BMP group. Micro-computed tomography and histology revealed that HCS-BMP guided more effective bone regeneration of central defect over time inducing minor ossification at the defect exterior while ACS-BMP exhibited excessive ossification at the defect exterior. These results showed that HCS-mediated BMP-2 delivery at a high dose has advantages over ACS including less early resorption of surrounding bone tissue and higher efficacy in compact bone regeneration over a longer period, highlighting a clinical feasibility of this technology.

Especially, the group that was exposed to PEMF after PMSC injection showed a highest result. This supports the hypothesis that PEMF improves nerve regeneration and PMSCs-PEMF group is the most effective in regeneration ability.

**Conclusion:** This study confirms that applying PEMF in vitro and in vivo is effective in enhancing regeneration of damaged nerves.

## TMJ

## P68

## The effectiveness of fused images of bone SPECT and facial CT in the diagnosis of osteoarthritis state of the temporomandibular joint

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**Introduction:** The objective of this study was to evaluate the effectiveness of bone SPECT/CT fused image for the diagnosis of temporomandibular joint (TMJ) arthritis.

**Method and materials:** From January 2011 to July 2012, 17 patients (3 males and 14 females) who visited Department of Oral & Maxillofacial Surgery, Hanyang University Hospital, Republic of Korea, were diagnosed primarily with condyle resorption and bony change by plain radiography (panorama and transcranial view). And these patients were taken by bone SPECT and facial 3 - dimensional computed tomography.(Facial 3D CT) Through the CT image and clinical examination, Thirty four TMJs of these patients were distributed by 4 groups : normal, internal derangement, osteoarthritis, osteoarthrosis groups. For the analysis of <sup>99m</sup>Tc-MDP uptake ratios of these TMJs, SPECT data and CT data were coregistered and reconstructed to yield fused SPECT and CT images. To quantitate the <sup>99m</sup>Tc-MDP uptake level of the TMJ, a sphere shape region of interest (3.0 x 3.0 x 3.0 pixel) was designated in the most highest point for evaluation and the counts in both the condyle and clivus bones measured. For evaluation of differences between groups, Kruskal-Wallis test was conducted between four groups.

**Results:** The groups which present the symptom showed higher uptake ratio than the others groups which show no clinical symptoms. Statistically significant differences between these two groups were observed( $p = 0.0039$ ).

Bony change group showed higher uptake ratio than non bony change group. However, statistically significant differences between these two groups were not observed ( $p = 0.0603$ ).

**Conclusion:** It was concluded from this study that fused image of bone SPECT and facial CT may help to evaluate the state and degree of temporomandibular joint in terms of osteoarthritis.

P69

## Clinical Study on Treatment of unilateral Temporomandibular Joint Chronic Recurrent Dislocations by Eminence Augmentation using bone graft : A Case Report

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The frequency of chronic recurrent dislocation(CRD) of temporomandibular joint tends to increase with age. The primary causes of CRD include excessive extension of TMJ, muscle fatigue and anatomical abnormalities. Conservative treatments such as drug treatment and, physical and appliance therapy are practiced and diverse surgical treatments including condylectomy, condylar osteoplasty, eminectomy, eminence augmentation, and plastic surgery of articular fossa have been proposed.

Among these surgical treatments, the advantage of eminence augmentation accompanied with bone graft is that the technique has no possibility for recurrence and low possibility for complications and there are many bone donor site such as chin bone, ramal bone and iliac bone, etc.

A 38-year old female visited to our hospital. Her chief complaint was habitual left side dislocation of the TMJ and eminence augmentation with chin bone graft was performed. The dislocation wasn't reported after the surgery and mouth opening amount was slightly increased compared with that of pre op. state.

So, we report clinical study on treatment of unilateral Temporomandibular Joint Chronic Recurrent Dislocations by Eminence Augmentation using bone graft with a review of literature .

P70

## Orofacial pain caused by temporomandibular joint osteoarthritis

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Temporomandibular joint (TMJ) osteoarthritis (OA) is a cause of orofacial pain in the dentistry. Therefore, the characterization of orofacial pain caused by the progressive degeneration of articular cartilage on TMJ is required to clinical management for patients with TMJ-OA. To generate the experimental animal model with TMJ-OA, 0.25 mg of monosodium iodoacetate (MIA) was intra-articularly injected into TMJ of Sprague Dawley rats. The degree of orofacial pain was assessed weekly by using a von Frey filament for 8 weeks after the induction of TMJ-OA using MIA. Orofacial pain was generated from 2 weeks and was maintained for 5 weeks after intra-articular MIA injection into TMJ. After 5 weeks, orofacial pain of rats injected with MIA had no significance compared with naïve and sham group. At 3 weeks after MIA injection into TMJ, matrix metalloproteinase-2, neuropathic pain associated calcium ion channel subunit  $\alpha_2\delta_1$ , inflammatory pain associated pro-inflammatory cytokines such as interleukin-1 $\beta$  and tumor necrosis factor  $\alpha$  were significantly upregulated in the medullary dorsal horn. Furthermore, pregabalin (20 mg/Kg), a drug that has been used for treatment of neuropathic pain, and anti-inflammatory drugs celecoxib (50 mg/Kg) showed analgesic effects in rats with orofacial pain caused by TMJ-OA for 2 h after administration. Intra-articular injection of MIA into TMJ induces the symptomatic TMJ-OA that has an orofacial pain caused by the progressive degeneration of articular cartilage in TMJ. Our findings are suggesting that orofacial pain caused by TMJ-OA may involve with neuropathic and inflammatory pain. Therefore, the combination treatment using neuropathic and inflammatory analgesics may effectively relieve the orofacial pain in patient with TMJ-OA in the dentistry.

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## Ultrasonographic evaluation of thickness changes in masseter muscle following TMD treatment

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Temporomandibular disorder(TMD) includes several entities and characterized by pain on temporomandibular joint and masticatory muscles. The parafunctional habits such as clenching and bruxism are usually detected in most of myofascial pain patients. These behaviors make masticatory muscles in low-level static contraction which might cause muscle pain and fatigue. A series of this process affects the thickness and features of the masticatory muscles.

Medication, physiotherapy, splint therapy are generally used for TMD treatment. Several studies have reported radiographic changes in temporomandibular bony structures along with clinical symptoms after TMD treatment. However there are just a few studies regarding the muscular changes following TMD treatment based on radiologic findings.

The purpose of this study was to analyze relationship between clinical symptoms and ultrasonographic changes of masseter muscle volume in TMD patients who had received TMD treatment.

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## Look-up at Chondrosarcoma of Temporomandibular joint

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**Purpose of study:** Chondrosarcoma (CS) is a malignant lesion characterized by the formation of cartilage, but not bone. Chondrosarcoma represents less than 5% of malignant tumors in head and neck region and which extremely rarely presents in the jaws. This lesion may manifest with the typical symptoms of the TMJ dysfunction syndrome. The purpose of this study is to analyze the rare case of CS of the TMJ.

**Patients and method:** The study consists of one patient who received treatment at the department of Oral and Maxillofacial Surgery, Seoul National University Dental Hospital. Medical records with X-ray, computed tomography scans, and histologically proven chondrosarcoma of mandibular condyle case was retrieved and examined. This case presents left condyle. The data were analyzed.

**Result:** We discuss a case of chondrosarcoma in temporomandibular joint in a 53-year-old man. The patient was treated by condylectomy, reconstructed with synthetic condyle and fossa (Biomet). In this case endaural approach was used. The intentionally cutted branch of facial nerve was re-anastomosed. In the follow-up period of 5 months.

**Conclusion:** Chondrosarcoma in temporomandibular joint is very rare. But nowadays malignant tumours of TMJ cases are increasing and developing. Early diagnosis with radiographic imaging is crucial for optimal treatment outcome. Moreover, during synthetic prosthesis, it is important to consider the required postoperative movement of mandible for correcting occlusion and asymmetry.

P73

### Subcutaneous emphysema of TMJ after fungal infection of external auditory canal : a case report

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The reasons of the subcutaneous emphysema in the oral and maxillofacial region are very various. The fistula formation between external auditory canal and TMJ is very seldom, but it could be a reason of subcutaneous emphysema.

The mechanism relates to the intimate anatomic relationship of the temporomandibular joint to the external auditory canal. Congenital tympanic plate dehiscence, trauma, chronic infection, and iatrogenic causes have been described as potential sources of communication between the external auditory canal and the TMJ. This fistula could provoke mild to severe complications. Severe complications (recurrent infection, TMJ ankylosis, persistent pain or trismus) often mandate surgical correction.

In this case, bony destruction of EAC anterior wall was observed in a patient with hemifacial subcutaneous emphysema. This destruction was evaluated as a reason of the communication between the EAC and TMJ. This communication was considered as a crucial reason of subcutaneous emphysema. The result of management was successful, so we report the patient with subcutaneous emphysema with the literature review.

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### Dentinogenic ghost cell tumor : a case report and literatures review

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Dentinogenic ghost cell tumor (DGCT) is a very rare odontogenic neoplasm. It has been reported as a solid neoplasm variant of calcifying odontogenic cyst (COC) with locally aggressive behavior. We report a case of a 56-year-old female patient diagnosed with a DGCT in right mandible posterior area. In the radiographic analysis, it was shown a well-circumscribed radiolucent-radiopaque mixed lesion. The patient underwent marginal mandiblectomy operation. In the histopathologic analysis, there was seen the aggregates of ghost cells and dysplastic dentin-like material. In addition, this study reviews the literatures about DGCT.

## Trauma

P75

**Clinical Study on open reduction and internal fixation of frontal bone fracture and superior & medial orbital wall fracture using bi-coronal incision : A Case Report**Tae Woong Ahn<sup>\*1</sup>, KH Yoo<sup>1</sup>, MS Oh<sup>1</sup>, CM Park<sup>1</sup>, SW Yoon<sup>1</sup>, SH Yoon<sup>1</sup>, DK Lee<sup>1</sup><sup>1</sup>*Dept. of Oral and maxillofacial surgery, Sun Dental Hospital*

Coronal incision or bi-temporal incision is the method that provide variable approach to upper & med facial region including zygomatic arch. Using this method, it is able to approach these area with minimal complications. The biggest advantage of this method is almost all the scar is concealed behind hair line and if incision line is extended to preauricular region, the scar is also hard to find. And this method provides wide and clear vision so that it can provide accurate reduction.

Trochlear nerve is located on superior oblique muscle and takes charge of this muscle's motor, sensory function. When this nerve is damaged, downward, lateral movement of eye ball is limited and results in diplopia and blurred vision. 53 years old female visited Sun hospital ER. His chief complaint was pain on left frontal region, superior orbital region and blurred vision due to fist blow. Patient is diagnosed to left frontal bone and left superior and medial orbital wall fracture. Left trochlear nerve damage is observed during the orbital evaluation. Open reduction and internal fixation using bi-coronal incision was done. After the operation, left frontal depression was corrected and orbital pain was relieved. Blurred vision was remained during downward movement of left eyeball.

So we report clinical study on open reduction and internal fixation of frontal bone fracture and superior & medial orbital wall fracture using bi-coronal incision with a review of literature .

P76

**The reliability of the trapezium plate for internal fixation using endoscope in mandibular subcondyle fracture.**Chunui Lee<sup>\*</sup>, Dae-Keun Kwon, Jin-Wook Kim, So-Young Choi, Jun-Young Paeng.*Dept. of Oral and Maxillofacial Surgery, Kyungpook National University Dental Hospital*

**Aim:** The aim of this study is to describe the advantages of internal fixation method of using trapezium plates for mandibular condyle fractured patient, instead of using conventional two parallel straight plates.

**Materials and Methods:** This is a retrospective study of 10 mandibular condyle fractured patients from 2015 to 2016 at Kyungpook National University Dental Hospital. Patients underwent open reduction and internal fixation (ORIF) under general anesthesia and deviated condyles were placed in proper position and fixated with trapezium plate. All surgical approaches were performed intraorally using endoscope. Patients underwent intermaxillary fixation(IMF) with screws, arch-bar and elastic band for one to two weeks to stabilize occlusion. Physical therapy was started as early as possible postoperatively to prevent temporomandibular joint ankylosis. None of the patients were lost for six months follow up. Statures of the patients recorded include radiograph, maximum mouth opening (MMO), pain on mouth opening and lateral excursion during periodic follow up.

**Results:** 9 men and 1 woman were operated in total. The age of patients ranged from 18 years to 60 years with the mean of 38.6 years. 9 patients reported limited mouth opening, pain on mouth opening and lateral excursion. However, such discomforts were disappeared after 6 month periodic follow up. All patients' final occlusions were stable,

**Conclusion:** Use of Trapezium plate in mandibular subcondyle fracture shows numerous advantages and sufficient reliability on fixation and function comparing touse of conventional straight plates.

**Key words:** Trapezium plate, mandibular subcondyle fracture, open reduction and internal fixation, straight plate, endoscope.

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## Open reduction of condyle fracture with vertical ramus osteotomy using both pedicled condylar fragment and seperated ramal bone.

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In the case of condylar fractures, open reduction is required when patient did not lead to the normal occlusion with non-invasive reduction, condylar head was deviated to the out of joint space, and there was foreign body in articular cavity

Surgical approach to condylar fracture is determined depending on state of condylar displacement or fracture position. If severe medial displacement of condylar fragment or high condylar fracture were observed, after vertical osteotomy of ramus and extracorporeal fixation with the displaced condyle, repositioning the reduced fragments to the joints is required, but there is a greater possibility of postoperative bony resorption

In this case, 39-year-old female patient who is diagnosed as bilateral condylar fractures underwent open reduction, due to the traction of the lateral pterygoid muscle, both condylar fragments were severely displaced to anterior and medially, there was the difficulty of the direct reduction and fixation of deviated fragments. So we considered modified vertical ramus osteotomy.

In particular, after vertical ramus osteotomy, both medial pterygoid muscle on ramal bone and lateral pterygoid muscle on condylar fragment were not detached. And so, reduction and fixation were performed in the intracorporeal state. Therefore, blood supply was expected to both fragement of condyle and ramus. We report that this case seemed be good healing state, after vertical ramus osteotomy using pedicled both condylar fragment and seperated ramal bone to prevent the resorption of bone.

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## Conservative interdisciplinary treatment of a case with multiple facial and condyle fractures.

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**Purpose:** to describe an interdisciplinary approach for a 51-year-old male who underwent multiple facial fractures including bilateral condyle fractures

**Materials and Methods:** The patient underwent emergency surgery, which included open reduction of the maxilla and mandibular symphysis and closed reduction of the bilateral condyle fractures. Although the patient recovered a comfortable range of mouth opening and alleviation of the TMJ symptoms after surgery, he suffered from a large anterior-posterior discrepancy due to less stability on the condyle-fossa relationships and from open bite with contacts only on both second molars and right second premolars. In this case, first, to increase the occlusal contact, comprehensive orthodontic treatment was completed. Second, occlusal equilibration was selectively performed to relieve the interferences and establish a stable range of mandibular movement without any changes in the vertical dimension. Third, both the upper central incisors and left lateral incisor were minimally restored with splinted and single zirconia crowns, which had modified lingual contours to provide adequate anterior guidance permitting the anterior-posterior discrepancy of the posterior teeth during protrusion.

**Results:** Through the comprehensive orthodontic treatment and minimal restorations, the patient acquired a comfortable and reproducible occlusion with neuromuscular adapta-

tion.

**Conclusions:** After an emergency open reduction on the maxilla and mandibular symphysis, the conservative approach via closed reduction on bilateral condylar fractures, comprehensive orthodontic treatment, selective occlusal adjustment and minimal prosthetic restorations based on the long centric concept were helpful in establishing a comfortable and reproducible occlusion with a stable range of mandibular movements.

P79

## Retrospective study of panfacial fractures with concomitant injuries.

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Patients with panfacial fractures occupies very small portions of all facial bone fracture, and we should consider concomitant injuries before surgical management because panfacial fractures can involve with other damaged sites.

In this study, we investigated all patients with panfacial bone fractures treated at the department of oral and maxillofacial surgery in Kyung-pook national dental hospital form 2010 to 2015.

The following data were collected for each patient: age, gender, mechanism of trauma, methods of intubation, concomitant injuries, and associated complications

In the case of panfacial fracture patients with concomitant injuries, there is significantly no differences comparing to simple facial fractures. But complications of panfacial fractures are more severe than simple facial fractures and in some cases, tracheostomy before operation was needed on panfacial fractures cases.

In conclusion, the evaluation and correction of concomitant injuries found in panfacial fractures patients should be done during the peri-operative procedures.



P80

## Temporomandibular joint reconstruction in patients with loss of total condyle due to trauma : Case reports

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**Introduction:** Temporomandibular joint (TMJ) reconstruction using the artificial joint is the operation replacing mandibular condyle and fossa with the artificial joint components of metal and high polymer, and performed to restore function and esthetics after loss of total condyle. This report describes TMJ reconstruction cases with the artificial joint system.

**Case 1:** Twenty one year-old female patient had undergone the open reduction and internal fixation of mandibular parasymphiseal and left condylar fracture caused by traffic accident. During follow up periods, the entire resorption of mandibular condyle was detected, hence, plates and screws were removed 22 months after the first surgery. However, malocclusion, prolonged inflammation, and retrognathism were observed, therefore, TMJ reconstruction using the artificial joint system was performed 39 months after the first surgery followed by the orthognathic surgery 4 months later. Afterward, occlusion, mandibular movement, and facial esthetics of patient were much improved to normal range, and surgical result also remained stable.

**Case 2:** Nineteen year-old female patient had undergone the open reduction and internal fixation of right mandibular condyle fracture caused by trauma due to the syncope. During follow up periods, she complained of malocclusion and severe pain after secondary trauma due to the recurrent syncope. Therefore, the re-fixation and repositioning of disc were performed. However, the condylectomy of right side was done 3 months after the first surgery, because the malunion and osteoarthritis due to repetitive trauma occurred. Afterward, malocclusion and facial asymmetry were observed, so

TMJ reconstruction using the artificial joint system was operated 6 months after the first surgery. Thereafter, occlusion, mandibular movement, and facial esthetics of patient were much improved to normal range, and surgical result also remained stable.

**Conclusion:** In the case of functional and esthetic deficiency due to the post-traumatic condylar loss of mandible, TMJ reconstruction using the artificial joint system shows relatively stable and satisfactory result without severe complications.

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## Evaluating the Stability of a Biodegradable Osteosynthesis Plating System in the Management of Zygomatico Maxillary Complex Fractures

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In general, displaced zygomaticomaxillary complex (ZMC) fractures require open reduction and internal fixation to avoid facial contour deformity, ophthalmic complications, and masticatory dysfunction. Clinical and experimental evidence suggests that accurate reduction and 3-dimensional fracture stability are the most important criteria for successful fixation. Multiple studies have sought to determine the postreduction stability of internal fixation in ZMC fractures. Three-point fixation with titanium miniplates is increasingly recommended to repair these injuries. Use of bioresorbable plates has been suggested to eliminate potential postoperative hardware complications. Comparisons of wire, titanium miniplate, resorbable miniplate, and combinations of titanium miniplate and microplate fixation have been attempted. However, there are not studies that compared of titanium and resorbable plating systems for stability of ZMC fractures in live humans. The purpose of our study is to evaluate quantitatively the efficacy of resorbable plating systems in live humans.

P82

## Clinical comparison between endoscopically assisted transoral approach and retromandibular approach for open reduction and internal fixation for mandibular subcondyle fracture

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**Purpose:** Aim of this study is to describe and compare clinical results and complications depending on the surgical approaches for the mandibular subcondyle fracture

**Materials and methods:** The patients who had been diagnosed as the mandibular subcondyle fracture and underwent open reduction and internal fixation (ORIF) from May 2009 to December 2014 were included. They were divided into two groups depending on the surgical approaches; endoscopically assisted transoral approach (EATA) and retromandibular approach (RMA). Association between the pre-operative fracture classification and post-operative results was reviewed depending on the surgical approaches.

**Results:** The number of patients selected in this study was 33. 18 patients (male 7, female 11) underwent ORIF via RMA and 15 patients (male 12, female 3) underwent ORIF via EATA. The mean age and follow up period were  $44.29 \pm 15.19$  years and  $9.97 \pm 7.82$  months.

1. Post-operative results were all "good" state in the RMA group regardless of the fracture classification but two patients in the EATA group underwent re-operation (ORIF) due to "poor" results. The fracture types of two were classified as displacement and lateral override at the same time. There was no statistically significant difference between two groups.
2. Three patients in the RMA group had experienced facial nerve palsy (17%) temporarily. No one showed malocclusion in this study. There was no significant difference on the complications such as temporomandibular disorder, local infection, and condyle resorption depending on the surgical approaches.

**Conclusion:** In this study, there was no significant difference on the complications between the two groups but RMA has advantage over EATA in case of the severely displaced subcondyle fracture.

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## Evaluation of Contralateral condylar change of Unilateral mandibular condyle fracture by Computed tomography

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It is a well-known fact that controversy still exists as to whether the condyle needs an open treatment or closed treatment to regain its maximum functionality. Closed reduction is often associated with reduced mouth opening, decreased patient compliance, and potential for ankylosis, internal derangement of joint and delayed restoration of function. Owing to these factors surgeons today prefer open reduction and internal fixation of displaced condylar fractures in adults, as this permits good anatomic repositioning and immediate restoration of function. Advocates of closed reduction feel that condyle can be fixed in unphysiological position with open reduction leading to severe postoperative (post op) degenerative joint changes and injury to the facial nerve.

With recent advances in the imaging techniques with computed tomography (CT) and availability of three-dimensional visualisation of the fractured condyle, there is a tremendous improvement in the understanding of the nature, degree of displacement, dislocation and other minute details of these fractures. These findings were not possible with conventional radiography, which provided the images in two-dimensions.

It has been rarely reported about the nature of contralateral condyle after the unilateral mandibular condyle fracture. This information is essential for the introduction of proper treatment, such as the selection of surgical or nonsurgical modality, the timing of treatment, and the necessity of the disc management. Therefore, in this study, we took Computed Tomography images for the unilateral condylar fractures with interval of immediately and 6 months after the traumatic injuries. And then those images were analyzed to evaluate the conditions of contralateral condyle, which were not injured and deformed at that time of the trauma with unilaterally fractured mandibular condyle fracture. This allowed us to understand the changed nature of contralateral condyle in unilateral mandibular condyle fracture.

P84

## Statistic report of 150 patients with nasal bone fracture on Department of Oral and Maxillofacial Surgery, Cheonju Hankook hospital

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**Introduction:** Nasal bone fracture is most common fracture in oral and maxillofacial area. Analyze nasal bone fracture patient on department of oral and maxillofacial surgery, Cheonju Hankook hospital to improve care and treatment of nasal bone fracture patient by categorize gender, age, cause of injury, injury site, associate injuries, reduction or non-reduction, consumed time from injury to reduction.

**Method:** Compile statistic on 150 patients with nasal bone fracture from January, 2014 to June, 2016 as gender, age, cause of injury, injury site, associate injuries, reduction or non-reduction, consumed time from injury to reduction.

**Result:** 60% of patient was male and peak age distribution was the second decade(34%) followed by 20s(23%). Human trouble was highest reason of nasal bone fracture(62%) followed by traffic accident(18%), accident during sports(10%). Most common type of nasal bone fracture was lateral impaction(61%), followed by fracture without deviation(33%), impaction of nasal tip(3%). 83% of patient had only nasal bone fracture and 8% of patient has nasal bone fracture with septal bone fracture, 6% of patient shows alveolar bone fracture as well. 58% of patient underwent reduction and 86% of those patient had been reduced under local anesthesia and mean consumed time to reduction was 6.7 days.

**Conclusion:** Nasal bone fracture is most common fracture in facial bone and dentist meets nasal bone fracture patient in practice not rarely. Thus, study of nasal bone fracture approached on aspect of oral and maxillofacial surgery is important. This study may be able to use as basic data to care and treat nasal bone fracture patient.

P85

## A Clinical Analysis of Emergency Patients of Oral and Maxillofacial Surgery Visited Korea University Anam Hospital Emergency Center in the Last 10 Years

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Emergency visits to the dentist are very diverse, and oral and maxillofacial surgeon have duty for improving public health by treating emergency patient appropriately. Maxillofacial trauma shows a complex pattern, and if treatment doesn't properly done, it can result in serious functional and aesthetic disorders.

The purpose of this study is to investigate tendencies of the emergency patients, to improve treatment outcome by analyzing the emergency patterns from various angles.

The patients who visited emergency center of Korea University Anam Hospital, and referred to department of dentistry were analyzed according to sex, age, day, the cause of visit, and the classification of trauma.

Through the analysis of the emergency patients, establishment of a systematic environment of emergency room, and providing a suitable treatment are possible.

P86

## Emphysema of midface after maxillofacial trauma

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Subcutaneous emphysema is the presence of gas or air in the layer under the skin. Subcutaneous emphysema in the head and neck region is a relatively rare complication, but may arise due to facial trauma. Sneezing, blowing one's nose, and/or using the air turbine dental handpiece during dental treatment after injury to the nasal cavity, paranasal cavity, and/or oral mucosa, may cause subcutaneous emphysema.

The most common signs and symptoms of subcutaneous emphysema are swelling, chest pain, and crepitation (crackling or rattling sound) upon palpation of the affected area. If pneumomediastinum is present, which is the entrapment of air in the mediastinum; throat pain, chest pain, dysphagia, fever, tachypnea, dyspnea, and voice change may occur at the same time.

In the treatment of subcutaneous emphysema, addressing the cause is of top priority. Supportive care, like intake of cough medicine to improve the underlying condition, is also important. However, subcutaneous emphysema is a self-limiting condition which means it will resolve on its own in time.

Although subcutaneous emphysema and pneumomediastinum on the head and neck region arising from facial trauma are relatively rare complications, the prognosis is favorable. However, if the correct treatment protocol is not followed, they could be fatal. Therefore, precise diagnosis and treatment are important.

We report a case of traumatic subcutaneous emphysema after facial trauma with its diagnosis, etiology, complication, and treatment by literature review.

P87

## Penetrating wooden chopstick enclosed in the masticator spaces area : case report

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Penetrating injuries in the head and neck region are not common but can pose difficult situations to manage properly.

Therefore, management of the penetrating injuries should be based on the fully understanding of anatomical relationships, accurate clinical examinations, a careful history taking and the proper treatment planning

This is a case of a 45 year old man who came to our department with a stab wound on his left temporal area. One month prior to consultation, the patient had a fight with another person in a pub probably due to alcohol intoxication. He was inflicted by wooden chopstick during a quarrel with another person. After that, he underwent trismus and feel pain on the opening.

From a CT scan with 3-dimensional reconstruction, the foreign body was found with enclosing in the masticator spaces area. The foreign body was withdrawn by intra oral approach during surgical procedure. After surgery, there was reduced pain in the opening and improved mouth opening

We report a case of a foreign body removal enclosed in the masticator area with probable surgical technique

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## A case report on bilateral sagittal split ramus osteotomy for occusal reconstruction of mandibular old fracture

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**OBJECTIVE:** The purpose of this case was to report open reduction of old mandible symphysis and right subcondyle fracture (more than 6 wks) using bilateral sagittal split ramus osteotomy (BSSRO).

**METHODS:** Closed reduction with arch bar, re-fracture of mandible symphysis and internal fixation with reconstruction plate, bilateral sagittal split ramus osteotomy (BSSRO) was done to recover favorable occlusion.

**RESULTS :** After 3 weeks of intermaxillary fixation, we found improved occlusion, increased mouth opening and synostosis of Rt subcondyle fracture area.

**CONCLUSION:** The short-term clinical result shows open reduction using bilateral sagittal split ramus osteotomy (BSSRO) in case of unfavorable occlusion caused by partial synostosis of old mandible fracture can be a choice of method.

## Tumor

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**Adenoid Cystic Carcinoma of the Sublingual Gland: A Case Report**

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Adenoid cystic carcinoma (ACC) of the sublingual gland is an extremely rare neoplasm. The clinicopathologic characteristics of ACC are slow growing swelling with or without ulceration, perineural spread, local recurrence, and distant metastasis. I report a 58-year-old male who had a slowly growing swelling without ulceration on the right side of the mouth floor, which was present for one month. In the radiological examination, the mass showed multilocular cystic feature and no bony or tongue muscle invasion. No enlarged cervical lymph node was detected. Excisional biopsy and histologic analysis revealed ACC. In addition to reporting a rare case of ACC, this paper also discusses the differential diagnosis and treatment of ACC with a review of relevant literature.

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**Sinonasal Malignant Melanoma occurred in Maxillary Sinus : Case report**

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Malignant melanoma occurred in sinonasal mucosa is rare malignancy. It accounts for less than 1% of all malignant melanoma and their affected age is fifth to eighth decade. In most of cases, it occurs primarily in mucosa of nasal cavity but rarely occurs in mucosa of paranasal sinus or in nasal cavity and paranasal sinus at a time. In the case of paranasal sinus involvement, maxillary sinus is more commonly involved.

Sinonasal malignant melanoma shows different aspect with oral mucosal melanoma which shows flat and thin shape; sinonasal malignant melanoma shows polypoidal, large, thick, ulcerative and necrotic aspect.

Complete resection of tumor with safety and negative margin is the most favorable treatment like other malignant tumor. Radiotherapy is just palliative treatment. Five years disease specific survival rate was reported as 17 to 47%.

The patient visited our clinic was referred from local clinic due to polypoidal lesion in right maxillary sinus. On CBCT image taken in our hospital, invasive bony destruction to nasal cavity also observed. Considering age and personal circumstances of patient, we removed tumor without safety margin and did fat pad graft for covering defect. One week after surgery, stitch-out was done and patient was referred to hemato-oncology for additional radiation therapy or chemotherapy.

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## Odontogenic fibromyxoma of maxilla: a rare case report

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**Introduction:** Fibromyxoma is a rare odontogenic tumor which is benign, but locally aggressive. The etiology of these tumors is unknown, It is a slow growing painless tumor that frequently occurs in second and third decades of life. Females are more commonly affected than males. The surgical treatment of these tumors consists of complete enucleation or radical excision.

**Method and materials:** A 31-year-old female was referred to our department with a increased tooth mobility and tenderness on left maxillary molar region. Present illness was subscribed as below. Mob (+++) on #27. Panorama shows radiopaque lesion on left maxillary sinus with tennis racket appearance. An incisional biopsy was performed and the histopathological examination revealed the lesion as fibromyxoma. Complete curettage and enucleation of the lesion was then performed by an intraoral approach under general anesthesia

**Results:** After the surgery, there is no recurrence and oro-antral fistula was disappeared. The excised maxillary sinus showed re-pneumatization of sinus cavity.

**Conclusion:** The etiology of fibromyxoma is not clear. The choice of treatment mainly depends on variables such as mandibular or maxillary localization, presence of a primary or recurrent lesion, age, general medical conditions and aesthetic needs of the patient. The patient should be monitored for at least three years after the surgical intervention as the recurrence rate seems to be higher during this period.

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## A case report and literature review of oral desmoplastic melanoma

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Desmoplastic melanoma of the oral cavity is a very rare variant of malignant melanoma. A male predilection for oral desmoplastic melanoma was present and most of the lesions occurred during the seventh decade of life. The palate and the upper gingiva were the most affected sites of the disease. Local recurrence was the most frequent form of treatment failure and overall survival was commonly less than 3years. Especially, it is difficult to diagnose exactly a primary mucosal desmoplastic melanoma by its initial biopsy because of its rarity and atypical histopathologic features, which may lead to a poor prognosis by inadequate treatment.

We report a case of primary desmoplastic melanoma demonstrating as an ulcerative lesion located on the left hard palate, which was initially diagnosed as squamous cell carcinoma by incisional biopsy in a 75 year old female. The final diagnosis was confirmed after surgical resection of the lesion. In addition, we aim to investigate the clinical and pathologic features, treatment method and a prognosis of oral desmoplastic melanoma by reviewing previously published literature up to date which is exceedingly rare worldwide.

The present case report demonstrates that desmoplastic melanoma should be considered in the differential diagnosis in a malignant tumor diagnosed of squamous cell carcinoma with atypical features.

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## Ghost cell odontogenic carcinoma on right mandible : case report and review of literature

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Recently, in the 2005 WHO histological Classification of Odontogenic Tumors, the name 'Calcifying odontogenic cyst' (COC) was changed to Calcifying cystic odontogenic tumor (CCOT). Ghost cell odontogenic carcinoma (GCOC), a malignancy tumor form of CCOT, is demonstrated as an odontogenic tumor that is exceptionally rare. Calcifying cystic odontogenic tumor (CCOT). has the character which was defined a benign odontogenic origin cystic neoplasm, an ameloblastoma-like epithelium with ghost cells that can calcify. On the other hand, GCOC has the characters which is a rare malignant neoplasm, necrosis, prominent mitotic activity, cellular pleomorphism, ghost epithelial cells, existence of mineralized dentin like material, infiltrative growth pattern.

In this report, we introduce a 53-year old man who has a solitary mass on the right mandible which was diagnosed 'Ghost cell odontogenic carcinoma' by histologic test ultimately. After the tumor was removed completely with mandibulectomy, the very large facial defect was reconstructed with latissimus dorsi free flap and anterolateral thigh free flap. In the hospitalization period, we taked care about the patient's underlying disease (hypertension, uncontrolled diabetes mellitus). And we had review the articles about how the underlying disease have effect to free flap survival rate. After the surgery, we take a close observation the patient for recurrence or donor site complication.

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## Treatment of biphasic synovial sarcoma in the mandible : case report and literature review.

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**Purpose:** To describe a case for the synovial sarcoma in mandible, a rarely reported malignancy in the jaw bone.

**Methods:** This is a case report and literature review for the synovial sarcoma in the jaw bone. An 81-years old man had unhealed wound in the right side of mandible, which resembled osteomyelitis on jaw bone. He underwent curettage on necrotic bone lesion, but showed persistent wound healing problems. Re-biopsy for the mandibular lesion was performed, then the lesion was eventually diagnosed as a biphasic synovial sarcoma on mandible. The patient was undertaken additional operation for hemimandibulectomy and immediately reconstruction with Re-con plate system.

**Results:** Biphasic synovial sarcoma is rarely reported malignancy on jaw bone. Here, we reviewed the literature for the incidence of biphasic sarcoma on the jaw bone, treatment protocol, and their long-term prognosis.

**Conclusion:** We report a case report of synovial sarcoma in the hemi-mandible, which were firstly misdiagnosed with jaw bone necrosis (osteomyelitis). In the literature, this malignant tumor is extremely rare in the jaw bone and poor prognosis.



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## High grade mucoepidermoid carcinoma mimicking squamous cell carcinoma in submandibular gland; a case report and literature review

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Mucoepidermoid carcinoma (MEC) is the most common malignant salivary gland tumor. The majority of MECs occur in major or intraoral minor salivary glands especially in the palate. It is typically consist of varying amounts of epidermoid cells, intermediate cells and mucous producing cells. Mucoepidermoid carcinoma is believed to arise from the reverse cells of excretory ducts. It displays a variety of biological behavior depending on the differentiation of the tumor cells. In literature, high-grade MEC was occasionally misdiagnosed as neck node metastasis of squamous cell carcinoma (SCC) in the fine needle aspiration biopsy (FNAB).

A 65-year old male presented to our department with a palpable neck mass on right side of submandible. In CT scan, a homogenous well-circumscribed 3.8x2.0-cm sized firm mass was revealed in adjacent with submandibular gland. FNAB performed in other hospital demonstrated metastatic squamous cell carcinoma in the neck, level I. However, no suspicious primary lesion was confirmed by various preoperative work-up. The neck mass was excised with selective neck node resection in the level I and II areas. The final pathologic report confirmed as high grade MEC originated from the submandibular gland.

The differential diagnoses of this tumor can include neck node metastasis of SCC, salivary duct carcinoma, carcinoma ex pleomorphic adenoma, primary squamous cell carcinoma, small cell carcinoma, undifferentiated carcinoma, Large B-cell lymphoma.

Here, we present a case of high grade MEC originated from submandibular gland, which was firstly misdiagnosed with a metastatic SCC in the neck.

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## Lip split mandibulotomy approach technique for oral malignant tumor patients: the case report

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The lip-splitting mandibulotomy approach (LSMA) includes a lower lip-splitting incision, followed by a mandibular osteotomy, which is fixated with metal plate at the end of the operation. It provides the widest view and most reliable access to the deep anatomical structures of the posterior oral cavity and pharynx. This study is to report the LSMA technique for oral malignant tumor patients with clinical consideration.

**Case 1:** Diagnosed with SCC of oral cavity (Left upper gingival, buccal mucosa, medial & lateral pterygoid muscle, palate and tonsil) 75-year-old man was admitted for surgery. Because it is impossible for complete resection of the lesion via conventional intraoral approach, the LSMA was used for better accessibility. Thereby we could resect the mass completely and reconstruct appropriately with radial forearm free flap.

**Case 2:** 55-year-old man visited the hospital for complain of swallowing pain. He was diagnosed with SCC at the left tongue base, soft palate and tonsil area histopathologically. For effective access for resection of the mass, we performed the LSMA additionally. After mass resection, the defect was reconstructed with pectoralis major myocutaneous flap.

**Result:** In the above cases, the LSMA was performed to increase operative accessibility and convenience, so surgical field was widened in axial and sagittal view. Also, Operation distance could be reduced. There was no acute complication associated with cancer surgery. Patients were maintaining stable occlusion, and we could minimize postoperative complications through the restoration of facial aesthetic.

**Conclusion:** Through wide surgical fields, the LSMA technique enable to approach easily to the lesions in oral and skull where it is difficult to access. Also, the LSMA can minimize the aesthetic defect and decrease damages to important anatomical structures caused by cancer surgery. In conclusion, the LSMA can be useful technique for complete mass resection in case of the lesion located deep space in the mouth or pharynx.

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## Marsupialization for management of keratocystic odontogenic tumor(KCOT): Case report

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The keratocystic odontogenic tumor(KCOT) is a unique benign tumor because of its locally aggressive behavior, high recurrence rate and characteristic histological appearance. This tumor, formerly known as odontogenic keratocyst(OKC), is a benign unicystic or multicystic intraosseous neoplasm of odontogenic origin, which arises from remnants of the dental lamina. Various options are available for treatment. While some clinicians advocate aggressive forms of dental treatment, others prefer more conservative therapy.

In this study, a more conservative surgical procedure, that is surgical excision after marsupialization was performed to treat the tumor. We report 10 cases which treated the KCOT with surgical excision after marsupialization have shown good prognosis.

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## Dentinogenic Ghost Cell Tumor : A Case Report

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The calcifying odontogenic cyst (COC) was first recognized as a distinct clinicopathologic entity in 1962 by Gorlin et al.<sup>1</sup> In 1971, the COC gained international recognition when the World Health Organization(WHO) included it in its classification of "Histological Typing of Odontogenic Tumours, Jaw Cysts, and Allied Lesions,"<sup>2</sup> describing a COC as a "non-neoplastic cystic lesion." With time, it became apparent that not all COCs are cysts and that some, in fact, appeared as a solid neoplasm. In 1981, Praetorius et al.<sup>3</sup> tried to resolve the enigma of the proper classification of COC by dividing it into 2 types, cystic and solid neoplastic. The cystic type was further classified into 3 subtypes: simple, associated with odontoma, and associated with ameloblastomatous proliferation. They proposed the term dentinogenic ghost cell tumor (DGCT) for the neoplastic type. In 2005, the WHO panel on odontogenic tumors decided to consider the 2 types of COC as tumors and divided them into 2 separate entities, renaming COC as a calcifying cystic odontogenic tumor (CCOT) and retaining the term DGCT for the neoplastic type.<sup>4</sup> Historically, DGCT has been called calcifying ghost cell odontogenic tumor, odontogenic ghost cell tumor, epithelial odontogenic ghost cell tumor, and dentinoameloblastoma with ghost cells.<sup>4</sup>

The 2005 WHO and then a large group of international leaders in oral and maxillofacial pathology<sup>5</sup> defined DGCT as a locally aggressive tumor that is histologically formed by groups and islands of epithelial cells with an ameloblastoma-like basal cell layer that sometimes shows nuclear polarization. Tissue resembling the stellate reticulum of an enamel organ also can be found in the central part of the ameloblastomatous islands. A DGCT characteristically contains variable quantities of dentinoid-like material in the surrounding connective tissue and in close contact with

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## Conservative treatment of unicystic ameloblastoma with marsupialization : Case report

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the epithelial islands. In addition, groups of ghost cells are found within the epithelial islands and in the connective tissue, and some of those cells undergo calcification.

The DGCT is an extremely rare lesion. Because of the rarity of DGCT, there are sparse details in the literature regarding its clinical and radiologic features. And on rare occasions, the lesion may even transform into carcinoma.

This report describes a case of DGCT that occurred in the Rt. maxilla of a 32-year-old female.

An ameloblastoma is one of the most common odontogenic tumors in the jaw. Ameloblastomas are classified into 3 subtypes: solid and multicystic, unicystic, and peripheral. In the treatment of ameloblastomas, surgical resection with surrounding tissues is still the mainstream approach because of its high recurrence rate.

On the other hand, especially in young patients, surgical resection could have side effects such as too wide resection margin, extraction of adjacent tooth, malocclusion and asymmetry in jaw. If pre-operative biopsy result were unicystic ameloblastoma, enucleation after marsupialization could be one of surgical choice.

There are few reports describing conservative treatment of ameloblastomas in children and adolescents, since this tumor in young person is considered a rarity, accounting for approximately 10% to 15% of all reported cases of ameloblastoma.

This report presents a 12-year-old male patient with a large cystic lesion with Lt. 3<sup>rd</sup> molar which diagnosed unicystic ameloblastoma. It shows 3 years and 6 months of follow-up of conservative treatment of unicystic ameloblastoma.

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## Deep Neck Space Infection Caused by Keratocystic Odontogenic Tumor: Case report

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Keratocystic odontogenic tumor (KCOT) is a benign cystic intraosseous tumor of odontogenic origin. An infection of a KCOT is not common because KCOT is a benign developmental neoplasm. Moreover, a severe deep neck space infection with compromised airway caused by infected KCOT is rare.

Deep neck space infections usually represent the overgrowth of the normal flora of the contiguous mucosal surfaces from which the infection originated. Deep neck infections are serious emergency conditions. They can spread anywhere and are susceptible to serious complications within hours such as mediastinitis, septic shock with disseminated intravascular coagulation, pleural emphysema, pericarditis, necrotizing fasciitis and life-threatening airway compromise.

This report presents a 60-year-old male patient with a severe deep neck space infection related to an infected KCOT due to cortical bone perforation and rupture of the exudate. Treatment of the deep neck space infection and KCOT are reported.

P101

## Accessory Parotid Gland Tumors : Case Series

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Accessory parotid gland tissue has been described as normal salivary tissue that is distinctly separate from the main body of the parotid gland.

Of all parotid gland tumors, 1 - 8 % arise from the accessory parotid gland. The prevalence of tumors arising from accessory parotid gland is rare, but accessory parotid gland tumors should be considered for the differential diagnosis of masses in the mid-cheek area. Any lesions that can occur in the main parotid gland can also arise in an accessory parotid gland. Rate of malignancy of accessory parotid gland ranges from 26 ~ 60%, which is far higher than rate of malignancy of main parotid gland.

We present 3 cases of accessory parotid gland masses with different characteristics in this review.

**P102**

## Multiple dentigerous cysts in a non-syndromic patients : serial case reports

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Dentigerous cyst is an epithelial-lined developmental cavity that encloses the crown of unerupted tooth at the cemento-enamel junction. This is one of the most common cyst of all developmental odontogenic cysts. Dentigerous cyst most frequently involve the mandibular third molar followed in order of frequency by the maxillary canine, mandibular second premolar and maxillary third molar, and usually occur solitarily. Bilateral and multiple dentigerous cyst generally occur in association with a developmental syndrome or systemic disease such as mucopolysaccharidosis, Basal cell nevus syndrome and cleidocranial dysplasia. Bilateral dentigerous cysts in non-syndromic patient is very rare. There are only 43 cases are reported till date 2015.

Here, we report three cases of multiple dentigerous cysts in non-syndromic patients who visit Catholic University Hospital of Daegu from 2012 to 2016. In 2 of 3 cases, patients have multiple dentigerous cysts involving all the four quadrants.

**P103**

## Diffuse Large B-cell lymphoma(DLBCL) involved on Maxillary anterior alveolar bone and distal appendicular bone : A Case report

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DLBCL rarely occurs on maxillary anterior gingiva area

And involving to distal appendicular bone is even more rare

Maxillary anterior lesions of this patient was initially diagnosed as radicular cyst of left maxillary lateral incisor

Even radiograph showed a similar pattern as radicular cyst, but was diagnosed with DLBCL in the final biopsy.

Additional PET/CT taking and bone scanning was also confirmed morbidity of distal appendicular bone site

Thereafter, patients were cured undergoing chemotherapy and radiation therapy

Here, we report a case of DLBCL on maxillary anterior alveolar bone and distal appendicular bone area who visit Catholic University Hospital of Daegu

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## Adenoid Cystic Carcinoma : Recurrence & nerve invasion

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The Adenoid cystic carcinoma(ACC) was first described by Billroth in 1856 and comprises about 1% of malignant tumours of the oral and maxillofacial region. Approximately 40–45% of this tumor arises in the minor salivary gland. The lesion mostly occurs in the fifth or sixth decade of life and has female dominance(1:1.4).

ACC usually appears as slowly growing mass with wide perineural invasion. Surgical resection is the first choice of treatment. Because lymphatic spread to the neck is uncommon(6% to 10%), neck dissection is usually not indicated. However, because of its higher late recurrence and distant metastasis, more than 10 years of long-term follow up is needed, Also, It has been reported that post-operative radiotherapy can reduce recurrence.

In this study we retrospectively analyze 171 patients undergoing surgery for ACC of the oral and maxillofacial region at Dental hospital of the Seoul national university from 1997 to 2016. We investigate recurrence and nerve invasion and compare our results with those reported in the literature.

P105

## Quality of life after the treatment of Oral squamous cell carcinoma based on EORTC QLQ questionnaire survey

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So Young Choi, Jun Young Paeng

**Introduction:** Impact of cancer treatment on quality of life (QoL) has become increasingly important. It refers to patient perception of effect of disease & treatment, daily functioning and general feelings of well-being.

**Materials & Methods:** In our prospective study, a total of 30 patients treated in our institution completed Korean version of European Organization of Research & Treatment of Cancer (EORTC) QLQ-C30 questionnaire & specific EORTC QLQ-H&N 35 module. Survey was conducted to these patients between 6–12 months postoperatively.

**Result:** Thirty patients with Oral Squamous cell Carcinoma, who had undergone surgical excision, neck dissection with or without microvascular reconstruction participated in this study. Difficulty in swallowing, dry mouth, and sticky saliva were found to be significant problem of patients followed by social problems. Pain in the jaw, oral cavity found to be significantly reduced post-operatively.

**Conclusion:** This module has good psychometric validity and should be considered to assess quality of life in Oral squamous cell carcinoma

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## Benign Cementoblastoma on the Left Mandibular Posterior Area : Case Report

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Benign cementoblastoma, a neoplasm of odontogenic ectomesenchyme, is a relatively rare lesion comprising 1% of all odontogenic tumors. This lesion is characterized by the formation of a mass of cementum or cementum-like tissue connected to the root of a tooth. Clinically, benign cementoblastoma has a slow and constant growth pattern, frequently accompanied by pain, and it expands volume of the bone on both buccal and lingual side. Radiographically, it appears attached to the apical or lateral portion of the root of a tooth as a densely radiopaque, well-circumscribed mass surrounded by an uniform radiolucent rim.

In this case, we looked into the possibility that this patient might have benign cementoblastoma, by comparing the available clinical and radiographic information to the diagnostic criteria for benign cementoblastoma. We report the treatment of benign cementoblastoma on the left mandibular posterior area that occurred in a 21-year-old female.

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P107

## Treatment of huge odontoma on mandible : Case report and literature review

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Odontomas, hamartomas that are classified as benign tumors, is divided into compound odontomas and complex odontomas. Odontomas which resemble tooth form during development are classified as compound odontomas. On the other hand, odontomas which do not form tooth like structures are classified as complex odontomas.

Most frequently involved areas in the jaw are incisive and premolar area of maxilla for compound odontomas and posterior mandible for complex odontomas.

Causes for odontomas have not been clarified, but trauma, genetic factors, impacted tooth, etc. are all possible causes for this benign tumor.

Majority of the odontomas are merely the size of normal tooth and huge odontomas are sometimes seen in complex type odontomas. Nevertheless, cases reported as huge odontomas are mostly foreign studies and there are not much domestic studies which report gigantic odontomas. Therefore, we are presenting huge odontomas on the mandible with a literature review.

Present case is a case of an 18 year old male who visited oral and maxillofacial department in Ulsan university hospital with chief complaint of pain on posterior mandibular area. Incisional biopsy was performed and identified as complex type odontoma. Surgical removal and simultaneous iliac bone graft was performed. Continuous follow up was done and no complications were found in regard to nerve damage, pain, and occlusion. Treatment of choice for odontoma is surgical removal and its recurrence is very rare. Bone grafting after removal is controversial in the literature but it is known that in a large defect, bone graft might be necessary. In this case, where huge odontoma was shown in mandible, nerve damage would be a concern and careful excision is essential to the management of such tumor.

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## Peripheral ameloblastic fibroma arising in the gingiva of the mandible; A case report

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In the intraosseous odontogenic neoplastic process of ameloblastic fibroma, both odontogenic epithelium and connective tissue are involved. Lately published papers show that the neoplasm occurs commonly in male (1.4:1) and mid-teen ager. Although the peripheral ameloblastic fibroma is classified as extraosseous tumors, it shares key histological features of intraosseous tumors. But due to lack of cases, information of occurrence mean age, legion and clinical features is not enough.

Clinically, peripheral ameloblastic fibroma is proliferative and hemorrhagic. Usually neoplasm is sturdy, limited in attached gingiva and looks reddish. There is no distinct radiographic findings in surrounding alveolar bone.

Histopathologically, in inner connective tissue of ameloblastic fibroma, cellular region is coarsely dispersed in hyalinization tissue. This characteristic also can be noticed in peripheral ameloblastic fibroma. But the epithelial component in a peripheral ameloblastic fibroma fuse with the surface epithelium occasionally. And there are dispersed oedematous fibrous connective tissue. A specimen from crevicular epithelium include stratified squamous epithelium. It shows fibrous connective tissue, and a benign odontogenic tumor.

Usually the lesion is excised with involved alveolar bone under local anesthesia. Careful microscopic examination should be followed for diagnosis. Tracking observation should involve clinical, radiographic examination

A 74-year-old woman visited our clinic for complaint of right mandible molar area gingival proliferation. We conducted surgical excision of lesion and later we diagnosed as peripheral ameloblastic fibroma from a specimen. Hereby, we report a case and review of the literature.

P109

## Concurrent chemoradiotherapy in the treatment of unresectable head and neck cancers: analysis of 9 cases

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Advanced head and neck cancer cases represent a current challenging for oncologists. Our main objective of this study was to assess the outcome of concurrent chemoradiotherapy in the treatment of 9 cases of unresectable head and neck cancer in our hospital.

**Methods:** 9 patients of unresectable head and neck cancer in the period between 2005–2015 were included in the study. Eligibility criteria for inclusion were histologically proven cancer in the head and neck, stage III or IV, and absence of distant metastasis. Patients were treated by concurrent chemoradiotherapy. Radiotherapy dose ranged between 66 Gy to 72 Gy in 30–35 fractions. 6 cycles of chemotherapy composed mainly of Cisplatin (35mg/m<sup>2</sup>) with seldom addition of docetaxel (75mg/m<sup>2</sup>) (2 cases) were delivered. Response evaluation was categorized in to complete response, partial response, stable disease and progressive disease. Overall survival was performed according to Kaplan – Meier method

**Results:** Following up period extended between 6 months to 6 years (mean = 25.89 months). Most of the cancers were squamous cell carcinoma (7), plus two cases of Adenoid cystic carcinoma and myoepithelial carcinoma. 3 cases (33%) showed complete response and absence of the lesion post to the treatment. Two of them were squamous cell carcinoma in soft palate and tongue base while the third one was adenoid cystic carcinoma in maxillary sinus. Another case of squamous cell carcinoma of tongue base achieved partial response. The remaining 5 cases were either stable (n=3) or progressive (n=2). The overall survivals at 10 & 24 months were 89% and 71% respectively.

**Conclusion:** concurrent chemoradiotherapy increased the survival of patients with unresectable malignant tumor of head and neck.

**Keywords:** Unresectable head and neck tumor, Radiotherapy, Chemotherapy.



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## Cartilaginous Choristoma Associated with Adenomatoid Hyperplasia of the Minor Salivary Glands in the Posterior Tongue

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“Cartilaginous choristoma” refers to as a tumorlike cartilaginous mass composed of “normal tissues” in an “abnormal location”. Oral cartilaginous choristomas are extremely rare to be fewer than 30 cases reported in the English literature. Although its rarity, most intraoral choristomas occur in the tongue region, and there were several reports of lesion in buccal mucosa, soft palate, neck. Lesions frequently present as firm, solitary, slow-growing, painless mass.

Adenomatoid hyperplasia of the minor salivary glands may be seen on the minor salivary gland bearing areas on all oral mucosa. It is uncommon but especially seen on soft and hard palate. Because it comprises clinical finding resembling a neoplasm, this lesion requires excisional biopsy and differential diagnosis.

We report a case of cartilaginous choristoma associated with adenomatoid hyperplasia of minor salivary gland occurred in the lateral posterior tongue. The lesion was completely excised and healing was uneventful.

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## Utility of sodium tetradecyl sulphate sclerotherapy from benign oral vascular lesion

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Hemangioma and vascular malformation are benign vascular lesions that often occur in cephalic and cervical region. Currently, surgical resection, laser therapy, angiographic embolization, use of steroids and sclerotherapy are used as treatments.

This study reports three cases of benign vascular lesions that are remarkably treated by STS injection, of which occurred in oral cavity and around the mouth. 3% of STS was diluted with 0.9% of normal saline, followed by injecting it at least once into a lesion site. The result of treatment was evaluated based on clinical findings.

Surgical treatment of hemangioma and vascular malformation occurred in oral cavity and face is often hesitated to undergo due to aesthetic issues as well as potential hemorrhage. On the other hand, sclerotherapy using STS is an effective therapy to treat vascular lesions without such disadvantages of taking surgical treatment. Despite the number of STS injection was different from each patient, all three patients were found clinically satisfactory through the treatment with gradual diminution of lesions.

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## Reconstruction Surgery with a Second Free Flap Following Resection of Recurrent Oral Cancer

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**Objective:** The purpose of this study was to evaluate outcomes of the oral cancer patients who had gone through primary resection and concomitant reconstruction but later required further resection and second free flap reconstruction due to recurrent oral cancer.

**Patients and Methods:** 36 patients who underwent mass resection and free flap reconstruction due to oral cancer, and later required additional resection and another free flap reconstruction between 2006 and 2016 were included in this study. Of the 36 patients, 18 were male and 18 were female. Collected data include primary pathology, location of recurrence, time interval between primary surgery and recurrence, types of flaps and vessels used for secondary reconstruction, modality and prognosis of additional surgeries including survival rate of the secondary free flaps.

**Results:** Patient age ranged from 35 years to 81 years with mean of 60.4 years. The time intervals between first and second surgeries ranged from 1 to 204 months with average of 38 months. The most common primary pathology was squamous cell carcinoma (83%). The most common site of recurrence was mandible (52%) followed by maxilla (18%), tongue (16%), buccal cheek (8%), and lip (3%). Radial forearm free flaps were used for the second reconstruction in 45% of the cases, while latissimus dorsi free flap (23%), fibular free flap (23%), and dorsalis pedis free flap (5%) followed. 8 of 36 patients developed local recurrence after the second surgery. 12 free flaps were anastomosed to contralateral neck vessels. The same artery used in the first surgery was used again in 2 cases. The same veins used in the first surgeries were used again in 5 cases. All free flaps of the second reconstruction surgery survived. In thirteen patients, the recurrence was not occurred primary site only.

**Conclusion:** With regard to the overall impact on survival and resulting quality of life, it is so important to identify patients with the best prognosis to respond to salvage surgery. With the advancement in the field of reconstructive surgery, the inability to perform reconstructive surgery is now rarely the factor limiting salvage surgery. Despite the potential difficulties, literature supports the overall success of second free flaps and they were found to be safe and effective.

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## A Giant Keratoacanthoma Treated with Surgical Excision : A Case Report

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**Introduction:** Keratoacanthoma(KA) is a skin tumor that occurs from the hair follicles and sebaceous glands. Growth speed is very fast, quickly grow to a maximum size within 2 to 12 weeks. It is characterized by forming a crater filled with keratin at surface center. Although the exact cause of the tumor is not known, but it is estimated Sunlight, chemicals, trauma, and viruses.

**Case A:** 98-year-old woman presented with lump on the left cheek. It occurred 7~8months ago and mass size began to increase from 3months ago. On the physical examination, There is a hemisphere -shaped 3.5cm diameter nodules on the left cheek with ulcer, crust, mild pus discharge. There was no evidence of regional lymphadenopathy.

**Results:** safety margins of 5 mm are used and complete excision was done included two adjacent lymph node, as with malignant skin tumor, we make reconstruction by a local rotation flap of the neck. The results of histopathologicalexamination, findings appropriate to keratoacanthoma is observed, At 5 weeks after the excision, the wound had healed and there was no clinical evidence of tumor recurrence

**Conclusion:** Keratoacanthomas are common but unique tumors with a rapid growth rate. A giant keratoacanthoma is a rare variant and are characterizedby lesions larger than 20 mm in diameter. Pathologically, It is difficult to distinguish from squamous cell carcinoma. But the keratoacanthoma is considered a self-healing tumor, After a plateau stage, it will involutes spontaneously within six months, often healing with a depressed scar.

Peak incidence is usually in middle-aged or older persons.

In this study, a98-year-old woman who was diagnosed with Giant keratoacanthoma in left cheek was treated by surgical excision without a significant complication, so, we report a case with review of the literature.

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## Lipoma of the floor of mouth: difficulty to differential diagnosis with ranula clinically

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Lipomas are one of the most common benign soft tissue tumors. However, they are relatively uncommon in the oral cavity. And oral lipomas are rarely developed at floor of mouth. Also, the lesion at floor of mouth was similar to ranula clinically and could be misdiagnosed as ranula. The two lesions were treated with very different manner. So the accurate diagnosis was needed for planning correct treatment plan for these two lesions. We reported an unusual case of a 69-year-old male patient diagnosed as lipoma. He was referred from general dental practitioner who misdiagnosed the lesion as ranula. The patient was diagnosed correctly as lipoma through radiographic analysis and histopathologic analysis. In this report, the authors report the differential diagnostic points between lipoma occurred at floor of mouth and ranula to help to diagnose clinically.

P115

## Marsupialization for treatment of huge dentigerous cyst in young patients with orthodontic treatment: cases report and literature review

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Dentigerous cysts usually occur in maxillas and in mandibles of children as well as adults. The treatment modalities were divided into two methods largely: one is the marsupialization and the other is the enucleation with surgical extraction of causative teeth. The decision of treatment modalities was affected by the size of cystic lesion, adjacent anatomic structures and patients' age. The marsupialization is to create a bony window in the wall of the cyst surgically for the decompression, evacuation, and maintenance of communication between the cyst and the oral cavity. The method is more conservative than cyst enucleation, and the huge cystic lesion cases occurred in young patients often could be indications. We report two huge dentigerous cyst cases of young patients. The cystic lesions were marsupialized and orthodontic treatment of malocclusion followed. In addition, this study reviews the literature about marsupialization of cystic lesion in young patients.

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## Case report of a family who have KCOT associated with NBCCS

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Nevoid basal cell carcinoma syndrome(NBCCS), also known as Gorlin-Goltz syndrome or Gorlin syndrome, is an autosomal dominant inheritance with variable expressivity. In this syndrome, the patients exhibit a spectrum of developmental anomalies and formation of neoplasm. Usually, It has reported that a mutation of PTCH, tumor suppressor gene, located at 9q22.3 is a cause of the syndrome. In the absence of genetic testing, to diagnose of NBCCS, major criteria and minor criteria are present. To diagnose of NBCCS, 2 major or 1 major and 2 minor criteria should be satisfied. Major feature of this syndrome are multiple basal cell carcinoma, multicystic KCOTs and bifid rib. Only 4 to 5% of all KCOTs are associated with NBCCS. KCOTs associated with NBCCS tend to occur earlier than sporadic KCOT, often just after the first decade of life. And KCOT associated with NBCCS occur more frequently in the maxilla

Usually, KCOTs can appear any parts of maxilla and mandible but most frequently appear at mandible posterior area and ramus. Also, KCOT exhibits locally destructive and highly recurrence rate.

Because of we experienced a family who have KCOT associated with NBCCS, we reported a diagnose of NBCCS and treatment of the KCOT with review of literature in this report.

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## Imaging study of Verrucous carcinoma arising from a cyst : A case report

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In this case report we report a case, comparing diagnose image between facial CT taken 8-year ago and diagnosed image verrucous carcinoma who underwent maxillectomy and neck dissection.

The patient referred from local clinic, something development intraoral area. In local clinic, there are verrucous region on maxillary anterior labial ridge area (2x3cm), diagnosed verrucous carcinoma by incisional biopsy.

On inspection, a diffuse exophytic growth was seen in the right maxillary anterior labial ridge approximately 2x3cms in size at the level of labial gingiva extending and superoinferiorly 1cm above and below the level of occlusion.

After that, the patient finally diagnosed verrucous carcinoma associated with HPV by CT facial bone(C enhancement), Face MRI C Enhancement, FDG PET/CT(Torso) + CE.

In the diagnostic process, presented image was observed that the patient coming our emergency room 8 years ago for chin laceration wound. We find cystic lesion on verrucous sites.

Verrucous carcinoma is the uncommon variant of squamous cell carcinoma characterized by exophytic overgrowth. The age range from 50 to 80 years with a male predominance and a median age of 67 years.

Something literature shows verrucous carcinoma arising from odontogenic cyst with rarely.

So, we finding association the patient diagnosed image with 8 years ago image, and we want to study about exercise as read with caution at this case.

Ect

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## Key-hole glossectomy for relapse prevention in post-operative orthognathic surgery

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**Introduction:** Macroglossia is a condition wherein the tongue protrudes beyond the teeth or alveolar ridge in a resting state.

**Objectives:** This report aims to describe a successful partial glossectomy technique in preventing orthognathic surgery relapse.

**Methodology:** A 24-year old, female patient with a history of dentofacial deformity, open-bite and mandibular prognathism corrected by 2-jaw surgery and genioplasty in 2009 presented macroglossia, with the tongue extending beyond the mandibular teeth. The patient underwent partial glossectomy under general anesthesia with nasotracheal intubation. Partial glossectomy was carried out using the "keyhole" technique, which aims to reduce the length and width of the tongue. A partial thickness symmetrical elliptical wedge incision was made on the tongue dorsum, starting from the midline to the tip extending to a small part of the dorsum, which was gradually carried out in full thickness. After hemostasis was achieved, tongue was approximated, sutured and symmetry was checked. One-month post-operative follow-up showed completely healed tongue and a reduction in size. The patient presented normal speech functions and did not exhibit any other problems in masticatory, motor or sensory function.

**Conclusion:** Considerations on the anatomic structures are paramount in the success of dentofacial deformity correction, orthodontic treatment and prevention of relapse. Knowledge of anatomy and physiology is of importance in determining resection designs to achieve the treatment's end-goal. Long-term success in treatments involving various co-managing fields in medical, orthodontics and oral and maxillofacial surgery is achievable through open-communication, efficient referral system and effective execution of patient education.

P119

## Preoperative tracheostomy due to the airway constriction with muscular weakness in the patient with bilateral cerebral infarction history : A case report and literature review

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Cerebral infarction is a kind of cerebrovascular disease which may result in motor, sensory, perceptual, and verbal disorders. Lung dysfunction, vocal cord paralysis or paresis, and muscle weakness around vocal cord are very severe complications which could threaten the patients' lives. These may result in insufficient removal of intra-airway secretions leading to complications like mal-hygiene of respiratory system and pneumonia. Tracheostomy may be necessary before or after general anesthesia in patients with serious motor and sensory disorder, and muscle weakness around vocal cord which may cause difficulty in removing intra-airway secretion and rigidity. This case report is on a patient with medical history of bilateral cerebral infarction, who visited department of oral and maxillofacial surgery with dental history of complete dislocation of TMJ for one year. During the Preoperative work-up, the ENT doctors reported the patient have crico-arytenoid muscle weakness during the inspiration. The anesthesiologist recommended preventive tracheostomy. The tracheostomy was performed under local anesthesia before the induction. There were no special events during the operation, however post-operative constriction from hyoid bone to epiglottis was observed. So tracheostomy tube remove was delayed. The airway constriction was resolved after postoperative 3 weeks, but the patient showed airway obstruction during the spasticity when the tracheostomy tube was tried to be removed. The tracheostomy tube was removed finally postoperative 6 weeks after training with gradual tube size reduction.

In conclusion, pre-operative elective tracheostomy for the general anesthesia might be necessary to avoid critical complications such as post-operative intra-airway constriction, in patients with history of bilateral cerebral infarction.

P120

## Surgical management of functional microstomia patient induced by chemical burn : A case report

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A case of treatment about microstomia patient caused by swallowing caustic soda is presented. A 61-year old man came to our institution with microstomia for prosthetic treatments. The patient had stricture of the circumoral region following accidental ingestion of caustic soda about 35 years ago. He lived normally, with satisfactory mouth opening, until he needed dental prosthetic treatment. Prosthetic dentist was unable to provide the treatment due to the lip stricture and small mouth opening. The patient was referred to our department for surgical management of circumoral stricture.

Surgical management was considered for functional microstomia correction. The selected surgical option was to perform cheiloplasty using bilateral buccal mucosa flaps by Gilles-Millard method and multiple Z-plasty on both commissure mucosa area. The reliable blood supply and excellent texture and color match are some of the advantages of this flaps. Additional vestibuloplasty with split-thickness skin graft from thigh was conducted on anterior vestibule of mandible. After the operation, the patient had an unremarkable postoperative treatment and had enough mouth opening for dental treatment including major prosthetic treatment. It increased the inter-incisal length on mouth opening from 30 to 45 millimeter over and inter-mouth corner length under tension from 40 to 60 millimeter. Relapse has not been observed. This report details the progression of treatment on this patient.

P121

## Cervicofacial, retropharyngeal pneumomediastinum emphysema following a air abrasive treatment peri-implantitis treatment : A case report

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A case of cervicofacial, retropharyngeal and pneumomediastinum interstitial emphysema following a application of air-powder abrasive device for peri-implantitis treatment is presented. A 51-year-old female was referred to our hospital. The patient were suffered for swelling, pain and heatness on her face. According to patient's medical history, the patient had treatment for peri-implantitis at local dental clinic. During the treatment, the patients began to feel swelling on her face with pain. This discomfort also spreaded her neck and persisted. The patient immediately referred to our institution. Clinical examination was done and crepitus on palpation was proved. Radiographs including enhanced computerized tomography confirmed the diagnosis on interstitial air emphysema on temporal, buccal, submandibular, submental, retropharyngeal and pneumomediastinum space. As time went by, patient complaint of her headache, dyspnea and dysphagia. Additionally, it appeared that facial palsy symptom on her eyelid movement. The patient received treatment as an inpatient for close follow-up care. Consultation was done for evaluation of retropharyngeal and pneumomediastinum emphysema, to otorhinolaryngology, thoracic and cardiovascular sugery department. Treatment consisted of reassurance, observation and prophylactic antibiotics.

Subcutaneous emphysema is rare but serious side effect of dental and oral surgery procedures. Emphysema arises when air is forced beneath the tissue, leading to swelling, crepitus on palpation, and potential to spread other facial spaces. A wide range of causes have been reported for the origin of subcutaneous emphysema during dental treatment **including**: crown preparations,

other operative procedures, endodontic therapy, extractions, as well as oral surgery procedures. Our case report shows that there is a potential risk of development of emphysema when using the air-powder abrasive treatment for implant surface cleaning during the peri-implantitis treatment. Progression of patient's treatments is presented in this report with a review of the literatures.

P122

## Acquired von Willebrand disease diagnosed after repetitive delayed post-extraction bleeding : A case report

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The systemic factors contributed to delayed post-operative bleeding are congenital genetic disease such as hemophilia, von Willebrand disease and acquired bleeding disorders such as idiopathic thrombocytopenia (ITP), disseminated intravascular coagulation (DIC), or taking anticoagulants.

Von Willebrand disease is heredity hemorrhagic disorder caused by lack of von Willebrand factor (vWF), an adhesive glycoprotein found on vascular endothelial cell and platelet. Usually it appears bleeding tendency on gastrointestinal tract or nasal cavity. It is also, a cause of excessive bleeding at trauma, surgery, delivery or menstruation.

Most of von Willebrand disease is a congenital form, however it rarely shows an acquired form. A patient who has an acquired von Willebrand disease may suffer from excessive bleeding and have difficulty in hemostasis even though they had underwent surgery without excessive bleeding.

In this case report, we present a patient who had been shown delayed post-operative bleeding during 2 weeks after right maxillary second molar extraction. He was diagnosed as acquired von Willebrand disease type IIN after clinical, radiological and laboratory examination.

P123

## Subcutaneous Emphysema related with Dental Treatment : A report of 8 cases

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Subcutaneous emphysema refers to the presence of air or gas in subcutaneous layer or fascial spaces, and is a relatively rare complication related with dental procedures. Mostly, it occurs during wisdom tooth extraction or restorative treatment.

This study was based on the eight patients who had visited the Department of Oral and Maxillofacial Surgery with subcutaneous emphysema associated with dental procedures, using by retrospective study based on the EMR from January 2009 to June 2016.

Total eight patients were included. The causes were 2 of class V resin filling of tooth, 3 of tooth crown preparation, 1 of tooth extraction, 2 of miniscrew insertion to alveolar bone through gingiva. All patients were treated by conservative care using antibiotics. Symptoms were subsided in 7days.

Subcutaneous emphysema can occur by various usual dental procedures in dental clinics, and it can be diagnosed by specific clinical signs and radiographic features, therefore it is important to treat properly after accurate diagnosis.



P124

## Histologic effects of intentional drilling on extraction socket in orthodontic movements in rats

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**Purpose:** The surgical method in orthodontic tooth movement is known that the damage of the tissue accelerates rapid tooth movement by Regional acceleratory phenomenon(RAP), which induce the remodeling of periodontal tissue.

The aim of this study is to evaluate an effect of drilling on extraction socket for elimination of periodontal ligament(PDL) on osteoclastic activity with orthodontic tooth movement in rats by histologic study.

**Methods:** Twenty-four Spraque-Dawley rats with an average weight of 400 g were used in this study. Both of the first maxillary molar were extracted, then the socket was drilled in experimental group. A traction force(50Ncm) was applied to the second molars with coiled spring. After the sacrifice at 3,7,10,14 days, H&E staining and Tartrate-resistant acid phosphatase (TRAP) staining were performed.

**Results & Conclusion :** The bone resorption at compression side in experimental group was observed earlier and continued longer than control group. Osteoclast counts and results of immunohistochemical analyses suggested elevated bone remodeling in both groups, especially in experimental group. Thus intentional drilling on extraction socket with elimination of PDL is considered effective method on rapid orthodontic treatment.

P125

## Complications after treatment of maxillofacial region in other department

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Recently, constitutional judgment about Botox procedure on maxillofacial region by dentist was significant event on dental and medical affiliation. Origin of this event was dispute between dental and medical affiliation about range of treatment. Likewise, overlap of range of treatment between dental and medical affiliation is frequent.

Because maxillofacial region account for significant part of appearance, esthetic aspect is also important. However, it is also important that another special property of maxillofacial region, for example, mastication or pronunciation. If functional aspect of maxillofacial region is insufficient, severe decrease of quality of life is occurred.

Oral and maxillofacial surgeon have strong points on treatment of maxillofacial region. Because they can perfectly deal with not only esthetic aspect but also functional aspect of maxillofacial region. For example, occlusion which can only be established by oral and maxillofacial surgeon is important factor on function of maxillofacial region. Patients may be suffered from variety complication by surgeon who have deficient knowledge and experience about functional aspect of maxillofacial region.

In this study, through we analyze about complications after treatment of maxillofacial region in other department, we discuss about the specialty of oral and maxillofacial surgeon on maxillofacial region.

P126

## Plunging Ranula: A case report

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**Introduction:** The plunging ranula is a mucous extravasation cyst of the sublingual gland. It shows no side preference, and is more prevalent in the second and third decades of life. It typically manifests as a painless, nonmobile swelling in the neck. The plunging ranulas in which there is no clinical evidence of an oral connection, needs a diagnostic acumen. This case is diagnosed with plunging ranula after biopsy. We report diagnostic method with literature reviews.

**Method and materials:** A patient is 22 years old male who has swelling in submandibular region. Intraorally, the swelling is not present, there was no infection associated with teeth.

**Results:** We diagnosed with lymphangioma and resection and biopsy performed. Then without relapse it has shown good healing aspect.

**Conclusion:** If there is no swelling in the oral floor, it is difficult to diagnose in plunging ranula. The plunging ranula must be differentiated from thyroglossal duct cyst, dermoid cyst, branchial clefts cysts, lymphangioma, lipoma, hemangioma, cystic hygromas, abscess or tumor.

The CT, ultrasonography, MRI are used for the diagnosis. On CT, we can determine location and, MRI showed hyperintense fluid-filled cavity. But this is not sufficient to diagnose. Takimoto suggested a simple radiographic technique for preoperative diagnosis of plunging ranula that involves injecting a contrast media in sublingual space.

P127

## Congenital melanotic macules of the tongue : Case Report and Literature Review

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Pigmented lesions that are difficult to classify into the recognized types of melanotic lesions are seen in the oral cavity. Oral hyperpigmentation may be focal or diffuse, acquired or familial, and due to endogenous or exogenous factors. Localized areas of increased melanin in the oral mucosa that are not associated with systemic diseases or syndromes have been variably termed ephelis, lentigo, melanoplakia, melanotic macule, and focal physiologic melanosis.

Oral hyperpigmentation is common in patients older than 40 years. But lesions in a newborn are unusual and congenital melanotic macule of the tongue has rarely been reported. A 2-month-old infant with 3 pigmented lesions on the right side of the dorsal tongue was evaluated. They were brown black but not homogeneous in color, smooth, nonblanchable, and nonpalpable, with irregular margins. We recommend excisional biopsy under general anesthesia because of possibility of malignancy, but parents refuse invasive procedure. On a following-up examination of the child at the age of 1 year, the pigmented lesions were unchanged. We report a case of congenital melanotic macules on the tongue and a review of literature about the lesion.

P128

## Children bone growing process after odontogenic ameloblastoma resection

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**Introduction:** Ameloblastoma is a rare, benign tumor of odontogenic epithelium with predominant appearance in the lower jaw. The annual incidence rates of ameloblastoma account for about 1% of all odontogenic and 11% of all oral tumors. Approximately 8.7% to 15% of ameloblastomas occur in children.

**Case description:** 4.5-year-old boy underwent resection of mandibular ameloblastoma in National center for Mother and Child Health of Mongolia, Department of Child Maxillofacial Surgery. Postoperative bone healing was monitored using dental panorama radiographs.

**Results:** Analysis of postoperative radiographs showed continuous bone healing and growth of bone from periosteum.

P129

## The Research of dermaroller combined with platelet rich plasma in the treatment of facial wrinkles and aesthetic skin

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**Introduction:** Facial wrinkles are a multifactorial, complex process and impair the quality of life of many people due to their perceived frustrating and unsightly appearance. The treatment for these wrinkles varies with the degree of severity. This prospective study aimed to evaluate the clinical effect of dermaroller alone and dermaroller combined with platelet rich plasma therapy applied to facial wrinkles and to quantitatively evaluate histological changes in the skin occurring in response to the top of two treatments.

**Methods and materials:** Twenty health women aged 43–48 years with scores of 2–4 on the baseline facial fine wrinkle grading scale were enrolled in this clinical study. Three sitting each at 4 weeks interval were carried out of dermaroller alone on the left face and dermaroller combined with platelet rich plasma on one the right face. Standard photographs and skin biopsies were obtained from the treatment area at baseline, at eight weeks posttreatment. Comparisons of the treatments were analyzed using clinic, histologic findings, and patient's satisfaction scores.

**Results:** The degree of baseline facial fine wrinkle grading scale after treatment revealed statistically significant effects of dermaroller combined with PRP treatment side compared to dermaroller alone treatment side. After 8 weeks post-treatment, the wrinkling grade on the dermaroller combined with PRP side ( $2.32 \pm 0.82$ ) and the dermaroller alone side ( $2.89 \pm 0.66$ ) showed significant differences ( $p < 0.05$ ). Microscopic evaluation of haematoxylin eosin and Masson's trichrome stained sections revealed significant difference in dermal fibers, epidermal thickness, papillaries, pigmented epithelial cells

and skin glands. Questionnaire results that dermaroller combined with PRP side is more effective than dermaroller alone side, there were no significant improvement of sagging.

**Conclusion:** Significant changes are noted when dermaroller alone and dermaroller combined with platelet rich plasma for treatment of facial wrinkles. Hence, combined dermaroller combined with platelet rich plasma is a novel method of facial rejuvenation.

P130

## Dentin hypersensitivity experimental therapy after induction sealing of dentinal tubules

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**Aim:** In clinical dentistry, dentin hyperesthesia could be often encountered, however, the reality is that treatment and prognosis to this is unpredictable. Various theories have been reported as cause of dentin hyperesthesia, and the hydrodynamic theory by Brannstrom is most universally recognized, where stimulus on the exposed dentinal tubule induces fluid movement through change in volume and pressure inside the tubule and thus inducing pain by stimulating mechanoreceptors of the sensory nerves in dentin or pulp. Based on this theory, inducing sealing of exposed dentinal tubule was experimented through various treatments.

**Material & Methods:** 532nm Bison Diode Laser (Bison Medical, Seoul, Korea) developed to treat dentin hyperesthesia was irradiated by time and frequency on the incisors of Sprague Dawley rats (male, 7 weeks, 280g). Line beams and circular beams were used with the hand-piece. One experimental group was irradiated once for 1, 3, 5 sec at 0.5w, 1.0w, 2.0w output power, and the other group was irradiated 1, 3, 5 times for 1 sec at 0.5w, 1.0w, 2.0w. Any dental pulp damage caused by the laser was confirmed through H/E staining.

**Results:** The result of 532nm Bison Diode Laser irradiation on SD rat incisors followed by H/E staining to check pulp necrosis level confirmed no damage in dental pulp in all groups. The exposed dentinal tubule on extracted tooth was sealed and observed through SEM. The results showed that dentinal tubule was exposed in the laser spot area and the surrounding area was sealed in 532nm Bison Diode Laser group.

Gluma and DIO were observed to be universally sealing.

**Conclusion:** Treatment products for dentin hyperesthesia such as 532nm Bison Diode Laser, Gluma, DIO were shown to be effective in the treatment. It is considered that more effective treatment methods could be sought if the products were appropriately mixed in the treatment.

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