

## SARPE (SURGICALLY ASSISTED RAPID PALATAL EXPANSION): REVIEW AND CASE SERIES

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**Aim:** to evaluate the effectiveness, indications, and orthodontic considerations of SARPE in skeletally mature patients with maxillary hypoplasia.

**Methods:** our two cases of SARPE carried out in the Dept. Oral and Maxillo-Facial Sciences (Sapienza University of Rome) are shown and a comprehensive literature review was conducted using PubMed, SCOPUS, and Cochrane databases for studies published within the past ten years. The review focused on SARPE surgical techniques, indications, alternative applications, and orthodontic considerations, with a reference on the rationale and limits of minimally invasive surgical approaches.

**Results:** as the outcome of some of our cases show, SARPE demonstrated efficacy in correcting posterior crossbites, crowding, and failed orthopedic maxillary expansion. Addition-

ally, SARPE has shown positive effects on mouth breathing, atypical swallowing, and OSAS. Various appliance designs with different anchorage configurations influence expansion patterns and post-expansion stability. Minimally invasive techniques, using smaller and fewer incisions for releasing the areas of resistance as well as palatal approaches, have been developed to reduce surgical trauma and preserve vascularization.

**Conclusions:** SARPE is a valuable tool for managing transverse maxillary deficiencies in skeletally mature adults. While the debate regarding the optimal surgical approach, whether extensive or minimally invasive, persists, further research is warranted to optimize surgical techniques, evaluate long-term outcomes, and expand the clinical applications of SARPE.

## EVALUATION OF A NOVEL TECHNIQUE FOR CLOSURE OF SMALL PALATAL FISTULA

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**Aim:** the aim of this study is to propose a minimally invasive non-surgical technique to reduce the size of palatal fistula and mitigate surgical difficulty, while identifying crucial factors for increasing the chance of reducing or completely closing the fistula. Palatal fistulae can lead to swallowing, speaking, and chewing difficulties, along with the risk of bacterial superinfections like sinusitis.

**Methods:** twenty patients with primary oral cancers meeting inclusion criteria underwent surgery resulting in palatal fistulae between the oral and nasal cavities. All the patients were initially rehabilitated with a palatal protection resin plate. Some patients totally or partially edentulous required palatal protection with an orthopedic prosthesis. Patients were monitored every 2 weeks. During each appointment, a small wound was

created around the fistula edges by using a needle to induce bleeding.

**Results:** the healing process generally took place in two phases: an initial one with a more rapid closure of the palatal fistula followed by a slower one. On average, the greater and faster healing phase was observed in the first 2 weeks of treatment, with 5060% fistula obliteration. Of the 20 patients, 15 achieved complete healing, while the remaining experienced an average reduction of 5 mm in fistula size.

**Conclusions:** the protocol proves effective for non-surgical palatal fistula reduction, with the potential for complete closure under appropriate conditions. Factors influencing fistula closure include age, presence of dental elements, basal maxillary bone, and keratinized mucosa.

## SURGICAL-GUIDED MISMARPE: MINIMALLY INVASIVE IN-HOUSE APPROACH FOR PTERYGOID DISJUNCTION

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**Aim:** the aim of this prospective cohort study is to assess the advantages of utilizing a surgical guide for pterygoid disjunction in Minimally Invasive Surgical and Miniscrew-Assisted Rapid Palatal Expansion (MISMARPE) and evaluate the skeletal, dental and soft tissue effects following this procedure.

**Methods:** MISMARPE was performed on 6 adult patients with transverse maxillary skeletal hypoplasia and cross bite. A surgical guide for pterygoid disjunction was designed and 3D printed using a full-digital in-house protocol. The surgical technique consisted in 5 maxillary osteotomies, using the surgical guide for the pterygoid disjunction. Palatal expansion involved a periodic activation of a custom-made boneborne device.

Using the software 3DSlicer linear, angular and volumetric

measurements were performed on CBCT, intra and extra-oral scans, acquired preoperatively ( $T_0$ ) and after the active expansion ( $T_1$ ) to evaluate skeletal, dental and soft tissue changes.

**Results:** all patients showed a satisfactory transverse palatal expansion with correction of cross bite. Enty of skeletal expansion was  $4.9\pm 2$  mm with a parallel midpalatal suture opening. Dental expansion was  $5.93\pm 1.29$  mm at molar and  $6.65\pm 0.77$  mm at canine level, with no differences in tooth angulation ( $p > 0.05$ ). Paranasal area showed a significantly increased width (mean value:  $6027 \text{ mm}^3$ ).

**Conclusions:** implementation of a digital guided protocol in MISMARPE has allowed a predictable opening of the pterygoid sutures, resulting in uniform anteriorly and posteriorly expansion of maxilla in adults, with minimal surgical trauma.

## COMPARISON OF TWO DIFFERENT TECHNIQUES IN ORTHOGNATHIC SURGERY USING PSIS

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**Aim:** this study aims to assess and compare the effectiveness of PSIs in bimaxillary orthognathic surgery, specifically in the context of maxilla-guided and mandible-guided techniques. All procedures were carried out using PSIs on the guiding jaw and conventional plates on the opposite one. The focus of this study is the evaluation and comparison of Virtual Surgical Planning (VSP) reproducibility between these two approaches.

**Methods:** the study involved 20 patients diagnosed with class II and III dento-skeletal malocclusions. For each case a Virtual Surgical Planning (VSP) on 3D models was carried out using data derived from a preoperative CBCT scan of the face. Surgical guides and PSIs were designed directly from VSP, aiming to transfer the preoperative planning during surgical procedures. An a-priori randomization chose the guid-

ing jaw for each case, be it maxilla- or mandible-guided.

Subsequently, all patients underwent bimaxillary orthognathic surgery; a postoperative CBCT scan was performed one month later to record the actual positioning of the jaws and the rami. The data obtained from the postoperative scans were then compared with VSP to identify any angular or translational discrepancies. Data analysis was performed using 3D digital entities comparative software CloudCompare.

**Results:** VSP reproducibility was satisfactory in all cases, no statistically significant differences in precision in the placement of mandibular rami and jaws (Mann-Whitney U-test,  $p > 0.05$ ) were found when comparing the two approaches.

**Conclusions:** both approaches exhibited clinically equivalent accuracy in reproducing the original virtual surgical planning.

## POSITRON EMISSION TOMOGRAPHY AND INDOCYANINE GREEN IN THE MANAGEMENT OF MRONJ

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**Aim:** the aim of the present study is to evaluate the use of 18F-FDG PET/CT and indocyanine green in the diagnosis and management of MRONJ and whether it allows identifying the real extension of the necrotic lesions which may be underestimated by other investigations.

**Methods:** oncologic MRONJ patients belonging to the maxillofacial surgery unit of the S. Maria Alle Scotte Hospital (Siena) were enrolled. They underwent a routine PET/CT before the surgery. During the procedure, 25 mg of indocyanine green was diluted in 10 ml of 0.9% NaCl. Then 2 ml boluses were carried out followed by washing with 10 cc of 0.9% NaCl: the first bolus after detachment of the flap, the second bolus after

the sequestrectomy. The results were recorded through the use of Fluobeam®LX (EUROPE - Fluoptics Grenoble, France).

**Results:** the PET/CT examination was able to highlight the focal hyperactivity also when the clinical appearance underestimated the real extension of the necrotic area. Indocyanine green emits fluorescence and allows the identification of injured area. No adverse effects were reported.

**Conclusions:** with the limitations of the present study, PET/CT and indocyanine green could identify necrotic areas not represented in other radiographic investigations. Further studies are needed to validate the risk assessment and the surgical effectiveness for MRONJ.

## PRIMARY INTRAOSSEOUS CARCINOMA OF THE MANDIBLE: CASE REPORT AND REVIEW OF THE LITERATURE

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**Aim:** Primary intraosseous Squamous Cell Carcinoma (POSCC) is a rare malignant tumor arising within the jaws, potentially originating from the residue of odontogenic epithelium or odontogenic cysts or tumors. It is associated with an unfavorable prognosis, characterized by frequent recurrence and metastasis and low survival rates.

Here, we report a case of POSCC in a male patient.

**Methods:** a 75-year-old male no smoker patient was referred to the Department of Oral Medicine and Surgery of the University of Parma due to non-healing of post-extractive sockets, following the extraction of tooth 4.7, which was performed one month earlier. The patient referred paresthesia of the lower lip and pain in the fourth quadrant, radiating to the neck. A CBCT scan showed a poorly defined irregular osteolytic lesion in the

right posterior mandibular region. Three incisional biopsies in the non-healed sockets were performed, followed by histopathological examination.

**Results:** a diagnosis of non-keratinizing squamous cell carcinoma was rendered. The patient underwent right-side neck dissection (levels I to III) and right hemimandibulectomy at the Department of Maxillo-facial Surgery of the Academic Hospital of Parma. Reconstruction of bony and soft tissue defects was performed using a composite flap with latissimus dorsi muscle and scapular bone. No recurrences were observed.

**Conclusions:** POSCC is a rare malignant lesion of the maxillofacial region which can present with various manifestations. This case emphasizes a relatively frequent presentation of a non-healing post-extractive socket.

## MYOFIBROSARCOMA OF THE PALATE IN A 10-YEAR CHILD. REPORT OF A CASE AND LITERATURE REVIEW

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**Aim:** Myofibrosarcomas (MS) are malignant tumors of myofibroblasts. MS are low-or high-grade sarcoma that develop in soft tissue or bone, in adults or children. Tumors can arise in extremities and trunk but there is a predilection for the head and neck region in both soft tissues, including the oral cavity, especially the tongue, and bone, notably maxilla and mandible. We report a case of a palatal low-grade MS in a 10-year-old child.

**Methods:** a 10-year-old boy was referred to the Academic Dental Center of the University of Parma for the presence of a non-healing lesion on the hard palate. Lesion was present since 2 weeks. The patient was healthy and did not take drugs. His mum reported that the nose was sporadically bleeding during crying. Clinical evaluation revealed the presence of an ulcerated nodular lesion of approximately 2 cm in the middle of the hard palate. It was slightly painful on palpation. CBCT showed erosion of the underlying bone. An incisional biop-

sy was performed.

**Results:** histopathological evaluation of the excised tissue revealed the presence of a low-grade MS. The patient underwent a complete removal of the lesion with 1.5 cm of clinically healthy tissue in all directions, at the Department of Maxillofacial Surgery of the Academic Hospital of Parma. The palatal defect was reconstructed through a free-flap harvested from the forearm. The patients had a positive post-surgical outcome and no recurrence has been observed after 3 years.

**Conclusions:** maxillary low-grade MS show a significantly higher recurrence rate (80%) compared to mandibular lesions, attributable to two factors: the challenge of achieving complete surgical removal and/or the thinner nature of the maxillary bone, which facilitates the rapid spread of the tumor. In this case, the radicality of tumor removal allowed to avoid post-surgical radiotherapy and/or chemotherapy.

## REHABILITATION OF A PARTIAL AURICLECTOMY DUE TO TRAUMA USING 3D TECHNOLOGY. CASE REPORT

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**Aim:** auricular defects occur secondary to congenital malformations, trauma, or surgical removal of neoplasms.

It is essential to restore prosthetically the patients creating the most comfortable and realistic prosthesis as possible and helping them to adapt and accept the rehabilitation.

The department of "Riabilitazione Orale Protesi Maxillofacciale e Implantologia Dentaria" in the Dental School of Turin, is specialized in treatment of patients with maxillofacial defects.

**Methods:** digital technologies are employed in this clinical report to restore an ear defect. Digital 3D Technologies are employed in this clinical report, like Face scanner, Sculpting, 3D Print, 3D Sprint.

**Results:** PL is a 29 old female patient who suffered a serious accident at work. A partial reconstruction of the left ear was necessary. Partial auriclectomy defect is difficult to rehabilitate with analogic method because the residual ear may be

moved from the impression material. Digital evolution, such as facial scanners allowed us to realize an impression with great precision, and consequently excellent results. The procedure consists of taking a digital impression with a face scanner, the scan is processed on a PC and the modeling of a try-in prototype is performed. If this prototype satisfies the aesthetic test, it will be transformed into silicone and is colored with modern techniques in order to allow for a realistic prosthesis.

**Conclusions:** new CAD-CAM technologies help to overcome these challenges and make excellent prosthesis, with less invasive and more precise procedures than analogic methodic. The negative side of this method is the high cost of equipment: the machinery for image acquisition and prosthetic design has a high cost. In addition, a great basic knowledge to carry out this process is necessary.