THE ACCURACY OF JAWS REPOSITIONING IN PATIENTS WITH CLEFT LIP AND PALATE

Bollato B., Barone M., Dario A., Bruno G., De Stefani A., Crivellin G., Gracco A., Stellini E.

Dentistry Section, Department of Neurosciences, University of Padua, Padua, Italy

Aim: the study aims to compare the accuracy of jaws repositioning in bimaxillary orthognathic surgery in patients with cleft lip and palate and in those with skeletal class III malocclusion without craniofacial anomalies.

Methods: this study included 32 patients divided into two groups. n = 16 with cleft lip and palate and n = 16 non-syndromic with III class malocclusion. Each patient received an orthodontic-surgical treatment with bimaxillary surgery. A 2D presurgical Visual Treatment Objective (VTO) was prepared for each patient to predict hard tissue changes; the surgical planning was digitally performed to simulate osteotomies and the bone segments were repositioned exactly where established in the VTO. The surgical splints were then produced with CAD-CAM technology.

The accuracy of the orthognathic surgery was measured by comparing specific cephalometric measurements obtained by the VTO with those obtained by the after-surgery cephalometry.

Results: the statistical analysis shows that measurements planned on the VTO are comparable with those obtained on the after surgery cephalometry in both groups. Only one measurement showed a greater difference between the surgical result and the virtual surgical planning in cleft lip and palate group.

Conclusions: the accuracy of jaw repositioning in bimaxillary orthognathic surgery using digital surgical planning is comparable in patients with cleft lip and palate and in those with a III class malocclusion: only one measurement shows that the obtained maxillary advancement slightly deviates from what has been planned in the former.

SURGICAL-ORTHODONTIC MANAGEMENT OF A CLEFT LIP AND PALATE IN A YOUNG PATIENT: CASE REPORT

Marinelli G., Ceci S., Patano A., Inchingolo A.D., Malcangi G., Barile G., Inchingolo A.M., Dipalma G., Rapone B., Di Venere D., Cardarelli F., Inchingolo F.

Complex Operative Unit of Odontostomatology Director: Prof. G. Favia. Specialization School in Orthognatodontics Director: Prof. F. Inchingolo, Interdisciplinary Department of Medicine D.I.M., University of Bari Aldo Moro, Bari, Italy

Aim: Cleft lip and palate (CLP) is a congenital malformation due to genetic and environmental factors.

Dental anomalies, agenesis, supernumeraries, transpositions are often found in these patients especially in the cleft area. This condition requires a multidisciplinary approach.

The aim of this work is to show the surgical-orthodontic management of the outcomes of a CLP in a young girl.

Methods: a 16 years old female patient with unilateral right CLP, referred to the Dental Department of Policlinico of Bari to improve her smile.

She was in first dental and skeletal class tending to third, with upper arch contracted, severe lower crowding, transposition of 1.3, palatinization of 1.4, inclusion of 2.3, agenesis of 2.5. She had received primary lip repair and palatoplasty when she was 6 and 24 months old respectively.

After the evaluation of RX-OPT, T-LL and TC CONE BEAM, orthodontist and surgeon planned: lingual arch cementation and extraction of 3.4 and 4.4 to resolve lower crowding with maximum anchorage; alignment and leveling of upper arch after extraction of impacted 2.3 and application of palatal expander with fan screw.

Results: under general anesthesia, after a trapezoidal papilla preservation flap, we proceeded to osteotomy and extraction of vestibular-horizontal impacted 2.3, horizontal mattress silk suture, and extraction of 3.4 and 4.4. PRP technique was applied in all surgical sites to favor tissue healing.

Conclusions: in these patients, a timely and appropriate multidisciplinary approach is required to improve the quality of life, aesthetics and function of patients with CLP.

Doi: 10.19256/abstract.cduo.01.2022

SINUS LIFT WITH ALGIPORE® FRIOS® AND AUTOGENOUS TOOTH BONE GRAFT COMPARED WITH BIO-OSS® AND PRP

Rapone B.[1], Ceci S.[1], Patano A.[1], Inchingolo A.D.[1], Malcangi G.[1], Hazballa D.[1], Gnoni A.[2], Ferrara E.[3], De Leonardis N.[1], Inchingolo A.M.[1], Dipalma G.[1], Di Venere D.[1], Inchingolo F.[1]

[1]Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Bari, Italy
[2]Department of Basic Medical Sciences, Neuroscience and Sense Organs, University of Bari Aldo Moro, Bari, Italy
[3]Complex Operative Unit of Odontostomatology, Hospital S.S. Annunziata, Chieti, Italy

Aim: implant placement and its restoration becomes clinically challenging when the alveolar ridge lacks sufficient bone volume. Among suitable biomaterials for sinus grafting in severely atrophic maxillae, the porous fluorohydroxyapatitic (FHA) biomaterial Algipore® FRIOS® and anorganic bovine bone have been studied. The aim of this trial was to explore the outcomes by using porous fluorohydroxyapatite (Algipore®FRIOS®) combined with autogenous tooth bone graft, in comparison with anorganic bovine bone (Bio-Oss®).

Methods: seventy-six patients were randomized to receive porous fluorohydroxyapatitic (FHA) biomaterial FRIOS Algipore with autologous tooth bone graft or anorganic bovine bone (Bio-Oss®) for maxillary sinus floor augmentation. The Piezo-assisted Split-Crest technique with the two-steps implant insertion procedure was applied. Group A (n= 38) received porous fluorohydroxyapatitic (FHA) biomaterial FRIOS Algipore with autogenous tooth bone graft; thirty-eight patients (Group B) received anorganic bovine bone (Bio-Oss®) in combination with autologous peripheral blood derived growth factors and bone graft.

Results: in total, seventy-six implants were placed. The grafts, in all cases analyzed, was subjected to physiological and bone remodeling phenomena, demonstrating an excellent integration with the host tissues.

Conclusions: the outcomes showed a faster healing process compared to other more conventional procedures applied in soft and hard tissue regeneration.

SURGICALLY ASSISTED RAPID PALATAL EXPANSION *VERSUS* MULTISEGMENTAL LE FORT I OSTEOTOMY

Bettoni E., Salina F.E., Rossi F., Loviglio M., Porrini C., Sforzini G.

U.O.C. of Maxillofacial Surgery and Odontostomatology, Department of Periodontology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico di Milano, Milan, Italy

Aim: the main objective of this work is to illustrate a complete overview of the main surgical methods and the treatment of adult patients with contraction of transverse maxillary diameters through analysis of the international literature in order to evaluate risks and benefits.

Methods: a systematic review of the international literature was conducted on MedLine database. The chosen keywords were: "surgical palatal expansion": "rapid palatal expansion"; "Le Fort I osteotomy"; "crossbite"; "transverse maxillary hypoplasia". Then the research has been restricted using the "humans" filter. Finally, the authors have considered only articles dedicated specifically to surgical techniques of surgically assisted rapid palate expansion (SARPE) and multisegmented Le Fort osteotomy.

Results: the main treatment is the surgical treatment for restoring a correct relationship between the maxillary and mandibular bones by Surgically Assisted Rapid Palatal Expansion (SARPE) and multisegmental Le Fort I osteotomy. The SARPE technique seems to be the ideal treatment in terms of success, reduced invasiveness and stability, for the correction of severe cases with only transverse maxillary deficiencies, whereas the multisegmental Le Fort I osteotomy is found to be useful to correct transverse defects under 7-8 mm, associated with complex dentoskeletal deformities, ensuring a wide freedom of movement of the osteotomized segments in the three planes of space and the consequent restoration of the face harmony solving the whole malocclusion in a single surgical step.

Conclusions: in conclusion, we can affirm that the SARPE technique is safe and with predictable results but finds application in a limited number of cases. On the contrary, it is advisable to use the multisegmental Le Fort I osteotomy technique to obtain a greater expansion and a more complete approach for the patient.

HOW CAD/CAM HELPS ORAL REHABILITATION WITH DENTAL IMPLANTS IN JAW RECONSTRUCTION

Tirelli G., Bolzoni A.R., Beretta P.

Maxillo-Facial Unit, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico di Milano, University of Milan, Milan, Italy

Aim: the purpose of this abstract is to evaluate the dental implants survival rate (ISR) of computer assisted surgery for segmental mandibular reconstruction with free flap (FFF).

Methods: between November 2016 and September 2018, 12 patients (5 male and 7 female) underwent implant rehabilitation after CAD/CAM reconstruction of the mandible or maxilla with FFF at the Maxillo-Facial Unit of Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano. Virtual surgical Planning (VSP), stereolitographic models (STL) and a custom-made titanium mesh were designed prior to surgery to enable vertical and horizontal reconstruction of FFF. The primary affliction were chronic sclerosing osteomyelitis, fusocellular phleomorifc neoplasia, mucoepidermoid carcinoma, keratocystic odontogenic tumor, squamous cell carcinoma, pseudoarthrosis, odontogenic mixoma, Ossifying fibroma, odontogenic cyst.

Results: 45 implants were placed and only 6 implants of 1 patient failed with ISR of 88,23%. This patient placed all 6 implants during the maxillo-facial surgery. The flap and implants failed due to oral wound dehiscence, and he underwent to a second surgery of FFF and placement of zygomatic implants in a second time.

Conclusions: the application of CAD/CAM technology in the microvascular reconstruction of jaw's defects using FFF in patients that needed dental implants, enables to planning an accurate vertical height essential for dental rehabilitation leading to satisfactory functional and long-lasting result.

IATROGENIC FACIAL EMPHYSEMA: LITERATURE REVIEW AND FOLLOW-UP OF A CASE

D'Agostino S.[1], Baldini A.M.[2], Ben M'hamed A.[2], Giovannoni M.E.[2], Grieco M.[2], Lanciani A.[2], Melchionna M.[2], Schiavoni C.[2], Dolci M.[2]

[1]Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Bari, Italy
[2]Department of Medical, Oral and Biotechnological Sciences, University G. D'Annunzio of Chieti-Pescara, Chieti, Italy

Aim: several procedures in dentistry may lead to iatrogenic emphysema such as improper root canal therapy, tooth extraction, periodontal treatment and restorative protocols. The aim of this work is to report about subcutaneous emphysema after endodontic treatment in literature, its management and to show the follow-up of a case.

Methods: the review part was performed in two digital databases: PubMed and ResearchGate using the following keywords "emphysema; endodontic" including articles from 2004 to 2022 describing subcutaneous emphysema post endodontic therapy, both in children and in adults. Other characteristics stressed were the onset, the resolution and the pharmacological treatment when reported. A case and its follow-up were also shown with detailed clinical photos and radiological images.

Results: from a total of 30 articles 12 were included. The onset described was variable: immediate, after few minutes or couple of hours. Pharmacological therapy is diversified in molecules and time. The case reported was solved by amoxicillin and clavulanic acid 3g/die for 7 days.

Conclusions: facial emphysema is a potentially life-threatening condition which may rarely appear after root canal therapy. Pressurized air stream should be carefully used when a perforation is suspected. Awareness among dental professionals is fundamental and pharmacological guidelines should be required.

FULL DIGITAL WORKFLOW FOR SURGICAL AND PROSTHETIC REHABILITATION WITH FREE FIBULA FLAP IN MANDIBLE

Franceschi D.[1], Conti M.[2], Migani S.[1], Spinelli G.[2]

[1]Department of Experimental and Clinical Medicine (DMSC), University of Florence, Florence, Italy
[2]SOD Maxillofacial Surgery, Careggi University Hospital, Florence, Italy

Aim: oncological patients who undergo ablative surgery develop functional and esthetic sequelae that require immediate reconstruction. Bony reconstruction of jaw defects using the Free Fibula Flap and dental rehabilitation mostly requires insertion of dental implants within the transferred fibula bone. Conventional freehand immediate placement of dental implants is technically challenging in the jaw reconstructive surgery. Computer-aided surgery might help the surgical positioning of dental implants and enhance the final prosthetic rehabilitation.
The purpose of this report is to illustrate a full digital workflow, assisted by virtual surgical planning, of a patient treated with Free Fibula Flap, and to assess the postoperative outcomes compared with preoperative digital project.
Methods: one patient was treated for the resection and reconstruction of a mandibular defect, with Free Fibula Flap and dental implants insertion. A computer-aided designed and three-dimensional printed patient specific surgical plate, which contains functions of fibula segmentation, surgical plate positioning and implant placement, was used to guide the reconstructive surgery and simultaneous dental implant placement.
Results: the patient was successfully treated with the insertion of 5 implants within the transferred fibula flap. The digital planning was compared with the post-operative CT and with the position of the dental implants obtained by the Intra Oral Scanner.
Conclusions: the preliminary data indicate that pre-operative digital planning and patient specific surgical plate facilitate simultaneous dental implant in patients underwent jaw reconstruction.

OSTEONECROSIS OF THE JAW: AN OBSERVATIONAL STUDY

Schiavoni C.[1], Baldini A.M.[1], Ben M'hamed A.[1], D'Agostino S.[2], Giovannoni M.E.[1], Grieco M.[1], Lanciani A.[1], Melchionna M.A.[1], Dolci M.[1]

[1]Department of Oral, Medical and Biotechnological Sciences, University G. D'Annunzio of Chieti-Pescara, Chieti, Italy
[2]Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Bari, Italy

Aim: osteonecrosis of the jaw (ONJ) is a severe clinical condition consisting of progressive bone destruction in the maxillofacial region. ONJ is commonly associated with the use of antiresorptive and anti-angiogenic medications such as bisphosphonates and some monoclonal antibodies. The aim of this study is to find a correlation between our observational study and literature review about the risk factors, incidence, pathogenesis, age, drugs of this complication.
Methods: the retrospective study was conducted using data obtained by 2581 medical records of the Odontostomatological Clinic of the University of Chieti between 2017 and 2020. For each patient we drew up a full list of age, gender, medical and dental history, level of oral hygiene and treatment of osteonecrosis. Inclusion and exclusion criteria set the boundaries for the review: in our study we included 27 patients.
Results: the results showed that 24 patients have been in therapy with Zoledronate. There were 25 oncology patients (15 with metastases), the 2 others were in therapy for osteoporosis. 7 cases, without undergoing dental treatment, developed MRONJ. Bacterial superinfection in 24 of 27 cases.
Conclusions: intravenous BPs are most associated with MRONJ (Zoledronate).
Excellent oral hygiene is a determining factor in avoiding the degeneration of MRONJ. Neoplastic diseases are the most related to MRONJ. The disease mainly affects women. Osteonecrotic lesions in the mandibular district are more severe (4 cases in Stage 3).
Spontaneous onset of MRONJ is common. The high average age (70.4 years) is an important factor.

ULTRASOUND-GUIDED *VERSUS* 'BLIND' INJECTIONS OF BOTULINUM TOXIN IN DROOLING'S TREATMENT

Val M., Gobbo M., Marangoni S., Ragazzo M., Guarda Nardini L.

Unit of Oral and Maxillofacial Surgery, Ca' Foncello Hospital, Treviso, Italy

Aim: this study evaluates the efficacy and safety of local application of Botulinum Toxin (BonT) for the treatment of sialorrhea in children with neurological disorder.

Methods: patients with neurological disorder with severe sialorrhea were included. Bilateral injections with BoNT-A (Botox, Allergan) were performed in both submandibular glands (20 U per gland) and parotid (30 U per gland). Based on the physical state of the patients, the injections were administered under ultrasound guidance (Group A) or according to anatomical landmarks (Group B). The primary endpoints were the changes in unstimulated salivary flow and the Thomas-Stonell and Greenberg scale from the infiltration session (T0) to the 4th week (T4) and the impression of caregivers according to the "Drooling Impact Scale". Adverse events were recorded.

Results: 6 patients were enrolled in GROUP A and 5 in GROUP B. 1 patient do not reported subjective improvement in sialorrhea at T1. Group A showed a significantly higher rate of saliva reduction already at T1, while in group B the reduction was not significant. Comparing the unstimulated salivary flows at each follow-up visit, it was found that ultrasound-guided injections were superior to those according to anatomical landmarks in reducing saliva. 2 patients showed mild hyposcialia for a transitional period of 2 weeks.

Conclusions: the ultrasound-guided injection of BonT-A at the level of the salivary glands was found to be more effective and generally safe for the treatment of sialorrhea.

QUALITATIVE AND QUANTITATIVE 3D ANALYSIS OF SKELETAL STABILITY AFTER ORTHOGNATHIC SURGERY

Barone S., Bennardo F., Muraca D., Diodati F., Averta F., Antonelli A., Giudice A.

Department of Health Sciences, School of Dentistry, Magna Graecia University of Catanzaro, Catanzaro, Italy

Aim: this study aimed to evaluate maxillary and mandibular post-surgical skeletal stability compared to virtual surgical planning (VSP) in patients undergoing orthognathic surgery.

Methods: a prospective study was conducted including orthognathic class III patients. VSP and CBCT scans at 12 months follow-up (T2) were compared. A voxel-based superimposition was performed. Morphometric analysis focused on 3D models of mandibular condyles, gonial regions, symphysis, and premaxilla. For all these districts, qualitative analysis was performed through colormap overlays of VSP and T2 models. Quantitative assessment was determined calculating any discrepancies between planned and post-surgical position of each area on axial, sagittal, and vertical axis. Statistical analysis was performed with alpha = 0.05.

Results: fourteen patients (mean age 25.7 ± 3.2 years) were included in the study sample. Eight patients (57.1%) showed skeletal asymmetry. Posterior, lower, and medial displacement was determined for most condyles, recording a mean movement of condylar surface of 0.46 ± 0.3 mm on the right, and 0.5 ± 0.31 mm on the left. Posterior, lower, and lateral displacement of gonial region was assessed (0.5 ± 0.4 mm on the right; 0.4 ± 0.3 mm on the left). Symphysis and premaxilla showed higher displacement on the sagittal plane with an anterior position of the lower jaw (0.89 ± 0.7 mm) and a posterior position of the upper jaw (1.4 ± 1mm) at T2.

Conclusions: at 12 months follow-up, the results of this study showed irrelevant post-operative changes in maxillary and mandibular position compared to VSP.

EVALUATION OF OC ASSET IN ONJ CASES: POSSIBLE 3D BIOPRINTING METHOD TO REPAIR BONE DEFECT

Mosca Balma A.[1], Pavone L.[1], Masante B.[1,2,3], Roato I.[1], Mussano F.[1]

[1]Department of Surgical Science, C.I.R. Dental School, University of Turin, Turin, Italy
[2]PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico of Turin, Turin, Italy
[3]Interuniversity Center for the Promotion of the 3Rs Principles in Teaching and Research, Pisa, Italy

Aim: Osteonecrosis of the jaw (ONJ) is an adverse event that may occur in patients with bone metastasis treated with anti-resorptive drugs. In this study we evaluated the difference in osteoclast precursors (OCPs) number between pre-treated patient and the ONJ group. We also quantified the OCs in *in vitro* peripheral blood mononuclear cell (PBMC) culture w/ or w/o osteoclastogenic factor, and analyzed the cells viability in hybrid scaffolds (PCL/Al_2O_3) for bone healing.

Methods: patients' PBMC cultures with or without M-CSF and RANKL were stained through TRAP staining kit in order to obtain OCs number. The OPs (CD14/CD51-61/CD11b+) were detected with flow cytometry. To obtain the mix of polymer (PCL) and ceramic (Al_2O_3), a solvent casting method was used. Then we 3D bioprinted the hybrid scaffolds and we plated Human ASC52 hTert cell line on them with foetal bovine serum (FBS) or human platelet lysate (hPL), to evaluate cell viability with CellTiter-Glo kit.

Results: we saw that the number of OCPs were not significantly modified between the ONJ and pre-treated patients, while the spontaneous *in vitro* osteoclastogenesis was increased in patients with bone metastasis, according to the anti-resorptive treatment. The hybrid scaffolds allowed cell adhesion and growth, we also reported that hPL enhanced cell viability compared to FBS.

Conclusions: ONJ patients did not show an increase in circulating OCPs and *in vitro* osteoclastogenesis, because of the drugs treatment. The results obtained with the hybrid scaffold represents a first step to develop a new substitute of the necrotic zone.

COCAINE-INDUCED MIDLINE LESIONS (CIMDL): A REAL CHALLANGE FOR MAXILLO-FACIAL SURGERONS

Di Cosola M.[1], Spirito F.[1], Malcangi A.[2], Cazzolla A.P.[1], Cantore S.[3], Ballini A.[3,4], Testa N.F.[1], Lo Muzio L.[1]

[1]Department of Clinical and Experimental Medicine, Riuniti University Hospital of Foggia, Foggia, Italy
[2]Public Local Health Company (Azienda Sanitaria Locale - ASL), B.A.T, Trani, Italy
[3]Department of Basic Medical Sciences, Neurosciences and Sensory Organs, University of Bari Aldo Moro, Bari, Italy
[4]Department of Precision Medicine, University of Campania Luigi Vanvitelli, Naples, Italy

Aim: a cocaine-related syndrome, named cocaine-induced midline destructive lesion (CIMDL), characterized by centrofacial midline necrosis, has been described. The objective of the current investigation was to characterize, from the authors' experience and literature data, the great variety of oral and maxillo-facial lesions produced by cocaine use and abuse.

Methods: the authors have extensive, long-term experience with a patient cohort occasionally willing to admit their addictions and recreational drug uses. Our observations of this patient's cohort, and from other similar cases reported in current scientific international literature, are herein summarized relative to oral and maxillofacial lesions.

Results: oral and maxillo-facial effects were identified by the authors as a consequence of repeated use of these drugs. The most described, included: 1. Hard palate osteonecrosis, perforated septum from recurrent interaction with cocaine; 2. Typical saddle-nose deformities; 3. Mucosal and gingival manifestations, including retractions, ulcerations and keratosis; 4. Heat damages, from glass or clay pipes to inhale the drugs.

Conclusions: CIMDL is an emerging health problem due to cocaine abuse. The diagnosis of these lesions can be challenging because numerous conditions can present with similar signs and symptoms. A multidisciplinary approach is mandatory.

NEW STRATEGY PLANNING FOR CONDYLAR FRACTURES

Cortese A.[1], Trodella M.[1], Catalano S.[1], Howard C.M.[2]

[1]Unit of Maxillofacial Surgery, Department of Medicine and Surgery, University of Salerno, Salerno, Italy
[2]Department of Radiology, University of Mississippi Medical Center, Jackson, MS, USA

Aim: mandibular fractures are the third most prevalent maxillofacial traumatic event. Surgical approaches to the condyle are a debated topic. This study described a mini-invasive technique for condylar fracture reduction.

Methods: the patient of this study was a polytraumatic girl with a carotid artery dissecting aneurysm, which contraindicated the standard open reduction and internal fixation (ORIF) technique. The author's technique involves intraoral access and fragments realignment using a periosteal elevator, a molar occlusal splint, and intermaxillary fixation—intraoperative radiologic imaging checks for condyle reposition.

Results: the authors avoided skin incisions or tissue dissections, with good aesthetic outcomes and facial nerve preservation. This technique proved to be safe and simple to be executed and less demanding for the patient, with a shorter recovery time.

Conclusions: the results suggest this technique to be considered a good option for the surgical treatment in the condylar neck fractures showing favorable rim morphology with primary stability after reduction. This technique is also useful as a first step for surgical open treatments in case of unstable or unsatisfactory condylar position after a minimally invasive approach.