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Interim Fixed Prosthodontic Management Post-Symphyseal Bone Grafting For Anterior Mandibular Ridge Deficiency –A Case Report

Dr. Pranjal Barman, Dr. Rajesh Kumar, Dr. Sunil Kumar M.V.,
Dr. Manvendra Singh Gahlot
(PG Student, Department Of Prosthodontics, Jaipur Dental College/ MVGU, India)
(Professor & HOD, Department Of Prosthodontics, Jaipur Dental College/ MVGU, India)
(Professor, Department Of Prosthodontics, Jaipur Dental College/ MVGU, India)
(Reader, Department Of Prosthodontics, Jaipur Dental College/ MVGU, India)

Abstract
Background:
Alveolar ridge resorption following tooth loss can result in inadequate bone width, compromising esthetics and implant placement in the anterior region. Ridge augmentation using autogenous bone grafts, particularly from the mandibular symphysis, provides a predictable solution with excellent biocompatibility and regenerative potential.
Case Description:
This case report describes the management of a patient with anterior mandibular ridge deficiency restored using a symphyseal bone graft, followed by interim fixed prosthodontic rehabilitation. The autogenous block graft was harvested from the mandibular symphysis and stabilized at the recipient site to achieve ridge augmentation. During the healing period, an interim fixed prosthesis with lingual wing extensions was fabricated using clear resin. Retentive grooves on the intaglio surface enhanced mechanical retention, and the prosthesis was cemented using resin-modified glass ionomer cement to ensure stability and protect the grafted site.
Results:
Satisfactory ridge augmentation was achieved within six months, providing adequate bone width for future implant placement. The interim fixed prosthesis maintained esthetics, phonetics, and soft-tissue contour, while offering comfort and psychological satisfaction to the patient throughout the healing phase
Conclusion:
Interim fixed prosthodontic management plays a vital role following ridge augmentation procedures. When properly planned, a resin-bonded fixed prosthesis can serve as an effective temporary restoration, preserving esthetics and ridge morphology, and enhancing patient comfort during the osseous healing period.
Keywords: *Symphyseal bone graft, ridge augmentation, resin-bonded fixed partial denture, interim prosthesis, anterior mandible.*

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I. Introduction

Ideal implant placement in the esthetic zone is often compromised by alveolar ridge resorption following tooth extraction. Rapid bone loss during the first few months can lead to inadequate ridge width and height, affecting both function and appearance. Ridge augmentation using autogenous bone grafts remains the gold standard for restoring deficient ridges, offering superior osteogenic potential and biocompatibility. The mandibular symphysis is a preferred donor site due to its accessibility, dense cortical structure, faster revascularization, and low morbidity. Harvesting bone from this site allows predictable correction of ridge contour and volume, creating a suitable foundation for future implant rehabilitation.

During the healing period after augmentation, interim prosthodontic management plays a crucial role in maintaining esthetics, phonetics, and patient comfort. Most patients prefer fixed provisional restorations over removable ones because they offer better stability, function, and psychological satisfaction. Interim fixed prostheses also help preserve soft tissue contours and protect the grafted site from mechanical trauma, which is essential for achieving optimal healing outcomes.

In the present case, one week post-grafting, an interim fixed prosthesis was fabricated using clear self-cure acrylic resin to restore esthetics and function while safeguarding the augmented ridge. Retention was

achieved by creating small grooves on the inner surface of the acrylic prosthesis and cementing it with conventional luting cement, without any acid etching or adhesive bonding**.** This simple and conservative approach provided adequate retention, stability, and tissue protection while allowing easy removal before the definitive implant phase. The case emphasizes the significance of well-planned interim prosthodontic management in enhancing esthetic outcomes, maintaining ridge morphology, and improving patient satisfaction following bone grafting procedures[1,2,3,4].

II. Case Report

A 25-year-old male patient reported with a complaint of a missing lower front tooth on the left side and expressed a desire for its replacement with a fixed prosthesis. The patient's medical history was non-contributory. Dental history revealed that the mandibular left central incisor (31) had been extracted one year earlier following trauma that resulted in extrusion and mobility. On radiographic evaluation, severe resorption of the labial cortical plate was noted. The available bone width in the 31 region measured approximately 1.5 mm, which was highly insufficient for implant placement.

As the patient reported with the intention of receiving an implant-supported prosthesis, ridge augmentation was first planned to correct the deficient ridge. It was decided to augment the site using an autogenous block graft from the symphyseal region, followed by an interim fixed prosthesis during the healing period. Implant placement was deferred until adequate bone volume was achieved. All treatment options were explained, and informed consent was obtained before the procedure.

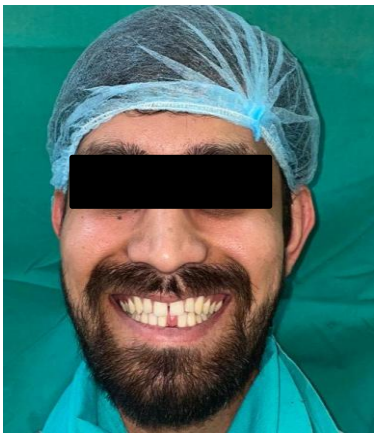
Prior to surgery, the patient was premedicated with Augmentin 625 mg (500 mg amoxicillin with 125 mg clavulanic acid) and Ketorolac DT 10 mg administered one hour before the procedure. A single dose of intravenous dexamethasone sodium phosphate (4 mg/ml) was given to minimize postoperative swelling and discomfort. The surgical site was disinfected with 5% povidone-iodine, and the procedure was performed under local anesthesia using 2% lidocaine with adrenaline (1:80,000) to ensure adequate anesthesia and hemostasis.

Surgical Procedure

The surgical procedure involved augmentation of the labial ridge defect in the region of the missing mandibular left central incisor (31) using an autogenous block graft harvested from the mandibular symphysis. A crevicular incision was made extending from the right to the left canine, with two vertical releasing incisions placed at the distal aspects of the canines to ensure adequate access and flap mobility. A full-thickness mucoperiosteal flap was carefully elevated to expose the labial cortical plate. The defect area was thoroughly inspected and gently curetted to ensure a clean, healthy bone surface prior to graft placement.

Decortication of the recipient site was performed using a round bur to induce bleeding and enhance graft revascularization. The mental nerves were identified and protected throughout the procedure, maintaining at least a 5 mm safety margin anterior to the foramina. In the right symphyseal region, a 1 cm × 0.5 cm cortico-cancellous bone block was outlined using a surgical bur, ensuring the superior cut remained at least 5 mm apical to the incisor root apices. Unicortical osteotomy cuts were made, and the block was carefully separated using an osteotome and retrieved.

The harvested bone block was trimmed and contoured to achieve intimate adaptation with the labial defect at the 31 region and was stabilized using a single titanium 1.5mmX6mm screw for rigid fixation. To further improve the contour and fill minor gaps around the block, a particulate allograft was placed over the grafted site. Hemostasis was achieved, and a collagen sponge was placed at the donor site to support healing. The flap was repositioned and sutured to obtain a tension-free primary closure, ensuring complete coverage of the graft and preventing exposure. Postoperative care included antibiotics and analgesics, along with instructions for cold compress, soft diet, and maintenance of oral hygiene. Healing was uneventful, and satisfactory ridge contour was achieved within few months, providing adequate bone width for future implant placement.



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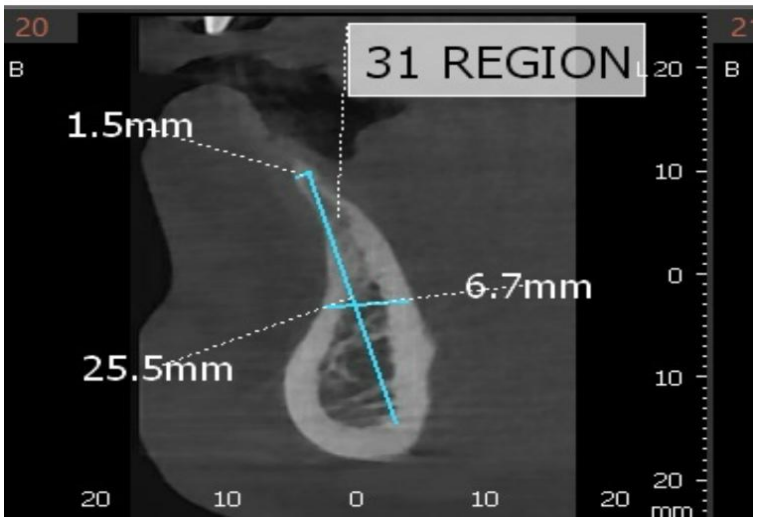

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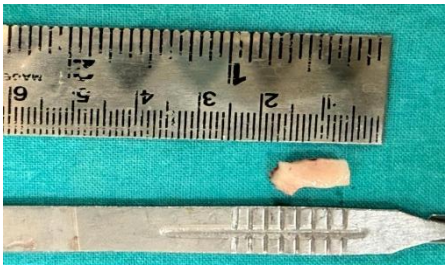
Fig. 1 – (a) Pre-op Front Profile (b) Intraoral Photograph (c) Saggital section of CBCT depicting measurements.

(a)

(b)

(c)



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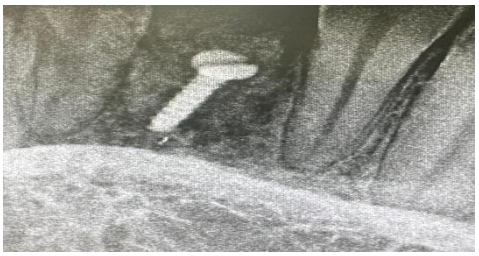

(g)

(h)

Fig. 2 – Surgical Phase. (a) Exposure of donor and recipient site, (b) Clinical measurement of defect, (c) Outline of block graft, (d) Harvested block graft, (e) Fixation of block graft to recipient site with 1.5mmX6.0mm titanium screw, (f) Closure with 4-0 Silk suture by simple interrupted technique, (g) immediate post-grafting RVG, (h) 3-month follow-up.

Prosthetic Phase

Before the surgical procedure, a primary impression of the mandibular and maxillary arch was made to record the preoperative ridge form and assist in fabricating a provisional prosthesis. An interim fixed prosthesis was then designed as a resin-bonded restoration with lingual wing extensions on teeth 32 and 42 to replace the missing mandibular left central incisor (31). The prosthesis was fabricated using clear self-cure acrylic resin to achieve good esthetics and ease of monitoring tissue adaptation. To enhance mechanical retention, grooves were incorporated on the intaglio surface of the acrylic wings, thereby increasing the surface area for cement adhesion. The prosthesis was luted using resin-modified glass ionomer cement (RMGIC), providing adequate retention while allowing for easy retrieval prior to definitive implant placement. The interim prosthesis offered excellent esthetics, phonetics, and comfort, while protecting the grafted site during the healing phase and maintaining the natural contour of the augmented ridge.

(a)

(b)

(c)

(d)

(e)

(f)

Fig. 3 - Prosthetic Phase. (a) Diagnostic impression, (b) Interim prosthesis with lateral wing extension buccal view, (c) Interim prosthesis with lateral wing extension lingual view, (d) Post-cementation occlusal view, (e) Post-cementation buccal view, (f) Facial profile view.

III. Discussion

Implant dentistry has evolved into a predictable and reliable treatment modality, now regarded as a standard of care in prosthodontic rehabilitation[5] . A sufficient alveolar ridge is essential for implant success, as deficiencies can compromise both function and esthetics. Hence, reconstruction of ridge deformities is a prerequisite for long-term stability. Autogenous bone grafts remain the gold standard owing to their osteogenic, osteoinductive, and osteoconductive properties, enabling superior integration with the host bone [6]. Among intraoral donor sites, the mandibular symphysis offers advantages such as proximity to the recipient area, minimal morbidity, and adequate bone volume for augmentation procedures. Unlike allografts or xenografts, autogenous grafts contain viable osteogenic cells and natural bone-forming proteins, contributing to predictable regeneration [7]. Although extraoral donor sites like the iliac crest or calvarium provide larger graft quantities, they involve greater surgical complexity, prolonged healing, and increased donor-site morbidity [8]. In contrast, intraoral membranous grafts—especially from the symphysis and ramus—demonstrate faster revascularization and reduced resorption compared to endochondral bone grafts [9]. However, minor complications such as transient sensory disturbances or changes in chin contour may occasionally occur [10].

Clinical evidence supports the effectiveness of mandibular symphyseal grafts in alveolar reconstruction. Balaji et al. achieved an 81.2 % success rate with symphyseal grafts for anterior maxillary augmentation, highlighting their advantages of ease, low morbidity, and minimal resorption [11]. Similarly, Keller et al. reported a 96 % success rate for autogenous onlay block grafts and a 91 % implant survival rate in maxillary rehabilitations, reinforcing the reliability of this technique for localized ridge augmentation [12].

The partially edentulous case was successfully restored using a resin-bonded fixed partial denture (RBFPD) with wing extensions. This approach was selected for its conservative nature, minimal tooth preparation, and short treatment duration, making it suitable for patients requiring immediate esthetic correction [13].Previous reports have shown that resin-bonded fixed partial dentures, when properly designed and bonded, provide predictable and esthetic outcomes for anterior restorations[14].

Beyond definitive cases, resin-bonded prostheses also serve effectively as interim restorations. Their conservative preparation, reversibility, low cost, and short fabrication time make them suitable for temporary esthetic and functional rehabilitation during healing, post-extraction, or pre-implant phases. They maintain occlusal stability, phonetics, and space preservation, allowing easy modification or conversion into definitive restorations when required [15,16].

IV. Conclusion

Reconstruction of ridge deficiencies using autogenous symphyseal bone grafts remains a highly predictable approach for implant site development. The close proximity of the donor and recipient sites, minimal morbidity, and superior bone quality make this technique reliable for anterior mandibular augmentation. Interim fixed prosthetic management following grafting provides additional functional and esthetic support during healing. When designed with adequate retention and proper occlusal control, a resin-bonded fixed prosthesis

effectively maintains ridge contour, protects the grafted site, and enhances patient satisfaction until definitive implant rehabilitation can be performed.

References

[1]. Jaiswal P, Banerjee R, Pande N. Reconstructive Surgery With Autogenous Chin Block Graft For Esthetic Rehabilitation Of Deficient Anterior Maxillary Region. Indian J Otolaryngol Head Neck Surg. 2024 Apr;76(2):1988-1993. Doi: 10.1007/S12070-023-04332-W. Epub 2023 Dec 18. PMID: 38566668; PMCID: PMC10982233.

[2]. Koyel Bhowal[1], Ghosh S[2], Ghosh S[3]. Ridge Augmentation Using Mandibular Symphysis Bone Graft For The Placement Of Dental Implant: A Case Report. WJPMR. 2020;6(2):97-102. ISSN 2455-3301.

[3]. Shrishti S, Kumari R, Aggarwal N, Jacob J. Resin Bonded Fixed Partial Denture As An Interim Restoration. Journal Of Advanced Medical And Dental Sciences Research. 2023 May 1;11(5):25-8.

[4]. Raghad SJ[1], Yahya EM[2]. Interim Restorations In Fixed Prosthodontics: A Literature Review. Al-Rafidain Dent J. 2022;22(1):203-219.

[5]. The Mcgill Consensus Statement On Overdentures. Quintessence Int. 2003;34:78–79.

[6]. Ersanli S, Arısan V, Bedeloğlu E. Evaluation Of The Autogenous Bone Block Transfer For Dental Implant Placement: Symphysal Or Ramus Harvesting? BMC Oral Health. 2016;16:4.

[7]. Friedlander G. Current Concepts Review: Bone Grafts—The Basic Science Rationale For Clinical Applications. J Bone Joint Surg. 1987;69:786–790.

[8]. Donovan MG, Dickerson NC, Hanson U, Gustafson RB. Maxillary And Mandibular Reconstruction Using Calvarial Bone Grafts And Brånemark Implants: A Preliminary Report. J Oral Maxillofac Surg. 1994;52:588–594.

[9]. Smith JD, Abramson M. Membranous Vs. Endochondral Bone Autografts. Arch Otolaryngol. 1974;99(3):203–205.

[10]. Hunt DR, Jovanovic SA. Autogenous Bone Harvesting. Int J Periodontics Restorative Dent. 1999;19:165–173.

[11]. Balaji SM. Management Of Deficient Anterior Maxillary Alveolus With Mandibular Parasymphyseal Bone Graft For Implants. Implant Dent. 2002;11(4):363–369.

[12]. Keller E, Tolman DE, Eckert S. Surgical-Prosthodontic Reconstruction Of Advanced Maxillary Bone Compromise With Autogenous Onlay Block Bone Grafts And Osseointegrated Endosseous Implants: A 12-Year Study Of 32 Consecutive Patients. Int J Oral Maxillofac Implants. 1999;14(2):197–209.

[13]. Muneera RAG, Mattoo KA, Youseef AM. A Novel Approach To Determine The Aesthetic Inclination Of Cast Post Core – Case Report. Annals Of International Medical And Dental Research 2017; 3(6): DE14-DE17

[14]. Mangal K, Dhamande MM, Sathe S, Mandhane RR, Patel RM, Goyal P. Resin Bonded Fixed Partial Denture As Treatment Option For Midline Spacing In Mandibular Anteriors: A Case Report. Medical Science. 2020;24(105):2963-7.

[15]. Eshleman JR, Janus CE, Jones CR. Tooth Preparation Designs For Resin-Bonded Fixed Partial Dentures Related To Enamel Thickness. The Journal Of Prosthetic Dentistry. 1988 Jul 1;60(1): 18-22.

[16]. Mattoo K, Brar A, Jain S. Utilizing Resin Cement To Conserve Natural Tooth Structure In Partial Veneer Retainers. Medico Research Chronicles 2014;1(2): 110 114