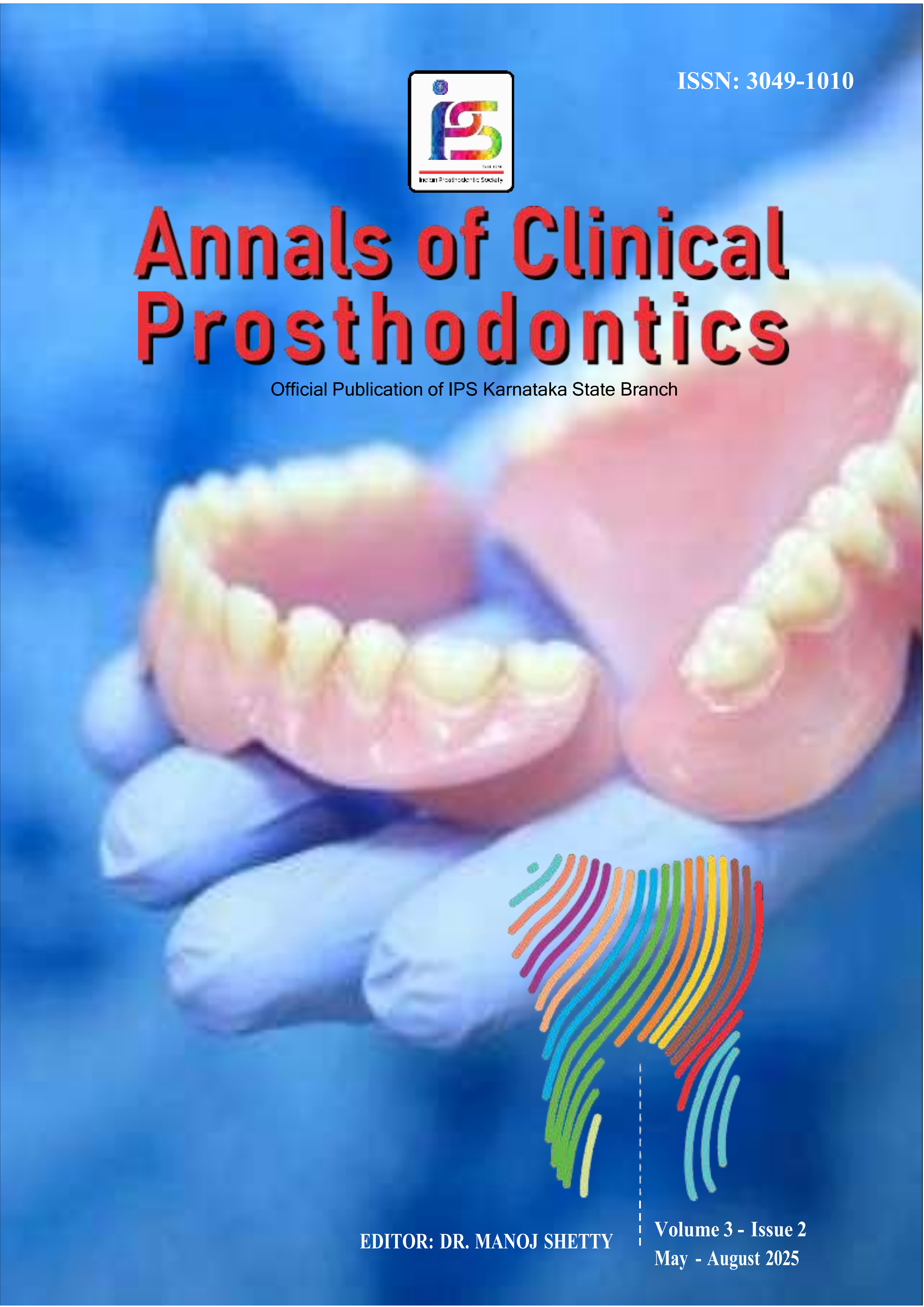

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PROSTHETIC REHABILITATION USING MAXILLARY IMMEDIATE DENTURE AND MANDIBULAR TOOTH-SUPPORTED OVERDENTURE WITH MICRO OT ATTACHMENTS: A CASE REPORT

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ABSTRACT

Tooth loss can significantly affect function, esthetics, and overall quality of life. Prosthodontic rehabilitation plays a key role in restoring oral health, appearance, and confidence. This case report outlines the treatment of a 42-year-old male patient with multiple periodontally compromised teeth. An immediate complete denture was planned for the maxillary arch to avoid a period of edentulism and maintain facial support. In the mandibular arch, selected teeth were retained and restored with short copings and micro OT cap attachments to support an overdenture. This approach offered improved retention, stability, and preservation of alveolar bone. Follow-up visits were scheduled at regular intervals, with relining done at six months. At the one-year review, the prostheses were functioning well, and the oral tissues remained healthy. his case emphasizes the importance of timely intervention, preservation of remaining teeth, and careful planning to achieve long-term success in prosthetic rehabilitation.

Key-words: Immediate denture, over denture

INTRODUCTION

Complete and partial edentulism are the major contributing factors for compromised oral health. Epidemiological data indicate that partial edentulism affects approximately 50% to 59% of individuals,[1] often leading to reduced masticatory function, aesthetic concerns, social withdrawal, nutritional deficiencies, and psychological challenges. Collectively, these factors can substantially affect a person's overall quality of life. Prosthodontic treatment aims to rehabilitate such patients by restoring oral function, appearance, and comfort through appropriate prosthetic solutions. A wide array of treatment modalities is available, including removable dentures, fixed dental prostheses, and implant-supported restorations. Among these, tooth-supported overdentures represent a vital component of preventive Prosthodontics, offering the benefits of preservation of alveolar bone and proprioception while fulfilling both functional and aesthetic requirements.

An overdenture is a removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants. It is a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots, and/or dental implants. It is also termed as an overlay denture or overlay prosthesis. [2]Retention of natural teeth contributes to the preservation of alveolar bone height, periodontal proprioception, thus modulating the occlusal forces and better control and function during mastication. [3]Moreover, tooth-supported overdentures can offer superior retention and stability when compared to conventional complete dentures, particularly when enhanced with attachment systems. These mechanical components are designed to secure the removable prosthesis effectively, making them beneficial in patients with sufficient interarch space.[4]

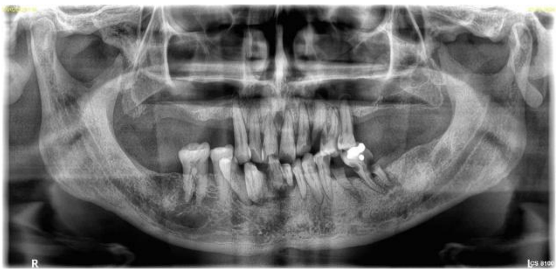
In consideration of the patient's aesthetic needs and psychological well-being, an immediate complete denture is a treatment solution. This prosthesis is fabricated before the extraction of the remaining natural teeth and is inserted immediately following their extraction. This eliminates the period of edentulism, preserving facial appearance, supporting soft tissues, and maintaining the patient's appearance and social confidence during the healing phase.[5,6] Immediate dentures also assist in protecting extraction sites, promoting uneventful healing, and enabling early adaptation to the prosthesis. However, they may require periodic adjustments or relining due to post-extraction ridge remodeling. The present case report describes a comprehensive oral rehabilitation in which the maxillary arch was restored with an immediate complete denture, while the mandibular arch was managed using a tooth-supported overdenture incorporating a micro OT cap attachment system for improved retention and stability.

Case History:

A 42-year-old male patient reported to the Department of Prosthodontics with the chief complaint of seeking complete oral rehabilitation following total extraction of the remaining teeth.

Extraoral evaluation revealed that the patient has a square tapering facial form, with a convex profile. Adequately supported, potentially competent lips with a length of 26mm.

Intraoral examination revealed Grade III mobility in teeth 21, 11, 12, 13, 31, and 41, and Grade II mobility in 42 and 43. Teeth 36 and 37 were grossly decayed, and tooth 46 showed signs of furcation involvement. The patient was partially edentulous with missing teeth 12, 13, 14, 15, 16, 17, 24, 25, 26, 27, and 47. Considering the poor periodontal condition and the patient's concern regarding aesthetics, extraction was advised for the remaining compromised mandibular teeth: 31, 32, 33, 35, 36, 37, 41, 42, 43, 44, and 46.



Pre-operative Orthopantograph

Pre-operative intra oral picture

During the initial visit, diagnostic impressions were made using Zhermack Tropicalgin alginate for both arches. Tentative jaw relation was recorded. Given the available interarch space, a Rhein 83 micro OT cap attachment system was planned for the mandibular arch. Considering the mobility, total extraction was planned with the maxillary arch.

In the subsequent appointment, post space preparation was carried out with teeth 35 and 44. Dome shaped preparation with chamfer finish margin and anti-rotational groove was prepared for the fabrication of short coping. Final impressions were made, and wax patterns for the cast posts and copings were fabricated. The micro OT cap attachments were positioned using a paralleling device to ensure proper alignment. The entire assembly was then casted together. After finishing and polishing, the cast posts were cemented using 3M Relyx resin cement.

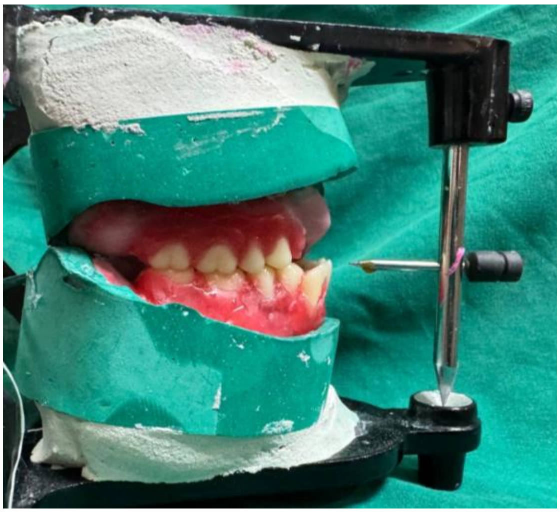
Tooth preparation for cast post with short coping

Casted post with coping and micro OT attachment

Cemented cast post with coping and attachment

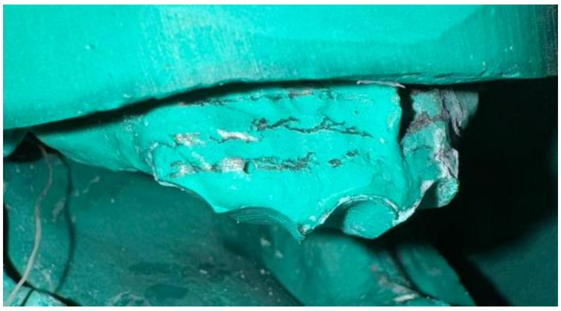
After cementation, a secondary impression was made with Zhermack Light body impression material. On the master cast, denture base and occlusal rims were fabricated, and centric relation was recorded.

Posterior teeth arrangement was completed. During the try-in, the vertical dimension of occlusion and centric relation were verified. Anterior tooth selection was confirmed with the patient based on esthetics and lip line.


Lower anterior and upper posterior teeth arrangement in mean value articulator

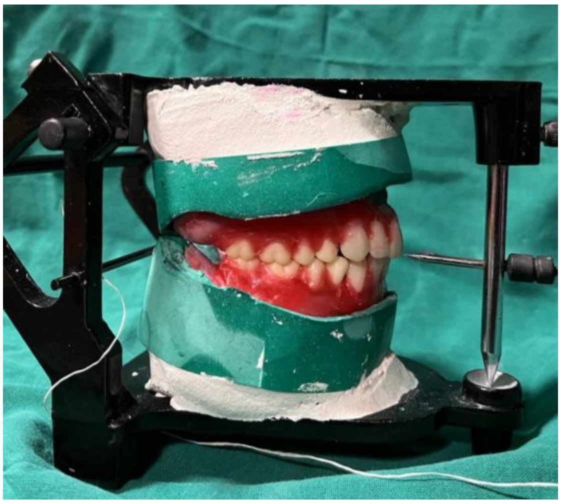

Posterior try-in

Following the try-in, the maxillary cast was modified based on the "rule of thirds" as recommended by Kelly.[7] A surgical template was fabricated to serve as a reference during the surgical phase.


Rule of thirds-Cast modification


Modified maxillary master cast

The anterior teeth setup was completed. Standard processing steps, including wax-up, dewaxing, packing, curing, finishing, and polishing, were performed.


Teeth arrangement-mean value articulator


Acrylised, polished maxillary and

mandibular complete denture

On the day of prosthesis insertion, the maxillary anterior teeth were extracted. The surgical template was used as a reference for alveoplasty. Suture placement was done.

Clear acrylic resin template used for bone recontouring following extraction

Post-extraction alveoplasty using surgical template

After haemostasis and suture placement, the immediate complete denture was inserted in the maxillary arch. For the mandibular arch, the copings were isolated with a separator, exposing only the patrix component of the micro OT cap attachment to prevent acrylic entrapment during pick-up. The standard retention sleeves were placed on the patrix intraorally. Adequate relief was created in the intaglio surface of the mandibular denture to accommodate the matrix portion of the attachment. After confirming accurate fit and occlusion, chairside pick-up of the matrix component was performed using self-cure acrylic resin. Excess material was trimmed and polished before final insertion.

Placement of retentive sleeve and matrix component

Mandibular denture with the matrix component, after chairside pickup

The patient was advised not to remove the maxillary denture for the first 24 hours post-insertion, as early removal could lead to soft tissue inflammation and compromise the proper seating of the prosthesis. Post-insertion instructions were provided in detail, and a follow-up appointment was scheduled after 24 hours to evaluate tissue response and prosthesis adaptation.[6]

Maxillary immediate denture and mandibular overdenture insertion

DISCUSSION

Preventive prosthodontics emphasizes preserving existing oral structures. Overdentures serve as a key modality in this approach. Complete edentulism significantly impacts one's personality, appearance, and diet, making timely treatment essential. As DeVan stated, Perpetual preservation of what remains is more important than the meticulous replacement of what is missing.[6] Unlike conventional prostheses, retained natural teeth provide proprioception through the periodontal ligament, allowing better occlusal awareness and reducing excess forces. Overdentures improve support, chewing efficiency, and delay ridge resorption. Prieskel described three abutment preparations: (a) reduced root surfaces (bare or dome-shaped copings), (b) use of attachments, and (c) thimble-shaped copings.[8] The success of the treatment depends on favorable alignment of abutment teeth (parallel or nearly parallel),well-positioned(canine or premolar region) to ensure a common path of insertion.Considering the inter-arch space and available favourable abutments, short coping with micro-OT attachments[10], standard clear retention sleeves were chosen in this case.

Immediate dentures are a dependable treatment option when proper case selection, planning, surgical technique and procedures are followed with good patient cooperation. When full extractions are needed, a clear acrylic surgical stent can guide bone recontouring, ensuring a better fit of the denture post-extraction. These dentures offer benefits such as protecting surgical sites, reducing bleeding, and maintaining appearance, as natural teeth help in guiding acrylic tooth placement.[9]
However, there are certain drawbacks

- Impression making and jaw relation records can be difficult due to remaining teeth.
- Anterior ridge undercuts may interfere with impressions.
- Uneven distribution of remaining teeth can lead to errors in recording centric relation or vertical dimension.
- The process requires more appointments, time, and cost.
- Lack of anterior try-in procedure for an immediate complete denture.
- Post-insertion adjustments or even complete remakes may be needed if major corrections are required.[9]

Patients must wear the denture continuously for the first 24 hours without removing it; otherwise, reinsertion might be difficult. As the supporting tissues heal and reshape, the denture may loosen over time, requiring refitting or relining, which involves additional cost. Because of the patient's age and the importance of maintaining esthetics, an immediate complete denture was provided for the maxillary arch. Post-insertion reviews were conducted at 24 hours, 1 week, and 3 months. At the 6-month visit, relining was done using heat-cured acrylic resin. Evaluation at the 1-year follow-up revealed satisfactory denture condition and tissue response.

CONCLUSION

Tooth-supported overdentures offer a functional and biologically sound approach for managing patients with remaining compromised teeth. By preserving natural abutments and utilizing attachment systems, they enhance prosthesis retention, stability, and proprioception. Immediate dentures, when properly planned, help maintain aesthetics and function without subjecting the patient to an edentulous phase. The combined use of a maxillary immediate denture and mandibular overdenture with micro OT attachments in this case provided an effective, patient-centric solution, restoring oral function and appearance while supporting long-term tissue health.

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CURRENT CONCEPTS IN OCCLUSAL LOADING OF DENTAL IMPLANTS : AN OVERVIEW

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ABSTRACT:

Transfer of mechanical load across the interface between prosthesis and their supporting biological structures, play a significant role in the success of Prosthodontic rehabilitation. Over the years various concepts of loading for various types of dental implants have been put forth by different authors.
This article discusses different loading concepts considering the various types of dental implants based on different clinical situations.
Keywords: loading of implants, occlusion, Occlusal loading, Pterygoid implant, Zygomatic implant

INTRODUCTION:

Prof. P.I Branemark's concept of osseointegration has taken implant dentistry by leaps in recent years. One of the key factors that influence osseointegration of dental implants is mechanical loading. Various studies have concluded that rate and loading frequency are of prime concern amongst the numerous factors that influence the response to mechanical loading.
Bone being a living structure could adapt its mass and structure to the demands of mechanical loading. Osteocytes, buried in the bone matrix and the lacuna-canalicular porosity are believed to be the professional mechanosensory cells of bone that mediates mechanosensing. In 1981, Albrektsson and colleagues[1] identified six factors that influence osseointegration : (1) status of the bone; (2) loading conditions;(3) surgical technique; (4) implant design; (5) implant finish; and (6)implant material.

Branemark's original protocol:

The two-stage surgical protocol established by Branemark et al to attain optimum osseointegration consisted of prerequisites such as countersink the implant below the crestal bone, obtaining and maintaining a soft-tissue cover over the implant and a minimally loaded implant for 3 to 6 months. The primary reason cited for the submerged surgical approach of implant placement was to reduce and minimize the risk of bacterial infection, to prevent apical migration of the oral epithelium along the body of the implant, and to minimize the risk of early implant loading during bone remodelling[1]. A second-stage surgery was thus necessary to uncover the implant and attach a prosthetic abutment.

LOADING CONCEPTS:

Immediate loading:

Immediate loading refers to implant-based surgical technique in which the implant supported restoration is placed into occlusal loading within 48 hours after implant placement. Immediate loading of a dental implant includes a non-submerged, one stage surgery and actually loads the implant with a provisional restoration at the same appointment[2]. It is indicated when there is adequate bone quality (type I, II or III), sufficient bone height of approximately 12mm, sufficient bone width of approximately 6 mm and the ability to achieve an adequate antero-posterior (AP) spread between the implants. A poor antero-posterior spread decreases the mechanical advantage gained by splinting the restoration.

The contraindications include poor systemic health, severe para functional habits, reduces bone density (e.g. type IV), decreased bone height or width and inability to achieve an adequate AP spread.

According to Gapski et al, the following four categories of factors influence the result of immediate implant loading[3]

TABLE 1 : Factors influencing the result of immediate implant loading

1	Surgery-related factors	Primary Implant Stability Surgical Technique
2	Host-related factors	Quality and Quantity of cortical and trabecular bone Wound healing Modelling / Remodelling activity Oral Hygiene/ patient compliance
3	Implant-related factors	Implant number Dimensions of the implant Implant design Surface condition of the implants
4	Occlusion-related factors	Occlusal forces Implant position

The immediate implant-loading concept challenged the conventional protocol of no occlusal loading of the implant for 3 to 6 months before the restoration of the implant. The surgical process of the implant osteotomy preparation and implant insertion causes a phenomenon of bone repair around the implant interface. As a result of this surgical process, organized and mineralized lamellar bone becomes unorganized, less mineralized and woven bone of repair next to the implant.

The implant-bone interface is weakest at 3 to 6 weeks and at a risk of overload, after surgical insertion due to the surgical trauma that causes bone remodelling at the interface that is least mineralized and unorganized during this time frame. One method to decrease the risk of immediate occlusal overload is to decrease the surgical trauma and the amount of initial bone remodelling during implant placement. The protocol for immediate load is to tighten the implant within the bone to 45 to 60 Ncm[3]. Although this concept helps to ensure that the implant has rigid fixation and is in good quality bone, the additional torque used to secure or evaluate fixation of an implant in bone actually may increase the strain at the interface and therefore increase the amount of remodelling, which decreases the strength of the bone-implant interface. Hence, it is prudent to minimize factors related to thermal injury and surgical trauma when considering immediate load to the implant interface.

Rationale for immediate loading is not only to reduce the risk of fibrous tissue formation which may result in clinical failure, but also to minimize woven bone formation and promote lamellar bone maturation to sustain occlusal load.

The Branemark Novum concept[4]:

The Novum Concept was conceived in 1980. This treatment modality is based on the Branemark Classic osseointegration procedure, a two-step surgical approach with varying time intervals between the steps. The distinctive feature of this procure is that it requires only 6 to 8 hours for reconstruction of the entire dentition and thus gives the patient a third set of teeth in just 1 day. There are four drill templates and eight drill guides that precisely position three implants which are totally parallel and level. A prefabricated lower bar is placed on three implants, and an upper bar fits on the lower bar. The denture teeth and vertical dimension of occlusion are previously selected by the dentist. Then the case is waxed up, adjusted, processed and fit and insertion done on the same day.

Apart from reduced cost, the advantage of this procedure is completion of the surgery and reconstruction in one day, with rigid stabilization at the time of implant placement. Disadvantages include appearance of the lower bar when the patient pulls down his or her lower lip, extensive surgical procedure demanding much more than routine implant surgery, limited patient selection due to anatomic limitations and also the surgical template might not fit all mandibles.

Early loading:

An implant supported restoration that is in occlusion between 2 weeks and 3 months after implant placement is referred to as an early loaded implant. The fundamental goal of early loading is to help improve bone formation in order to support occlusal loading at two months[5].

Delayed loading:

It refers to implant prosthesis with an occlusal load after more than 3 months of implant placement. This loading approach either uses a two-stage surgical procedure that covers the implants with soft tissue or a one-stage approach that exposes a portion of the implant at the initial surgery.

The rationale behind this approach is that premature loading of implants would lead to implant micro movement, caused by functional force around the bone-implant interface during wound healing and may induce fibrous tissue formation rather than bone contact, leading to clinical failure. In addition, prevention of infection and epithelial down growth can also be prevented by coverage of the implant. Initial exposure or biomechanical stimuli often induce a fibrous connective tissue interface between implants and bone. Hence the submerged implants were preferable for initial rigid fixation[4].

Progressive loading:

In 1980, the concept of progressive or gradual bone loading was proposed by Branemark during prosthetic reconstruction to decrease crestal bone loss and early implant failure of endosteal implants[6]. Bone density and bone-implant interface were found to be the key factors affecting progressive loading of implants.

A review of the literature of in vivo and in vitro studies[7,8] has shown that a significant metabolic change in the bone cell population is caused by dynamic or cyclic loading. The greater the rate of change of applied strain on bone, more is the bone formation. The effect of applied strain on bone is dictated not only by the rate of the applied load but also by the magnitude and duration. Lower-magnitude loads applied for many cycles can cause the same anabolic effects of larger loads applied for a limited number of cycles. Therefore, a range of clinical conditions may equate to an increase in bone density.

The bone strength is directly related to density, with Division D1 bone being 10 times stronger than D4 bone to stresses that cause micro-fracture[9]. Therefore, increasing bone density around an implant increases the strength of bone, which in turn help to avoid crestal bone loss and implant failure.

Considering different types of implants:
Mini implants:

Mini implants may be placed in sites where there is osseous atrophy or site-length attenuation. Immediate loading of mini-implants may not be appropriate for fixed prosthesis. These prostheses apply much greater off-axial forces, which may induce micro-movement and result in the implant failure. Bone should be Misch type I or II, and an implant protective occlusal scheme should be used whenever mini-implants are the treatment option.[10,11]

A minimum of 6 implants maybe needed to retain a maxillary removable complete denture, 10 to 12 implants may be needed to support splinted fixed complete maxillary prostheses[11]. Occlusal and masticatory forces are distributed over these multiple splinted implants, thus reducing the relative load on a single implant by increasing the surface area loaded against the supporting bone. Two mini-implants can be used for certain mandibular tooth-bound molar sites to accept a splinted crown restoration[12]. Generally, mini-implants are indicated at sites where a standard diameter implant may not fit with adequate tooth-to-implant spacing. Hence two mini-implants can resist axial forces. However, rounded and narrow prosthetic teeth may be required to present a small occlusal table to minimize off-axial forces.[10,11]

Pterygo-maxillary implants:

The use of pterygoid implants was described by Tulasne[13]. Restoration of posterior atrophied maxilla with implant is a complex entity in itself[12]. Since implant placement in this area is often accompanied by sinus lift which itself is a morbid procedure with questionable success rate, this new approach of placement of implants in Pterygo-maxillary area was explored. Literature describes two anatomic locations where implants can be placed: the Pterygoid process and the Pterygo-maxillary region[13]. Bahat et al considered it necessary to have the patient's mouth open to a minimum of about 35 mm to achieve desirable implant angulation[14].These pterygoid implants often offer immediate loading solutions as the bone present in that region is predominantly cortical (Type I-Type II). Therefore, it is observed that, given the excellent results achieved with pterygo-maxillary implants, this procedure has gradually established itself as not only a reliable treatment option but also one that offers good long-term results[15].

Zygomatic implants:

Rehabilitation of the maxillary anterior region has been far easier than rehabilitation of maxillary posterior region due to various reasons. According to Lekholm and Zarb classification system, the posterior maxillary region is characterized by factors such as: inadequate residual bone height due to maxillary sinus expansion and/or alveolar bone resorption and poor bone density (Type III or IV) [15-18]. Considering these anatomic challenges, few techniques have been put forth such as sinus lift procedures, guided bone regeneration, grafting with autogenous and allogenous grafts and later tilted implants (All-on-4) and zygomatic implants were introduced[19]. However, these procedures have complications such as sinus membrane perforation, graft displacement into sinus cavities, rejection of graft and screw loosening of tilted implants. To prevent these problems, posterior most area of maxillary tuberosity that is distal to maxillary sinus can be utilized for implant placement.

It was proposed by Tulsane in 1992 that implants placed in compact bone of the pterygomaxillary region shows osteointegration and provide retention and stability[20]. Tulasne (1989) credited Paul Tessier for proposing the idea of placing implants in the pterygoid region.

DISCUSSION:

Marginal bone resorption around dental implants can hamper the stability of peri-implant tissue which may lead to peri-implantitis or unesthetic implant restorations.

Certain studies have also evaluated the effect of loading on the success of dental implants. Henry and Rosenberg[21] used Branemark implants with bicortical anchorage and concluded that after a period of 6-7 weeks before loading the implants, success rate of 100% was obtained whereas Salama et al[22] found no difference in success rate between the randomly applied immediate and delayed loading. Scortecci[23] also studied immediate loading of implants with bicortical anchorage. They demonstrated that bicortical anchorage and the placement of a rigid prosthesis allows the immediate loading of implants, with a predictable outcome.

Horiuchi et al.[24] studied the immediate loading of Branemark implants and suggested delayed loading for the placement of overdentures, both in the maxilla and mandible. Jo et al.[25] concluded that primary stability of the implants at the time of the loading is the main factor influencing the success of immediate loading. Vercruyssen and Quirynen in their long-term study concluded that some factors such as smoking, guided bone regeneration, the presence of dehiscence and bone quantity had a significant impact on the marginal bone loss around the dental implants[26].

Due to increase demands of shortening treatment time and reducing patient discomfort, immediate loading of dental implants has emerged. Regular maintenance also played a key role to ensure long-term success of immediately loaded implants. In addition, factors relating to surgery, host factors, implant and occlusion-related factors are also of utmost importance and should be analysed prior to initiation of treatment.

CONCLUSION:

Different loading protocols have been applied in different clinical situations over the past few decades. Immediate loading has achieved success when compared to other loading protocols, but primary implant stability is a key factor to be considered before attempting immediate implant loading along with other factors like patient's medical and psychological condition. Thorough diagnosis, treatment planning, analysis of bone quantity and quality as well as careful selection of implant size and form and application of loading concept are necessary factors for the long-term success of Osseo integrated supported prosthesis.

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EPULIS FISSURATUM ASSOCIATED WITH LONG-TERM DENTURE IRRITATION: A CASE REPORT AND TREATMENT APPROACH

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ABSTRACT

A 65-year-old male presented with an overgrowth in the upper front teeth region persisting for six months. Clinical examination revealed edentulism in the maxillary jaw and a 3 x1.5 cm elliptical overgrowth in the right maxillary vestibule extending from the canine to the second premolar region. The lesion was coral pink with mild tenderness. A provisional diagnosis of denture epulis was made, and the lesion was excised and sent for histopathological examination. Histopathology revealed stratified squamous para keratinized epithelium with hyperplasia, hyperkeratosis, and elongated rete ridges. The connective tissue stroma exhibited dense interlacing collagen fibers, blood-filled capillaries, chronic inflammatory cells, and extravasated RBCs, with kerato-mucous dystrophy noted. This case report discusses epulis fissuratum associated with long-term denture irritation, detailing the clinical presentation, diagnostic considerations, histopathological considerations, treatment approach, and outcomes. The report underscores the importance of proper denture fit and regular oral examinations in preventing such lesions and maintaining oral health.

Keywords: Epulis fissuratum, Hyperplasia, Kerato-mucous dystrophy, Edentulism, Maxillary overgrowth.

INTRODUCTION

Epulis fissuratum, or denture-induced fibrous hyperplasia, is a benign reactive overgrowth of fibrous tissue caused by chronic irritation from an ill-fitting denture. It manifests as hyperplastic mucosal folds, typically in the mucobuccal fold, leading to discomfort and difficulty in mastication. The condition arises from continuous mechanical pressure, resulting in mucosal ulceration and fibrous proliferation. Though benign, prolonged trauma may increase carcinoma risk. Treatment involves surgical excision using scalpel, electrosurgery, cryosurgery, or laser therapy, followed by prosthetic correction to prevent recurrence. Ensuring a properly fitting denture post-surgery is essential for healing and minimizing the risk of recurrence.[1]

Case description

A 65-year-old man presented at our tertiary care hospital with the chief complaint of an abnormal growth along the anterior border of his ill-fitting maxillary partial denture, which gradually grew in size over the past 6 months. The denture was fabricated almost 2 years ago. The patient had been suffering from pain and discomfort during mastication for the past 3 months and had not removed the denture for 6 months. An intraoral examination revealed a fibrous mass, had a firm consistency and a smooth texture, measuring about 3cm × 1.5 cm (Image 1). No relevant medical history was noted, and he was not under any medications.

Image1: shows overgrowth in the upper right front teeth region

Differential diagnosis included irritation fibroma, leaflike denture fibroma, benign mesenchymal tumors, and minor salivary gland tumors. Based on the patient's history and intraoral and extraoral clinical examination, a provisional diagnosis of a Denture-induced hyperplasia was made.

The treatment plan consisted of both medical and surgical approaches and after through explanation of the same, written consent form was taken. A surgical procedure followed by isolation of the lesion and anesthesia of the area by bilateral anterior block was performed. Using a no. 15 scalpel blade, the lesion was excised from its base, followed by suturing of the open edges and excessive bleeding was controlled by electrocautery. Postoperative instructions were given and the specimen collected were sent for histopathological examination.

Histopathological analysis demonstrated stratified squamous parakeratinized epithelium with hyperplasia, hyperkeratosis, and elongated rete ridges. In certain areas, the epithelium was thinned due to the proliferation of underlying collagen fibers. The stroma exhibited dense interlacing bundles of collagen fibers interspersed with numerous blood-filled capillaries, chronic inflammatory cells, and extravasated RBCs. Kerato-mucous dystrophy was also noted. These findings confirmed the diagnosis of epulis fissuratum. (Image2)

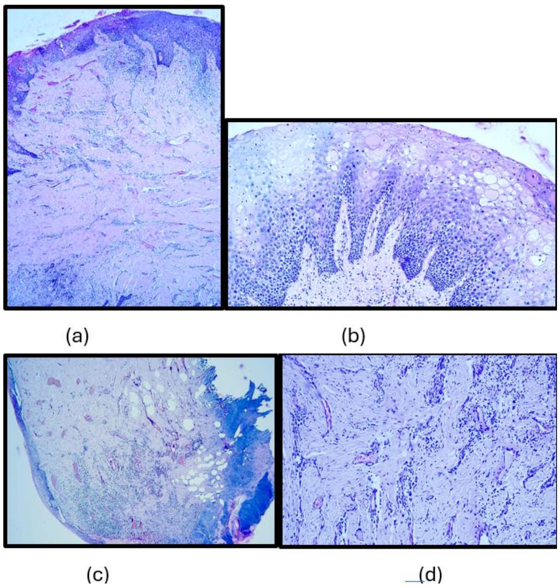

Image 2: A photomicrograph of an H&E-stained section at 4x magnification shows epithelium and connective tissue. At 10x, kerato-mucous dystrophy with thin rete ridges is visible. The epithelium thins due to excessive connective tissue proliferation, featuring collagen fibers, capillaries, and adipocytes. Dense collagen bundles with chronic inflammation are also observed.

DISCUSSION

The case report presents a classic example of epulis fissuratum, a benign oral lesion caused by chronic mechanical irritation from an ill-fitting denture. The condition develops due to continuous low-grade trauma exerted by denture flanges on the oral mucosa, leading to tissue hyperplasia. (2) The present case exemplifies the clinical progression and management of epulis fissuratum, emphasizing the need for both surgical and prosthetic intervention to ensure complete resolution and prevent recurrence.

Clinically, epulis fissuratum manifests as one or more redundant folds of hyperplastic tissue, usually in the vestibular region. (3) It often presents bilaterally, with a firm, smooth, pink or reddish appearance. In some cases, ulceration may occur due to persistent trauma (3). In this case, the lesion developed along the anterior border of the patient's maxillary partial denture, progressively enlarging over six months, leading to pain and discomfort during mastication. Failure to remove the denture for an extended period further exacerbated the lesion's growth, reinforcing the role of chronic mechanical irritation in its pathogenesis. (4)

Histopathological examination is essential for confirming the diagnosis and ruling out neoplastic changes. (5) Typical findings in epulis fissuratum include epithelial hyperplasia, hyperkeratosis, and stromal proliferation. (6) In this case, the presence of kerato-mucous dystrophy, an uncommon feature, indicated chronic mucosal irritation. This underscores the importance of histopathological evaluation in assessing the extent of tissue changes and ensuring accurate diagnosis.

The standard treatment approach for epulis fissuratum involves surgical excision of the lesion, followed by addressing the underlying causative factor. (7) In this case, the lesion was excised using a scalpel, with electrocautery employed for hemostasis. Postoperative care included antibiotics, analgesics, and wound care instructions to facilitate healing and prevent secondary infection.

Beyond surgical management, prosthetic correction is critical in preventing recurrence. The use of an ill-fitting denture is the primary etiological factor in epulis fissuratum, necessitating either denture relining or replacement to eliminate ongoing mucosal trauma. (8) Proper denture adaptation and regular follow-up visits help ensure continued comfort and function, reducing the risk of lesion recurrence.

This case highlights several important clinical considerations. Routine oral examinations are crucial, particularly for elderly patients with dentures, to detect poorly fitting prostheses early and prevent complications. Additionally, patient education on appropriate denture maintenance, including regular cleaning, removal, and professional adjustments, is vital in mitigating denture-related oral lesions. Finally, while epulis fissuratum is a benign condition, histopathological confirmation remains an essential step to exclude dysplastic or malignant transformation, particularly in chronic cases with prolonged irritation.

CONCLUSION

The case report effectively demonstrates the clinical presentation, diagnosis, and management of epulis fissuratum. Surgical excision, combined with appropriate prosthetic correction, ensures effective treatment and reduces the risk of recurrence. The case underscores the importance of regular oral examinations, patient education, and proper denture maintenance in preventing such lesions.

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FROM VIRTUAL PLANNING TO CLINICAL REALITY: A CASE REPORT OF GUIDED IMPLANT SURGERY

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ABSTRACT

This case report describes the successful implementation of a fully guided surgical approach for dental implant placement in the mandibular right posterior region of a 38-year-old male patient with a missing second molar (37). Following comprehensive preoperative planning utilizing cone-beam computed tomography (CBCT) and computer-aided design/computer-aided manufacturing (CAD/CAM) technology, a surgical guide was fabricated to ensure precise implant positioning.

The surgical procedure involved a flapless approach with the placement of a 4.0 mm × 10 mm titanium implant using the fully guided protocol. The guide allowed for sequential osteotomy preparation and implant placement with controlled depth, angulation, and positioning relative to critical anatomical structures such as the inferior alveolar nerve. Post-operative CBCT evaluation proved optimal implant placement with a 2.1 mm safety margin from the mandibular canal and ideal positioning for future prosthetic rehabilitation. After 8-week osseointegration period, the implant demonstrated successful integration with good primary stability (35 Ncm insertion torque) and was restored with a screw-retained porcelain-fused-to-metal crown.

This case highlights the benefits of fully guided implant surgery in the posterior mandible, including enhanced precision, reduced surgical time, minimal postoperative discomfort, and predictable prosthetic outcomes. The digital workflow facilitated accurate implant placement in an anatomically challenging region while minimizing risk to vital structures.

Keywords: dental implant, fully guided surgery, mandibular posterior, computer-guided implantology, digital workflow, flapless technique

INTRODUCTION

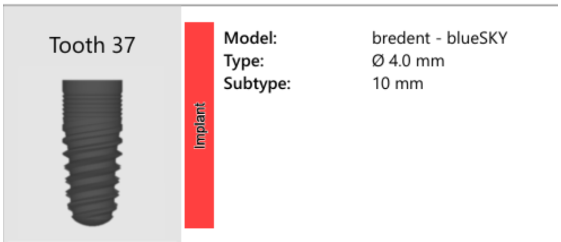
Dental implantology has undergone a remarkable evolution, transitioning from conventional methods to sophisticated guided implant surgery approaches. Practitioners commonly face significant challenges in treatment planning for dental implant therapy, regardless of whether they employ traditional techniques or guided surgical protocols[1,2].

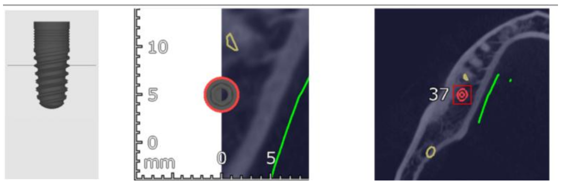
Guided implant surgery offers a streamlined and highly predictable alternative to conventional methods. Central to this approach is the surgical guide , a customized medical device created through three-dimensional printing based on Cone Beam Computed Tomography (CBCT) imaging[3]. These patient-specific guides enable clinicians to place implants with optimal precision, directing both surgical instruments and implants according to predetermined positions with remarkable accuracy[1,4].

Advancements in dental procedures have significantly improved predictability, accuracy, and patient comfort in clinical treatments. The advent of osseointegration has introduced numerous surgical options with high long-term success rates, with preoperative planning being essential for successful rehabilitation. Dental surgeons now utilize computed tomography (CT) for detailed visualization of facial anatomic structures, and specialized software can convert these images into physical prototypes and surgical guides for precise implant placement[5,6]. For partially edentulous patients, metal-free removable dentures can be included in scans to align tooth positions with bone morphology. Virtual planning results in faster, more predictable, and less traumatic surgeries while simplifying prosthetic restorations. The surgical guide transfers the virtually planned positions to the oral cavity through metal cylinders that indicate drilling locations and guide implant alignment, enhancing safety and predictability while reducing complications, morbidity, and discomfort. This approach enables evaluation of discrepancies between virtual plans and actual clinical outcomes after titanium implant placement[7].

Case Report

A 38-year-old male presented with a complaint of missing teeth and sought oral rehabilitation at our department of oral implantology. After comprehensive examination including clinical assessment, supplementary tests, CT scan analysis, and evaluation of intermaxillary relationships, guided surgery was planned. The methodology involved intraoral scanning of the patient's upper and lower arches followed by CBCT scanning to procure data in STL format. These two sets of images were superimposed digitally on a planning software. After a thorough evaluation of the positioning of the nerve, inter-implant distance evaluation, and available width and height of bone, appropriate implants were planned. Once the positions of the planned implants had been defined in the virtual model, a teeth-supported surgical guide was designed for 3D printing, using the same software. The remaining natural teeth were used to support the guide, eliminating the need for stabilization screws. After merging the intraoral scan with the CBCT image on planning software (Exocad), the files were sent to a 3D printer (Asiga ultra max , Australian diamond company). The guide was printed in 3D printing resin, and metal sleeves were fitted into the slot to allow for digital drilling protocol (Bredent sky pro guide). The fabricated guide was then autoclaved at 121 degrees Celsius.





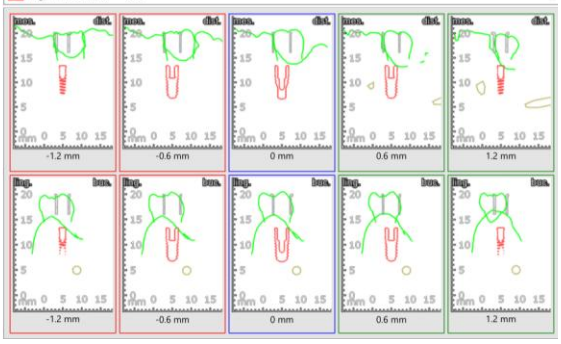
Implants **Lower jaw:** Only one implant set!

Minimum safety distance between implants and anat. structures (e.g. mandibular canals):	1.5 mm
Minimum safety distance between two implants:	3 mm
Minimum safety distance between two anchor pins:	3 mm
Minimum safety distance between anchor pins and implants:	3 mm
Minimum safety distance between anchor pins and anat. structures (e.g. mandibular canals):	1.5 mm
Result of alignment (Acceptable/Not Acceptable):	Acceptable
CT alignment object for lower jaw was modified during planning:	No
CT alignment object for lower jaw was modified after alignment step:	No
Left mandibular canal was skipped by the user:	No

X-ray panoramic radiograph image with all set implants and sleeves.

Implant

Model:	bredent - blueSKY
Type/Subtype:	Ø 4.0 mm/10 mm
Diameter Body:	4 mm
Diameter Platform:	4 mm
Implant Length:	10 mm
Manufacturer:	bredent medical GmbH & Co.KG
Part/No.:	blueSKY, Ø 4.0 mm, RP, 10 mm/bSKY4010
Web address:	http://www.bredent.com/
General information:	N/A
Legal information:	N/A

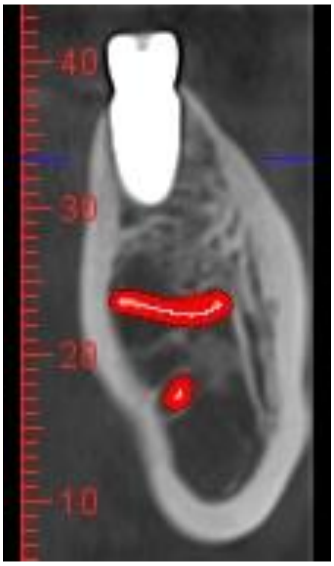


DISCUSSION

Digital planning and guided implant surgery have revolutionized modern implantology, as demonstrated in this case utilizing the Bredent Sky pro guide (bredent medical) implant system. The treatment protocol began with comprehensive diagnostic imaging using cone-beam computed tomography (CBCT)[4], which provided detailed three-dimensional visualization of the patient's bone architecture, density, and proximity to vital anatomical structures. The digital workflow continued with virtual implant planning software, where the prosthetically-driven approach determined optimal implant positioning, angulation, and depth based on both functional requirements. The stereolithographic surgical guide was fabricated with high precision tolerances to ensure accurate transfer of the virtual plan to the clinical scenario[8,9].

Following local anaesthesia administration, the tooth-supported surgical guide was verified for stability and to prevent micro-movements during osteotomy preparation. The Bredent kit's sequential drilling protocol with dedicated sleeve inserts maintained precise control over both the drilling axis and depth, with each drill's length calibrated to account for the guide's height, sleeve dimensions, and planned implant depth. The flapless approach was made possible by the high predictability of the guided system, preserving periosteal blood supply and maintaining soft tissue architecture. The Bredent Sky pro guide implant(4.0/10mm) was then placed through the guide at precisely 35 Ncm insertion torque, achieving primary stability ideal for the planned loading protocol.

Postoperatively, the patient reported minimal discomfort with minimal inflammation and no need for analgesics beyond the first day. The precision achieved through guided surgery significantly enhanced both functional outcomes and minimal invasive surgery, with postoperative radiographic evaluation confirming the implant's placement in exact accordance with the preoperative plan. The digital workflow reduced chair time by approximately 40% compared to conventional protocols, benefiting both patient comfort and clinical efficiency. This case illustrates how guided implant surgery with the Bredent Sky pro guide (bredent medical) system effectively addresses challenges of spatial positioning while minimizing surgical trauma and maximizing predictability. The technique's combination of digital precision and biological respect resulted in optimal osseointegration conditions and excellent emergence profile development for the final restoration, underscoring the value of guided approaches in contemporary implant dentistry, particularly in cases requiring exceptional precision or where anatomical limitations present significant challenges[10,].



CONCLUSION

The fully guided implant placement protocol demonstrated in this case report of the mandibular right posterior region illustrates the significant advantages of digital workflow integration in modern implantology. Through meticulous preoperative planning utilizing CBCT imaging, intraoral scanning, and implant planning software, we achieved precise positioning that respects critical anatomical landmarks while optimizing prosthetic outcomes.

The surgical guide fabricated from this digital workflow facilitated a minimally invasive approach with reduced chair time and patient discomfort. The accuracy between the planned virtual position and the actual implant placement validated the reliability of this technique in the posterior mandible, where anatomical considerations such as the inferior alveolar nerve and lingual concavities traditionally present challenges.

Follow-up evaluations demonstrated excellent osseointegration, with optimal soft tissue healing and ideal emergence profile development. The final prosthesis achieved proper occlusal loading and harmonious integration with the existing dentition.

This case demonstrates that fully guided implant surgery represents not merely a technological advancement but a paradigm shift in treatment predictability, precision, and patient experience in the management of posterior mandibular edentulism. The seamless integration of digital and clinical workflows showcased in this report supports the broader implementation of guided implantology as a standard of care for complex implant cases.

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CASE REPORT: ANTERIOR AESTHETIC REHABILITATION WITH CROWN LENGTHENING

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ABSTRACT

Aesthetic rehabilitation of anterior teeth is essential for restoring function, form, and the patient's self-esteem. This case report describes a comprehensive interdisciplinary approach for the management of compromised maxillary anterior teeth in an 18-year-old male patient with a history of facial trauma. The treatment plan incorporated non-surgical root canal therapy, orthodontic extrusion, surgical flap repositioning, post and core build-up, and final restoration using lithium disilicate crowns. Orthodontic extrusion allowed conservative crown lengthening while preserving the biological width, and mucoperiosteal flap surgery corrected gingival overgrowth and improved crown-root ratios. The use of fiber posts and composite resin cores ensured adequate support for the prostheses. Lithium disilicate crowns were chosen for their superior aesthetic and mechanical properties. This interdisciplinary approach led to a successful functional and aesthetic outcome, emphasizing the value of integrating endodontics, periodontics, orthodontics, and prosthodontics in complex anterior restorations.

Keywords: Crown lengthening, Orthodontic extrusion, Aesthetic rehabilitation, Fiber post, Lithium disilicate, Anterior restoration.

INTRODUCTION

Aesthetic rehabilitation of anterior teeth plays a crucial role in restoring both function and appearance. This case report details the interdisciplinary approach used for the management of compromised anterior teeth, involving orthodontic extrusion, surgical flap repositioning, post and core build-up, and final prosthetic restoration. The objective was to achieve optimal crown length, maintain periodontal health, and enhance aesthetics.

Case Presentation

A 18-year-old male patient presented with broken upper front teeth requiring aesthetic and functional rehabilitation. The patient had a history of trauma to the left side of the face in the last 3 months which led to difficulty opening mouth and radiating pain on left side of face.

On clinical examinations there was unesthetic appearance of the maxillary anterior teeth, with insufficient clinical crown height. A comprehensive treatment plan incorporating non-surgical root canal treatment, crown lengthening by orthodontic extrusion and surgical intervention was devised


(A)


(B)


(C)

Fig 1 A) Preoperative radiograph, Pre operative images of B) Buccal view C) Occlusal view

Clinical and Radiographic Examination

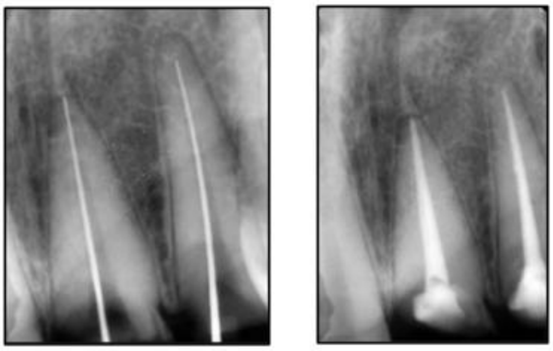
1) **Pre-operative Clinical Findings:**

- The patient exhibited compromised crown length in the maxillary anterior region. (Fig 1 b, c)
- Buccal and occlusal clinical views showed insufficient coronal structure for restoration.
- Gingival architecture appeared uneven, requiring periodontal intervention.
- Radiographic Examination:
  - Pre-operative intraoral periapical radiographs (IOPAR) were taken to assess root length, bone levels, and periapical status. (Fig 1 A)

Treatment Procedure

1. **Root canal treatment:**

- Working length determination (Fig 2 A)
  - Tooth 21: 16 mm
  - Tooth 22: 17 mm
- Root canal preparation:
  - Initial binding file: #15/0.02
  - Master apical cone: #40/0.06
  - Obturation was done using lateral compaction using Adseal .(Fig 2 B)



(A) (B)

Fig 2 A : working length determination B) Obturation done using lateral compaction

2. Orthodontic Extrusion:

- A 0.8 mm stainless steel wire was shaped into a 'J' form and cemented inside the canal using flowable composite to facilitate controlled extrusion. (Fig 3 A-D)
- Gutta-percha was removed 4 mm from the coronal third of the root to accommodate the wire.
- Orthodontic extrusion was initiated using elastic bands. (Fig 3E)
- A follow-up after five months revealed successful extrusion but also gingival overgrowth, necessitating periodontal intervention. (Fig 3F)

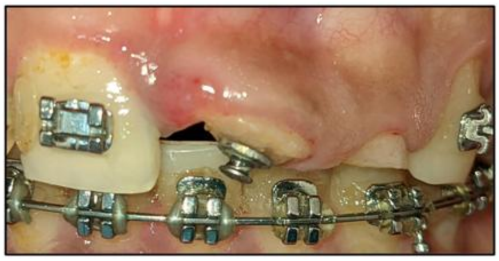
(A)

(B)

(C)

(D)

(E



(F)

Fig 3 A) 0.8mm stainless steel wire in 'J' shape, B) & C) Wire cemented inside canal using flowable composite, D) Radiographic image 0.8mm stainless steel wire in 'J' shape cemented inside canal using flowable composite, E) Orthodontic extrusion using elastic bands, F) Orthodontic extrusion after 5 months follow up gingival overgrowth seen

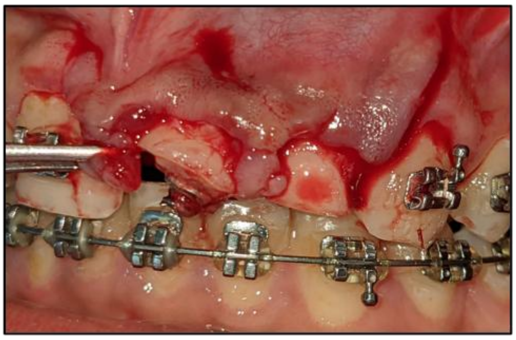
3. Surgical Flap Repositioning:

a) To correct the excessive gingival display and ensure proper crown length, a surgical flap repositioning procedure was performed.

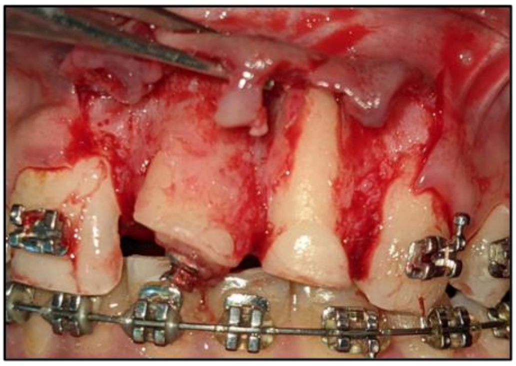
b) Crevicular and vertical incisions were made to raise a mucoperiosteal flap. (Fig 4A,B)

c) The flap was apically repositioned and secured using 4.0 silk sutures. (Fig 4D)

d) Clinical and radiographic evaluations were done to confirm appropriate flap positioning and healing.



A)



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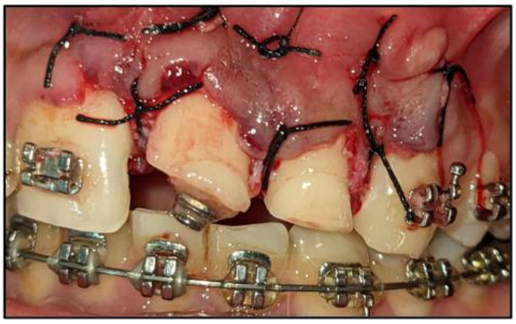

C)

D)

Fig 4; A) Crevicular and vertical incisions raising a mucoperiosteal flap, B) Apically repositioned flap, C) Suture placed

4. Post Space Preparation and Core Build-Up:

a) Following adequate healing, post space preparation was performed using a #3 Peeso reamer.

b) A #2 fiber post was selected and placed to enhance retention and support for the final restoration.

c) Composite resin was used to build up the coronal structure, ensuring adequate support for the final prosthesis. (Fig 5)

Fig 5: Post operative image after placement of Fibre post and core build up using composite

5. Final Restoration:

a) The final prosthetic restoration was planned using lithium disilicate (Emax) crowns for superior aesthetics and durability.

b) The crowns were cemented with resin-based luting cement to ensure optimal retention and marginal adaptation.

c) Post-operative clinical views were documented, showing successful rehabilitation of the anterior teeth. (Fig 6 A-C)

(C)

Fig 6: A) Crown cementation, B) occlusal view of crown cementation, C) Social smile

Follow-Up and Outcome

- **One-month follow-up:** The post-operative images demonstrated satisfactory healing, with well-adapted gingival contours and stable prostheses.
- **Final outcome:**
    - The patient achieved a significant improvement in aesthetic appearance with natural-looking anterior teeth.
    - Functional stability was restored, with no reported discomfort.
    - The treatment successfully met both functional and aesthetic goals.

DISCUSSION

This case highlights the importance of a multidisciplinary approach in managing complex anterior aesthetic rehabilitation cases. Orthodontic extrusion provided a conservative alternative to surgical crown lengthening by gradually repositioning the tooth coronally while maintaining bone support. This technique not only preserved the biological width but also minimized the need for aggressive osseous recontouring.

One of the key challenges encountered in this case was the gingival overgrowth observed after orthodontic extrusion. This necessitated a surgical intervention to reposition the gingival margin and create an optimal crown-to-root ratio. The use of a mucoperiosteal flap with apical repositioning effectively addressed this issue, ensuring a stable and healthy periodontal condition.

Post space preparation and fiber post placement played a crucial role in reinforcing the remaining coronal tooth structure. The selection of a fiber post was advantageous due to its superior mechanical properties, such as lower modulus of elasticity, which helped distribute stress more evenly and reduced the risk of root fracture. Composite core build-up further enhanced the retention and stability of the final prosthesis.

The choice of lithium disilicate (Emax) crowns was made due to their excellent aesthetics, high strength, and superior wear resistance. These crowns closely mimic natural tooth translucency and provide long-term durability, making them an ideal choice for anterior restorations.

The overall success of this treatment can be attributed to careful case selection, meticulous execution of each procedural step, and regular follow-up. The integration of orthodontics, periodontics, and prosthodontics enabled the restoration of both function and aesthetics, ultimately enhancing the patient's confidence and quality of life.

CONCLUSION

This case illustrates the effectiveness of combining orthodontic extrusion with surgical flap repositioning for crown lengthening. This interdisciplinary approach allowed for an optimal balance between periodontal health, structural integrity, and aesthetic enhancement. The use of fiber posts and lithium disilicate crowns contributed to a durable and natural-looking restoration, ultimately improving the patient's smile and overall confidence.

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SINGLE-STAGE CONTOUR AUGMENTATION AND IMPLANT PLACEMENT: A CASE REPORT

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ABSTRACT

Tooth loss in the anterior maxilla poses significant aesthetic and functional challenges, especially when associated with alveolar ridge defects. This case report describes the management of a 34-year-old female patient presenting with an 8-month history of a missing right maxillary central incisor, including a mild horizontal ridge deficiency. A one-stage contour augmentation using guided bone regeneration (GBR) was performed simultaneously with implant placement. The case illustrates the clinical steps, graft materials used, and the successful osseointegration and prosthetic restoration outcome after six months. This approach minimized treatment duration while achieving favourable aesthetic and functional results.

INTRODUCTION

Tooth loss in the anterior maxilla poses significant aesthetic and functional challenges, especially when associated with alveolar ridge defects. Implant placement in the anterior maxilla is challenging due to aesthetic demands and frequent ridge deficiencies. Horizontal ridge augmentation is often required to restore adequate bone volume for optimal implant positioning and soft tissue support. Traditionally, staged procedures were favored; however, one-stage contour augmentation with immediate implant placement has gained popularity for reducing treatment time, patient morbidity, and cost. This approach is indicated in cases with mild-to-moderate horizontal defects and sufficient vertical bone for primary implant stability.[1,2]

CASE PRESENTATION

Patient Profile:

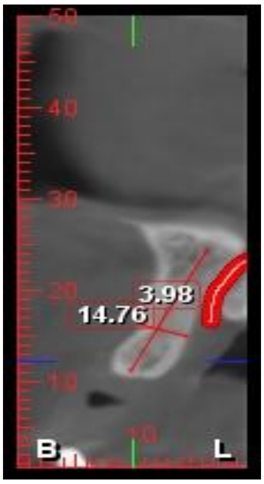
A 34-year-old healthy female presented to the department of oral implantology with a chief complaint of a missing upper right front tooth (tooth #11) for the past 8 months following trauma. The patient expressed concern about aesthetics and desired a fixed solution.

Clinical Examination:

Intraoral examination revealed a missing maxillary right central incisor with moderate horizontal alveolar ridge deficiency (Seibert Class I). The soft tissue profile showed mild contour collapse with adequate keratinized tissue. The adjacent teeth were healthy with no signs of mobility or periodontal disease. Blood investigation was performed which revealed no abnormalities.

Radiographic Evaluation:

Cone Beam Computed Tomography (CBCT) revealed a horizontal defect in the alveolar ridge with sufficient vertical bone height (>12 mm) but inadequate width (<4 mm) for ideal implant placement.

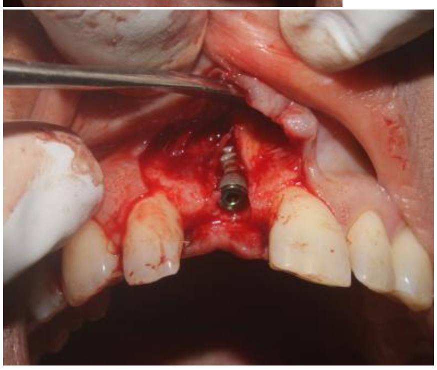


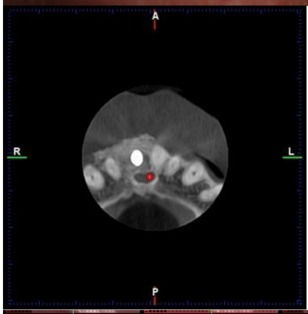
Treatment Plan:

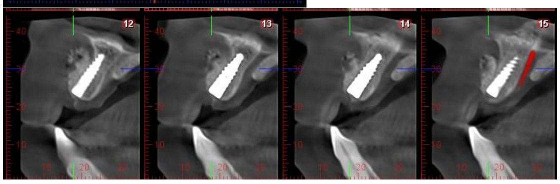
A one-stage procedure involving horizontal ridge augmentation using guided bone regeneration and simultaneous implant placement was planned. The patient was informed of the risks, benefits, and alternatives, and informed consent was obtained.

Surgical Procedure:

Under local anesthesia (Lidocaine Hydrochloride 2% with adrenaline 1:80,000 USP), a full-thickness mucoperiosteal flap was elevated to expose the defect site. A 3.5 mm x 13 mm titanium dental implant (Alpha Bio®) was placed in the ideal prosthetic position, engaging the apical native bone for primary stability (>35 Ncm insertion torque).
Contour augmentation was performed using a mixture of autogenous bone chips harvested from the adjacent site and xenograft (Bio-Oss®). A resorbable collagen membrane (Bio-Gide®) was adapted over the graft to stabilize it and prevent soft tissue ingrowth. The flap was advanced and sutured using PTFE suture material for tension-free primary closure.





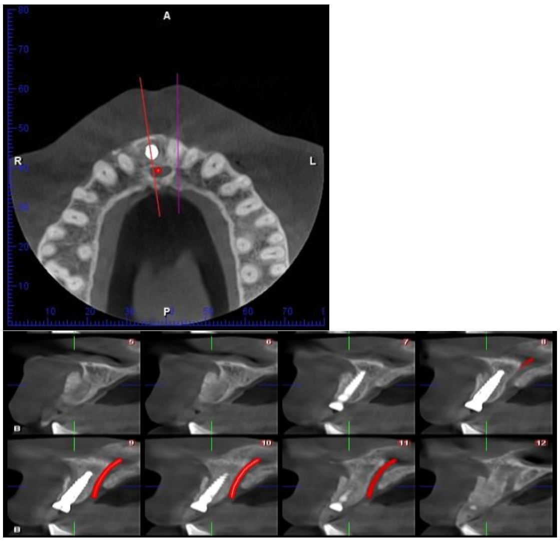


Post-operative Care:

The patient was prescribed antibiotics (amoxicillin 500 mg TID for 5 days), analgesics, and chlorhexidine mouth rinse. She was advised to avoid mechanical pressure on the surgical site.

Follow-up and Healing:

Postoperative healing was uneventful with no signs of infection or graft exposure. At 6 months, CBCT confirmed horizontal ridge augmentation with adequate buccal contour and implant integration.



Prosthetic Phase:

A healing abutment was placed after uncovering the implant. Shade selection was done.Two weeks later, a screw-retained porcelain fused to metal crown was delivered. The emergence profile and gingival aesthetics were satisfactory.

Outcome:

At 12-month follow-up, the implant remained stable with healthy peri-implant soft tissues and excellent patient-reported satisfaction regarding function and aesthetics.

DISCUSSION

Implant placement in the anterior maxilla is challenging due to aesthetic demands and frequent ridge deficiencies. Horizontal ridge augmentation is often required to restore adequate bone volume for optimal implant positioning and soft tissue support.2,3

Traditionally, staged procedures were favored; however, one-stage contour augmentation with immediate implant placement has gained popularity for reducing treatment time, patient morbidity, and cost. This approach is indicated in cases with mild-to-moderate horizontal defects and sufficient vertical bone for primary implant stability.4

This case highlights the predictability of guided bone regeneration using a combination of autogenous and xenograft materials and resorbable membranes in such scenarios. The simultaneous approach requires precise flap management, meticulous graft stabilization, and careful case selection to avoid complications such as graft exposure or implant failure.5 Long-term success is enhanced by proper prosthetic planning, soft tissue management, and patient compliance with oral hygiene.

CONCLUSION

One-stage contour augmentation with simultaneous implant placement is a viable and effective treatment option in selected cases with moderate alveolar ridge deficiencies. It offers a faster route to functional and aesthetic rehabilitation while maintaining high success rates.

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