

DOWNLOAD PDF SEGMENTAL OSTEOTOMY FOR BONE AUGMENTATION PROCEDURE

Chapter 1 : Segmental osteotomy for mobilization of dental implant

The choice was made to perform a segmental osteotomy and mobilize the bone block and the implant down and forward; a bone block extracted from the mandibular ramus was installed between the implant block and the bed to stabilize the segment.

Gross jaw discrepancies anteroposterior, vertical, or transverse discrepancies [6] Skeletofacial discrepancies associated with documented sleep apnea, airway defects, and soft tissue discrepancies Skeletofacial discrepancies associated with documented temporomandibular joint pathology A disproportionately grown upper or lower jaw causes dentofacial deformities. Chewing becomes problematic, and may also cause pain due to straining of the jaw muscle and bone. Also, a total maxilla osteotomy is used to treat the "long face syndrome," known as the skeptical open bite, idiopathic long face, hyper divergent face, total maxillary alveolar hyperplasia, and vertical maxillary excess. A potentially significant long-term outcome of orthognathic surgery is impaired maxillary growth, due to scar tissue formation. The numbness may be either temporary, or more rarely, permanent. Surgery[edit] Orthognathic surgery is performed by an oral and maxillofacial surgeon in collaboration with an orthodontist. It often includes braces before and after surgery, and retainers after the final removal of braces. Orthognathic surgery is often needed after reconstruction of cleft palate or other major craniofacial anomalies. Careful coordination between the surgeon and orthodontist is essential to ensure that the teeth will fit correctly after the surgery. Planning[edit] Planning for the surgery usually involves input from a multidisciplinary team, including oral and maxillofacial surgeons, orthodontists, and occasionally a speech and language therapist. Although it depends on the reason for surgery, working with a speech and language therapist in advance can help minimize potential relapse. Radiographs and photographs are taken to help in the planning. While correcting the bite is important, if the face is not considered, the resulting bone changes might lead to an unaesthetic result. Technique[edit] All dentofacial osteotomies are performed under general anesthesia , causing total unconsciousness. General anesthesia allows surgeons to perform dentofacial osteotomies effectively without involuntary muscle movement or complaints about minor pain. Prior to any Osteotomy, third molars wisdom teeth are extracted to reduce the chance of infection. Dentofacial osteotomy is usually performed using oscillating and reciprocating saws, burs, and manual chisels. Reciprocating saws are straight and are used for making straight bone cuts. Oscillating saws are angled, to different degrees, in order to make deep curved cuts for certain osteotomies like mandible angle reduction. The recent advent of piezoelectric saws has simplified bone cutting, but such equipment has not yet become the norm outside of the most developed countries. The surgery might involve one jaw or both jaws cuncurrently. This surgery is usually performed with the use of general anaesthetic and a nasal tube for intubation. The nasal tube enables the teeth to be wired together during surgery. The surgery usually does not involve cutting the skin. Instead, the surgeon is often able to go through the interior of the mouth. Cutting one bone is known as an osteotomy , while performing the surgery on both jaws simultaneously is known as a bi-maxillary osteotomy cutting the bone of both jaws or a maxillomandibular advancement. The maxilla can be adjusted using a " Lefort I " level osteotomy most common. These techniques are utilized extensively for children that suffer from various craniofacial abnormalities, such as Crouzon syndrome. The jaws will be wired together inter-maxillary fixation using stainless steel wires during the surgery to ensure the correct re-positioning of the bones. In most cases, these wires are released before the patient wakes up. However, some surgeons prefer to wire the jaws shut instead. In some instances, the change in jaw structure will cause the cheeks to become depressed and shallow. Alveolar prognathism, maxillary osteotomy recommended. Maxilla osteotomy upper jaw [edit] This procedure is intended for patients with an upper jaw deformity, or with an open bite. Operating on the upper jaw requires surgeons to make incisions below both eye sockets, making it a bilateral osteotomy, enabling the whole upper jaw, along with the roof of the mouth and upper teeth, to move as one unit. At this time, the upper jaw can be moved and aligned correctly in order to fit the

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upper teeth in place with the lower teeth. Then, the jaw is stabilized using titanium screws that will eventually be grown over by bone, permanently staying in the mouth. Mandible osteotomy lower jaw [edit] Patient exhibits a mandible prognathism. Requires a mandible osteotomy to correct. The mandible osteotomy is intended for those with a receded mandible lower jaw or an open bite, which may cause difficulty chewing and jaw pain. For this procedure cuts are made behind the molars , in between the first and second molars , and lengthwise, detaching the front of the jaw so the palate including the teeth and all can move as one unit. From here, the surgeon can smoothly slide the mandible into its new position. Stabilization screws are used to support the jaw until the healing process is done. First, a horizontal cut is made on the inner side of the ramus mandibulae , extending anterally to the anterior portion of the ascending ramus. The cut is then made inferiorly on the ascending ramus to the descending ramus , extending to the lateral border of the mandible in the area between the first and second molar. At this time, a vertical cut is made extending inferior to the body of the mandible , to the inferior border of the mandible. All cuts are made into the middle of the bone, where bone marrow is present. Then, a chisel is inserted into the pre existing cuts and tapped gently in all areas to split the mandible of the left and right side. From here, the mandible can be moved either forwards or backwards. If sliding backwards, the distal segment must be trimmed to provide room in order to slide the mandible backwards. Lastly, the jaw is stabilized using stabilizing screws that are inserted extra-orally. The jaw is then wired shut for approximately 4-5 weeks. First, incisions are made from the first bicuspid to the first bicuspid , exposing the mandible. Then, soft tissue of the mandible is detached from the bone; done by stripping attaching tissues. A horizontal incision is then made inferior to the first bicuspids , bilaterally, where bone cuts osteotomies are made vertically inferior, extending to the inferior border of the mandible , thereby detaching the bony segments of the mandible. The bony segments are stabilized with titanium plates; no fixation binding of the jaw necessary. If advancement is indicated for the chin, there are inert products available to implant onto the mandible, utilizing titanium screws, bypassing bone cuts. This consists of the surgeon making horizontal cuts on the lateral board of the maxilla , extending anterally to the inferior border of the nasal cavity. At this time, a chisel designed for the nasal septum is utilized to detach the maxilla from the cranial base. Then, a pterygoid chisel, which is a curved chisel, is used on the left and right side of the maxilla to detach the pterygoid palates. Care must be taken as to not injure the inferior palatine artery. Prior to the procedure, the orthodontist has an orthopedic appliance attached to the maxilla teeth, bilaterally, extending over the palate with an attachment so the surgeon may use a hex-like screw to place into the device to push from anterior to posterior to start spreading the bony segments. Post operation[edit] After orthognathic surgery, patients are often required to adhere to an all-liquid diet for a time. Weight loss due to lack of appetite and the liquid diet is common. Normal recovery time can range from a few weeks for minor surgery, to up to a year for more complicated surgery. For some surgeries, pain may be minimal due to minor nerve damage and lack of feeling. Doctors will prescribe pain medication and prophylactic antibiotics to the patient. There is often a large amount of swelling around the jaw area, and in some cases bruising. Most of the swelling will disappear in the first few weeks, but some may remain for a few months. Recovery[edit] All dentofacial osteotomies require an initial healing time of 2-6 weeks with secondary healing complete bony union and bone remodeling taking an additional 2-4 months. If the jaw is sometimes immobilized movement restricted by wires or elastics for approximately 1-4 weeks. However, the jaw will still requires two to three months for proper healing. Lastly, if screws were inserted in the jaw, bone will typically grow over them during the two to three month healing period. Patients also may not drive or operate vehicles or large machinery during the consumption of painkillers, which are typically taken for six to eight days after the surgery, depending on the pain experienced. Immediately after surgery, patients must adhere to certain infection preventing instructions such as daily cleaning, and the consumption of antibiotics. Cleaning of the mouth should always be done regardless of surgery to ensure healthy, strong teeth. They were used to correct dentofacial deformities like a malocclusion , and a prognathism. In , mandible and maxilla osteotomies were effectively used to correct more extreme deformities like receding chins, and to relieve pain from temporomandibular

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joint disorder TMJ. Prior to , some patients undergoing a dentofacial osteotomy still had third molars wisdom teeth , and had them removed during surgery. An extensive study done by Dr. M Lacy and Dr. R Colcleugh, was used to identify threats of combining the two surgeries used 83 patients from the time span of and The data indicated that getting the osteotomy and the third molar extraction at the same time highly increases the chances of infection development. Raffaini introduced this technique in after a four-year study done with local anesthesia and assistance from intravenous sedation. Prior to this, surgeons would fully sedate patients, hospitalizing them shortly after the surgery for a day recovery, specifically from the anesthesia. Advancements allow surgeons to expand the use of an osteotomy on more parts of the jaws with faster recovery time, less pain, and no hospitalization, making the surgery more effective with respect to time and recovery. The original mandible and maxilla osteotomy procedure still remains almost unchanged, as it is the simplest and still the most effective for dentofacial deformity correction.

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Chapter 2 : Orthognathic surgery - Wikipedia

segmental osteotomy for repositioning a malposed dental implant. A year-old man was referred with an unrestorable osseointegrated dental implant that had been placed in the region of the maxillary right central incisor.

This article has been cited by other articles in PMC. Abstract Purpose The aim of this work is to evaluate a surgical technique for mobilization of mal posed dental implant in anterior area. Methods A year-old patient consulted our unit for esthetic dissatisfaction with the implant treatment of a central incisor. An implant was observed in 11 and 21, where 11 was 3 mm above the ideal limit, with excessive vestibular angulation. The choice was made to perform a segmental osteotomy and mobilize the bone block and the implant down and forward; a bone block extracted from the mandibular ramus was installed between the implant block and the bed to stabilize the segment. Results After 4 months, a conventional fixed prosthesis was created and the esthetic result achieved was close to what the patient wanted, with no need for further surgery. The surgical condition was stabilized and maintained for the long-time and no complications how necrosis, infection or bone defects was present. Conclusions It was concluded that the procedure is efficient, and the biological arguments in favor of the procedure are discussed. Changes in design, surface types, connection systems, and varied installation alternatives are fulfilling the demands for function and esthetics requested by patients [1 , 2]. Given these conditions of improvement, error, and failure, treatment with dental implants is becoming increasingly complex to manage. In this sense, the adequate three-dimensional positioning of implants and integral planning of the case are highly relevant when the procedure is performed [3]. This involves a suitable esthetic rehabilitation combined with the medium- and long-term stability of the implant [3]. When a dental implant is poorly positioned, the options for solving the case are either 1 through prosthetic compensation or 2 through replacement or transfer of the position of the implant. In these situations, the esthetic objective is often difficult to achieve, particularly when the implant is in the anterior sector [5]. If the malposed implant is osseointegrated, the only options for modifying the position are either replacement with a new implant, which often requires procedures prior to reconstruction with a bone graft [5], or the transfer of the osseointegrated implant by means of a peripheral osteotomy that includes the block with the implant inside it. Osteogenic distraction has been reported where the osteotomy performed with the implant inside the block has achieved repositioning [6]. Another option is alveolar segmental osteotomy, which involves movement of the block with the implant inside it, together with its stabilization by means of some fixation system [7]. Initial condition and planning The clinical examination revealed a mesomorphic patient, facially proportionate, with no prior alterations or surgeries at the facial level. A slight vertical excess of the maxilla approximately 3 mm was observed, coinciding with a high smile level and greater tooth exposure with the lips at rest. The intraoral examination showed partial edentulism, alterations in occlusal balance, diastemas with poor tooth positions, and the position of two implants in 11 and 21 3. The radiographic study revealed stability of the implants with no signs of peri-implantitis or alterations in the osseointegration Fig.

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Chapter 3 : Orthognathic Surgery - Medical Policy Criteria - Regence - Find-A-Code Articles

Segmental osteotomy with bone grafting is a modification of Le Fort I swing osteotomy that has several advantages. The in-lay graft was not resorbed because it was rapidly revascularized and.

With teeth missing, the alveolar ridge irreversibly resorbs in three dimensions, while the sinus cavity expands. The remaining osseous structures in the maxillary posterior regions are often deficient in quality and quantity for straightforward and predictable implant placement. It is imperative to be intimately familiar with the anatomic relations of posterior maxillary structures during the necessary pre-implant-placement sinus augmentation to avoid surgical complications and injuries. This case report presents the clinical management of a horizontal ridge defect and maxillary sinus pneumatization by sinus floor elevation using osteotomes, and GBR with simultaneous implant placement. That noted, implant position and angulation intrasurgically are determined by the presenting local anatomy and bone morphology at the implant site – which is often unfavorable after long-standing edentulism. The main postextraction confounding factor associated with posterior maxillary atrophy is the occurrence of sinus pneumatization. It begins as a physiological process during embryogenesis, and normally concludes with the eruption of third molars at approximately 20 years of age. This process is influenced by genetics and previous surgeries, as well as patient metabolism. Edentulism less than five years; bone height minimum: Edentulism five to 10 years; bone height: Edentulism more than 10 years; bone height: The treatment plan for SAC 3 patients calls for a staged approach, with delayed implant placement after a healing period post sinus lift and graft maturation. The primary bony projections of the maxillary floor divide the pyramidshaped sinus cavity into compartments. The secondary septa are shorter, protrusive bone spikes into the sinus, which occur following tooth extractions. The thickness of the Schneiderian membrane is highly variable; in health, it is generally less than 1 mm thick, but it can be more than 2 mm if inflamed. These clinical preoperative photographs of the maxillary left posterior region show the absence of teeth 13 and 14, and associated horizontal and vertical bone deficiencies. Initial clinical examination revealed missing teeth 13 and 14, with associated localized mild to moderate horizontal and vertical bone deficiency of the ridge Figures 1A and 1B. His dental provider, who had formulated a comprehensive treatment plan, referred the patient. Periapical radiographs of the region are shown in Figures 2A and 2B. Intraoral periapical radiographs of the upper-left posterior region reveal adequate vertical bone dimensions in the region of 13, but not around 14 due to sinus pneumatization. A limited-view CBCT scan provided detailed information regarding the available horizontal and vertical dimensions of the edentulous ridge and proximity of the maxillary sinus, which aided implant selection and planning Figures 3A through 3C. Virtual placement of the implants can be seen in the figure; as is evident, the buccal plate is very thin when placing the implants in an ideal prosthetic location. Additionally, precise measurements of the sinus location and remaining vertical bone height are critical during placement. Limited view cone beam computed tomography of region 13 A and region 14 B and C. A central slice was chosen for each region. Prior to implant surgery, the patient was advised about the importance of improving oral hygiene, and informed of the clinical and radiographic findings. The necessity of horizontal bone augmentation for region 13 and vertical sinus elevation for region 14 was reviewed, and all questions were answered regarding associated risks, benefits and potential complications. In addition, the patient was reminded of the restorative needs of the surrounding teeth. Lastly, written consent for implant surgery, and ridge and sinus augmentation, was obtained. This surgical guide proved helpful in determining the appropriate position of the implants, based on the proposed final restorations. This clinical intraoperative image shows the edentulous ridge after buccal flap reflection. After administration of anesthesia via local infiltrations on the buccal and palatal aspect of the maxillary left posterior region, a 15c blade was used to make three incisions: Reflection of a full-thickness buccal flap was performed to gain access for implant placement, while the palatal tissues were left intact Figure 5. As anticipated, the intraoperative clinical photograph reveals a horizontal deficiency in region

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Clinical intraoperative photograph showing direction indicator in 13 osteotomy, with a flat-top periodontal probe inserted into osteotomy 14 to determine if the sinus floor is still intact. Intraoral periapical radiograph taken with direction indicators placed in both osteotomy locations. The osteotomy for 13 was first prepared to approximately half of the desired implant depth and a direction indicator was placed, while osteotomy 14 was performed to a depth 1 mm short of the sinus floor. A periapical radiograph was subsequently taken to assess location and angulation of the osteotomies, as seen in Figure 7. This image depicts the osteotome and mallet used for infracture of the sinus floor. The osteotomy 13 was prepared to the final depth and diameter using the appropriate implant drills. For osteotomy 14, only the diameter was initially enlarged; the team then placed a deproteinized bovine bone mineral DBBM graft into the osteotomy, which was followed by the use of an osteotome to infracture the sinus floor Figure 8. Subsequently, additional graft material was introduced, which was elevated vertically using the osteotome to the desired vertical dimension " which is a few millimeters beyond the length of the chosen implant. A clinical intraoperative photograph and periapical radiograph exposed immediately after the implants were placed and cover screws inserted, but prior to grafting of the buccal aspect. Both implants were placed and achieved primary stability at a torque value of 35 newton centimeters or Ncm. Cover screws were placed and radiographs were obtained Figures 9A and 9B. A periosteal incision was made in the buccal flap using a new 15 blade, and the flap was adapted and sutured " chiefly with nonresorbable polytetrafluoroethylene sutures and a few resorbable chromic gut sutures Figure This image shows the surgical area following suturing. Periapical radiograph three months after implant placement, and a bitewing radiograph exposed immediately after placement of healing abutments at the second-stage surgery visit. The patient was placed on a liquid diet for the first 24 hours, followed by a soft diet for the remaining week, and instructed to chew on the right side only. He was also advised to refrain from oral hygiene practices in the surgical site, and rinse with 0. Clinical photograph of the maxillary left posterior region six weeks after second-stage implant surgery, at the time of referral for the restorative phase of treatment. Second-stage surgery was performed after three months of healing, and radiographs were taken before and after placement of the healing abutments Figures 11A and 11B. Figures 12A and 12B depict the clinical outcome six weeks after second-stage surgery at the time of referral back to the restorative dentist. The patient returned for a follow-up visit and presented with provisional crowns on the implants, as seen in Figures 13A through 13D. These images of the maxillary left posterior region depict the initial presentation prior to surgery, and seven months postoperative with provisional implant crowns on 13 and 14 that were fabricated by the restorative dentist six months postsurgically. In dental implantology, the posterior maxilla presents a clinical challenge due to its morphology and anatomy. Case selection and practitioner experience are significant determinants of long-term success. It behooves clinicians and patients alike to consider all possible complications intraoperatively and postoperatively, so both can reach informed consent: Careful consideration of appropriate surgical technique will help ensure successful outcomes. After trauma or pathology-related loss of dentition in the posterior maxilla of an implant patient, the remaining osseous structures are often deficient in quality and quantity for straightforward and predictable implant placement. The specific case, as well as practitioner skill and preference, are factors to consider when choosing the most appropriate treatment modality. Implant position and angulation intrasurgically are determined by the presenting local anatomy and bone morphology at the implant site " which is often unfavorable after long-standing edentulism. In implant site development, careful case selection and preoperative data collection using cone beam computed tomography improve the chances for a successful outcome during augmentation procedures. Evaluation of anatomical considerations in the posterior maxillae for sinus augmentation. *World J Clin Cases*. Biological factors contributing to failures of osseointegrated oral implants. *Eur J Oral Sci*. Panoramic images versus three-dimensional planning software for oral implant planning in atrophied posterior maxillary: *Clin Implant Dent Relat Res*. The efficacy of various bone augmentation procedures for dental implants: *Int J Oral Maxillofac Implants*. Which hard tissue augmentation techniques are the most successful in furnishing bony support for implant placement? Augmentation of the posterior maxilla: Autogenous onlay bone grafts vs. Clin

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Oral Implants Res. Sinus augmentation utilizing anorganic bovine bone Bio-Oss with absorbable and nonabsorbable membranes placed over the lateral window: *Int J Periodontics Restorative Dent*. Augmentation procedures for the rehabilitation of deficient edentulous ridges with oral implants. Anterior maxillary alveolar distraction osteogenesis: Forced eruption of a solitary nonrestorable tooth using mini-implants as anchorage: Posterior maxillary segmental osteotomy for the implant reconstruction of a vertically deficient ridge: Morphologic characteristics of the sinuses. *Arch Otolaryngol Head Neck Surg*. Thomas A, Raman R. A comparative study of the pneumatization of the mastoid air cells and the frontal and maxillary sinuses. Nowak R, Mehlis G. Studies on the state of pneumatization of the sinus maxillaris. Maxillary sinus floor in edentulous and dentate patients. *Indian J Dent Res*. Das Gesetz der Transformation der Knochen. Weinmann JP, Sicher H. *Fundamentals of Bone Biology*. CV Mosby Co; Sharan A, Madjar D. Maxillary sinus pneumatization following extractions: The maxillary sinus floor in the oral implantology. *Rom J Morphol Embryol*. Bazrafshan N, Darby I. Retrospective success and survival rates of dental implants placed with simultaneous bone augmentation in partially edentulous patients.

Chapter 4 : The Anterior Segmental Maxillary Osteotomy | Pocket Dentistry

History of the Procedure. The first anterior segmental maxillary osteotomy (ASMO) was reported at the beginning of the twentieth century. Günther Cohn-Stock tried to surgically "correct a marked overjet and overbite of the central maxillary teeth."

However, ridge resorption can occur in a vertical dimension under normal conditions or in severe cases under the following clinical situations: However, there are still many clinical situations that necessitate a vertical ridge augmentation for a successful and esthetic outcome of dental implant therapy. All of the mentioned procedures to regenerate a vertically deficient alveolar ridge are extremely technique sensitive and have complications that often occur. This can result in insufficient vertical bone growth. Early graft exposure can also occur resulting in graft failure. Distraction osteogenesis requires frequent visits and a cumbersome distractor to be placed in the patient. Guided bone regeneration, when performed with a titanium-reinforced expanded polytetrafluoroethylene e-PTFE membrane and tenting screws, can result in graft infection and failure if the membrane becomes exposed. Titanium mesh grafts can often result in early exposure of the mesh, leading to infection and graft failure. Most complications during bone grafting are often related to improper surgery techniques and thin soft tissues around the surgical site; therefore, it is often advantageous to perform a soft-tissue augmentation procedure prior to a vertical ridge augmentation in order to ensure thick soft tissues to overly the graft materials, thus minimizing the complication rate. It is also imperative to follow the basic principles PASS of bone regeneration during any ridge augmentation procedure. Severe bone loss can be seen on the initial periapical Fig. Upon removal of the hopeless teeth, a severe vertical and horizontal ridge deficiency will be expected. Approximately eight weeks later, a GBR procedure was done utilizing a vestibular incision approach, reflecting the mucoperiosteal flap beyond the ascending ramus. A combination of FDBA regeneross, Biomet 3i and autogenous graft particles harvested from the ascending ramus were placed on the deficient ridge after making cortical perforations. The graft materials were covered with a titanium-reinforced dense polytetrafluoroethylene d-PTFE membrane cytoplast, osteogenics that was tacked into place in order to maintain graft stability during healing. The membrane extended approximately 2 mm beyond the bone graft materials and was placed up the ascending ramus. Immediately after surgery, a panoramic radiograph was taken Fig. Dental implants nobel active 5. Additional minor bone grafting was done using autogenous coagulum collected during the osteotomies and a xenograft particulate Bio-Oss, Geistlich , then covered with a resorbable collagen membrane Biogide, Geistlich in order to maintain buccal bone stability and contour Fig. The implants were later uncovered, ensuring that an adequate zone of keratinized tissue was present and the implants were subsequently restored Figs. The success of this case was dependent upon proper treatment planning, meticulous surgical techniques, patient compliance, and understanding bone and soft-tissue biology.

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Chapter 5 : Implant Placement With Augmentation and Osteotomy Sinus Elevation - Decisions in Dentistry

Key words: Segmental osteotomy, dental implant, mandible, inlay graft. Kamperos G, Zografos I, Tzermpos F, Iatrou I. Segmental sandwich os- teotomy of the posterior mandible in pre-implant surgery - A systematic.

Segmental osteotomy with interpositional bone grafting in the posterior maxillary region Abstract Tooth loss is followed by a natural bone resorption process that often leads to defects in the alveolar ridge, making the installation of dental implants unfeasible. Correction of such bone defects, especially loss of height of the ridge or associated loss of thickness, is a great challenge to dental surgeons. The technique of segmental osteotomy accompanied by interpositional bone grafting has been shown to be a viable option for addressing the problem. This report describes a successful application of the technique in the treatment of vertical dimension deficiency in the posterior maxillary region. Four months after graft surgery, 3 implants were successfully placed in accordance with the original reverse planning. Dental implant rehabilitation depends fundamentally on the presence of an adequate alveolar bone structure. After tooth loss due to trauma, periodontal disease, pathology or malformation, a natural process of bone resorption occurs that often leads to vertical ridge height, horizontal ridge thickness deficiencies, or both. Correction of such bone defects, especially loss of height of the ridge, or associated loss of thickness, is a challenge to dental surgeons. In the literature, the technique of segmental osteotomy accompanied by interpositional grafting has been reported as a viable and predictable procedure with a low incidence of complications and a high percentage of success. The technique has been recommended for the correction of moderate vertical defects 4–8 mm in the anterior maxillary and posterior mandibular regions, and it can also be used to reposition badly placed implants. This case report describes a clinical case of segmental osteotomy with interpositional bone grafting designed to rehabilitate the alveolar ridge in the posterior region of the maxilla. Case report A year-old, white, male patient sought implant rehabilitation to compensate for tooth loss and chewing difficulties. Clinical and radiological examinations revealed the absence of teeth in positions 14, 15 and 16 and osteo-deficiency of the vertical dimension 6 mm of the crest of the alveolar ridge and of the thickness the ridge. The distance from the reabsorbed ridge to the floor of the maxillary sinus was found to be approximately 16 mm Fig. Note the distance between the floor of the maxillary sinus and the reabsorbed crest of the alveolar ridge, approximately 16 mm. The proposed treatment entailed a segmental osteotomy and an inter-positional graft using bone removed from the ramus of the mandible to restore the posterior maxillary alveolar ridge prior to placing dental implants. The mucoperiosteum was detached and the preparation of the vertical and horizontal osteotomies was carried out using sagittal saws. Chisels were used to finalize the osteotomies and for the mobilization of the bone segment. Care was taken not to damage the palatine mucosa. The surgery proceeded to the removal of the bone graft block from the ramus of the right mandible and adapted it to the receptor area with its cortical portion facing the vestibule side Fig. The set formed by the mobilized bone segment and the interposed bone graft block was fixed using a 1. The procedure was finalized using a running stitch for closure with 3. Careful separation of the mucoperiostium revealed that the fixation system was in place, the interpositional bone graft had been incorporated and gains in the height and thickness of the alveolar ridge had been achieved Fig. Only gold members can continue reading. Log In or Register to continue Share this:

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Chapter 6 : Osteotomy - Wikipedia

Segmental osteotomy with bone grafting is a modification of Le Fort I swing osteotomy that has several advantages. The in-lay graft was not resorbed because it was rapidly revascularized and implant placement was delayed.

The authors have declared that no conflict of interest exist. Received Sep 11; Accepted Nov This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. This article has been cited by other articles in PMC. Abstract Background The rehabilitation of the atrophic posterior mandible with dental implants often requires bone augmentation procedures. The aim of the present study is the systematic review of the literature concerning the success rate of Segmental Sandwich Osteotomy SSO of the posterior mandible in pre-implant surgery. Material and Methods Systematic review of all clinical cases and clinical studies of SSO of the posterior mandible in pre-implant surgery with a minimum follow-up of 6 months after implant loading was performed, based on specific inclusion and exclusion criteria. In every study, the intervention characteristics and the outcome were recorded. Results Out of the initial results, only 17 articles fulfilled the predetermined inclusion and exclusion criteria. They consisted of 9 retrospective case reports or series and 8 prospective randomized clinical trials. Overall, the studies included patients. In these patients, SSO augmentation procedures were performed in the posterior mandible and implants were placed. The follow-up period after implant loading ranged between 8 months and 5. The implant survival during the follow-up period ranged between Conclusions Segmental Sandwich Osteotomy should be considered as a well documented technique for the rehabilitation of the atrophic posterior mandible, with long-term postsurgical follow-up. The success rates are very high, as well as the survival of the dental implants placed in the augmented area. Segmental osteotomy, dental implant, mandible, inlay graft. Introduction The rehabilitation of the atrophic posterior mandible with dental implants is often difficult due to anatomic restrictions. After the loss of teeth, the continuing bone resorption sometimes leads to an inadequate alveolar height over the inferior alveolar nerve IAN even for a short implant. Many bone augmentation procedures have been used including guided bone regeneration, onlay and inlay grafts, distraction osteogenesis and IAN lateralization. All of them require careful planning and great surgical skills. Furthermore, they are characterized by considerable morbidity. The application of interpositional graft after segmental osteotomy was first introduced by Schettler, , in the anterior mandible for improving the retention of a full denture 1. Clinical and histological studies confirmed the vascularization and stability of the inlay graft 2 , 3. Since then, many variations have been proposed and the procedure has been applied in the pre-implant surgery interventions. Yeung, , was the first to treat the atrophic posterior mandible with SSO, in order to avoid the drawbacks and limitations of the other augmentation procedures 4. There are two necessary parameters: Even if there are many published case reports, as well as clinical trials, for the rehabilitation of the posterior mandible with this technique, the intervention characteristics and indications are often unclear. The aim of the present study is the systematic review of the literature concerning the success rate of SSO of the atrophic posterior mandible for placing dental implants. Moreover, the impact of the intervention characteristics on the final result is evaluated. The following inclusion and exclusion criteria were defined at the beginning of the systematic review: Clinical trials, case series or case reports, using SSO of the posterior mandible in pre-implant surgery on human subjects. Implant follow-up after loading should be at least 6 months, in order to assess every possible biological complication during function, rather than early failures. No restriction on the publication status of the study. No restriction for medically compromised patients or smokers. Studies not fulfilling all inclusion criteria. Studies applying SSO for treatment of malpositioned osseointegrated implants. Publications reporting the same data as later ones by the same authors. Reviews - Types of intervention All studies applied segmental osteotomy in the posterior mandible, combined with interpositional graft and some kind of stabilization. After bone healing, dental implants were placed in the augmented site. In every study,

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the following intervention characteristics were recorded. Number of augmented sites, b. Alveolar bone height over IAN, c. Movement of the mobilized fragment, d. Use of a membrane or not, g. Number of dental implants and, i. Follow-up period after loading. Intraoperative and postoperative complications, b.