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Andrew's Bridge: A Conservative Fixed–Removable Prosthetic Solution for Anterior Ridge Defects – A Case Series

[1]Dr. Ritisri Chakraborty, [1]Dr. Bhairab Samai, [2](Prof) Dr. Samiran Das ,
[3](Prof) Dr. Soumitra Ghosh , [4]Prof Dr. Preeti Goel , [5]Dr. Sourav Maji,
[1,2,3,4,5]BDS,MDS,
[1]WBUHS, [2]AIIMS, [3]CU, [4]RGUHS
[5]Utkal University
[1,2,3,4]Department of Prosthodontics and Crown & Bridge
[1,2,3,4]Guru Nanak Institute of Dental Sciences & Research

***Corresponding Author:**
Dr. Ritisri Chakraborty
BDS,MDS, WBUHS
Guru Nanak Institute of Dental Sciences & Research

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Abstract

Background

Alveolar ridge abnormalities that result in association with lost anterior teeth continue to present a restorative challenge. While removable prostheses may jeopardize patient comfort and appearance, conventional fixed partial dentures frequently fail to replace lost soft tissue contour. The benefits of both fixed and removable prostheses are combined in Andrew's bridge to provide better function, hygiene, and appearance.

Case Presentation

This case series presents three patients with anterior maxillary ridge defects rehabilitated using Andrew's bridge. The patients included one young adult with traumatic tooth loss and two middle-aged adults presenting with multiple missing maxillary anterior teeth. Following clinical and radiographic evaluation, fixed retainers were fabricated on suitable abutment teeth and connected using a bar attachment. A removable pontic segment replacing the missing teeth and supporting soft tissue was fabricated to engage the bar. Clinical photographs documented all treatment stages from tooth preparation to prosthesis delivery.

Results

All patients demonstrated satisfactory esthetic rehabilitation, improved phonetics, acceptable function, and excellent patient acceptance immediately after prosthesis delivery. The removable component facilitated oral hygiene while restoring the lost ridge contour.

Conclusion

Andrew's bridge is a predictable treatment modality for localized anterior ridge defects where conventional fixed prostheses are esthetically inadequate and implant therapy is contraindicated or declined.

Keywords: Andrew's bridge, Fixed-removable prosthesis, Ridge defect, Esthetic rehabilitation, Bar attachment

Introduction

Replacement of missing anterior teeth associated with severe ridge defects represents one of the greatest esthetic challenges in prosthodontics. Loss of alveolar bone following trauma, extraction, or pathology often results in compromised emergence profile, elongated

pontics, and inadequate lip support when conventional fixed partial dentures are employed.

The fixed partial denture-removable partial denture system was introduced by Dr James Andrews of Amite, Louisiana, USA in 1965, when fixed or removable partial dentures were not successful in treating ridge defects.[1] It combines a fixed bridge supported by natural teeth with a removable pontic assembly retained by a precision bar attachment.[2] This design provides excellent esthetics while allowing removal for maintenance of oral hygiene.

The fixed component is made of porcelain fused to metal crowns that are joined together by casted bar cemented on to the prepared abutments. The removable component consists of acrylic teeth on acrylic base to which metal or plastic sleeve tract are embedded.[3] This technique, with some technical variations, possesses the advantages and complexity of fixed removable restorations.

The physiologic advantages are effective oral hygiene and increased stability of the splinted teeth. The location of the bar near the gingival margin and the decreased mobility of the splinted teeth support two principles of physics in increasing the stability of the abutments. The indications for fixed-removable Andrews's bridge system are -1) Several missing teeth along with defect in the edentulous ridge; 2) Patients whose residual ridge has a relationship to the opposing dentition that would prohibit the esthetic placement of the pontics of a fixed partial denture; 3) Patients requiring diastemas to harmonize the natural dentition.[4] Failure of removable partial denture because of discomfort related to its palatal extension; Long edentulous space where fixed partial denture has failed; 4) Cleft palate patients.[5] The aim of the present article is to describe a series of cases, having multiple missing anterior teeth along with ridge defect leading to unfavorable ridge opposing tooth relation, who was restored successfully by using fixed-removable Andrews's bridge system.

The present case series describes the successful rehabilitation of three patients with anterior ridge defects using Andrew's bridge.

Case Series

Case 1

A 25-year-old male reported to the Department of Prosthodontics and Crown & Bridge, with the chief complaint of missing upper front teeth following a road traffic accident five months earlier.

Clinical examination revealed missing maxillary right lateral incisor (12), right central incisor (11), and left central incisor (21). Considering the anterior ridge defect and esthetic requirements, rehabilitation with an Andrew's bridge was planned.

Clinical Procedure

The treatment was carried out in a systematic sequence beginning with a comprehensive diagnostic examination and treatment planning. Suitable abutment teeth were then prepared, followed by making a definitive elastomeric impression. A master cast was fabricated and mounted on an articulator to facilitate accurate laboratory procedures. Subsequently, the metal framework was fabricated and evaluated intraorally during the metal framework try-in to assess its fit and adaptation. This was followed by a bisque trial incorporating the removable pontic assembly to verify esthetics, occlusion, and functional requirements before final processing. After satisfactory evaluation, the definitive prosthesis was inserted, ensuring proper fit, occlusion, and patient comfort. Finally, postoperative evaluation was performed to assess the clinical outcome, provide oral hygiene instructions, and monitor the patient's adaptation to the prosthesis.

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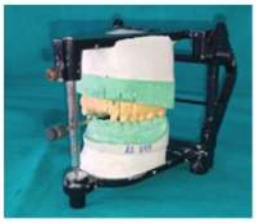




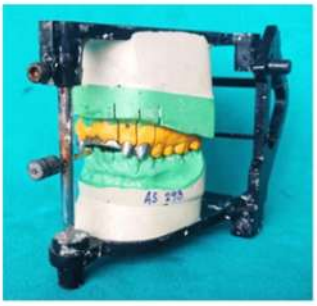
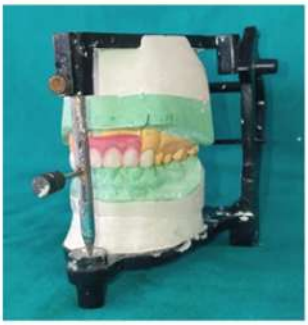
Pre operative intra oral image




Intra oral image after tooth preparation

Final impression and master cast articulation


Metal try in



Bisque trial of bridge with wax trial of RPD




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Case 2

A 42-year-old male was referred from the Department of Oral and Maxillofacial Surgery for prosthetic rehabilitation of missing anterior teeth.

Clinical examination revealed missing teeth 11, 21, and 22. An Andrew's bridge extending from teeth 13 to 23 with retainers on 13, 12, and 23 was planned.

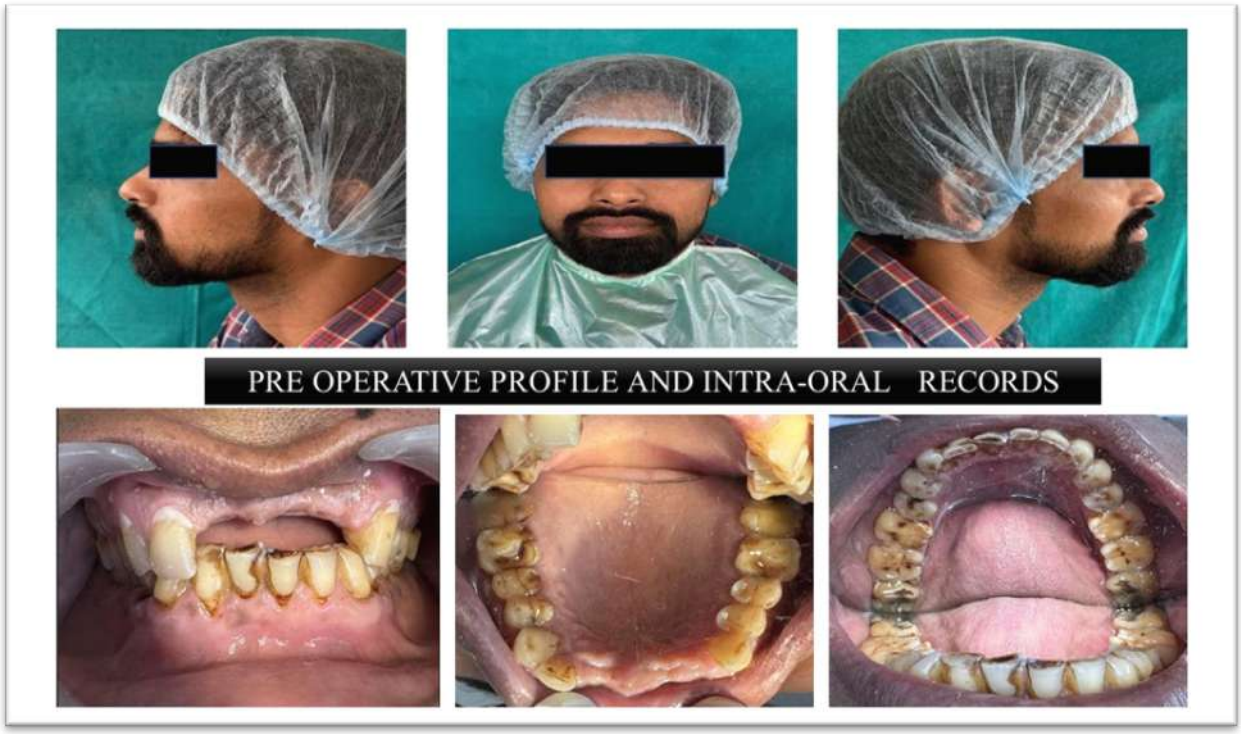
Clinical Procedure

Treatment involved:

The treatment sequence commenced with the recording of preoperative clinical records to facilitate comprehensive diagnosis and treatment planning. Tooth preparation was then performed on the maxillary right lateral incisor (12), canine (13), and left canine (23), which served as the abutments for the prosthesis. Following this, the metal framework was fabricated in the laboratory and subsequently evaluated intraorally during the framework try-in to verify its fit, adaptation, and accuracy.[6] After satisfactory evaluation, the removable pontic segment was fabricated and integrated with the fixed framework. Finally, the completed prosthesis was delivered, ensuring proper fit, esthetics, function, and patient comfort.

The final prosthesis restored the missing teeth and associated soft tissue defect while maintaining favorable esthetics and oral hygiene access.

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Case 3

A 42-year-old male presented with missing maxillary anterior teeth.

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Clinical examination demonstrated absence of teeth 11, 21, and 22. After treatment planning, rehabilitation with Andrew's bridge was selected because of the existing ridge defect.

Clinical Procedure

The treatment sequence consisted of a comprehensive diagnostic evaluation, followed by preoperative profile photography for clinical documentation and treatment planning. Tooth preparation was then carried out on the selected abutments, after which provisional crowns were fabricated to protect the prepared teeth and maintain esthetics and function during the interim period. A metal framework try-in was performed to verify the fit, marginal adaptation, and passive seating of the framework. Subsequently, the removable pontic segment was fabricated and incorporated with the fixed framework. Following verification of esthetics, function, and patient comfort, the definitive prosthesis was inserted and adjusted to achieve optimal occlusion, retention, and overall clinical outcome.

The definitive prosthesis restored esthetics, phonetics, and function with satisfactory patient acceptance.



Pre operative profile photos

Pre oparative intra oral image

Intra oral image after tooth preparation



Radiographic evaluation



Metal try in





Post oparative intra oral image

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Post operative extra oral image

In all three cases, the gingival retraction was performed using gingival retraction cord (Ultrapak) and putty wash impressions (Affinis, Coltene) were made. Provisional crowns were cemented on the prepared abutment teeth. The maxillary and mandibular casts were mounted, and the wax pattern was fabricated in Blue Inlay Wax (Bego, USA) comprising of a rectangular bar connecting copings on both the prepared teeth. A vertical precision bar attachment system (Preci-Horix; Ceka Attachments Preci-cline; Alphadent NV, Waregen, Belgium) consisting of a prefabricated bar (male part) and 2 clip (female part) attachments was utilized. The flexible nylon clips in this system gets locked with the bar to provide retention and stability to the prosthesis. The pattern was casted in Nickel chrome alloy (Wiron 99, Bego, USA). The cast metal framework was tried in patient and checked for any impingement of the basal tissues. The framework was again tried in after application of Porcelain (Ceramco 3, Dentsply, USA). Afterwards, the framework was reseated on the cast and a trial wax up was made for the pontic region. Try in of denture wax up done. A metal sleeve and the attachment was incorporated within the final denture. On the insertion appointment first, the fixed component was tried and verified for occlusion and then removable flange was inserted, adjusted and verified for occlusion. This was followed by cementation of the fixed component by type-1 luting GIC cement. After 30 minutes, the acrylic prosthesis was delivered.

Discussion

Anterior ridge defects present significant restorative challenges because restoration of both missing teeth and lost supporting tissues is essential for optimal esthetics. Conventional fixed partial dentures often produce elongated pontics and unaesthetic black triangles, whereas removable partial dentures may compromise patient comfort.[7]

Andrew's bridge successfully combines the advantages of both fixed and removable prostheses by utilizing a fixed retainer with a detachable pontic segment. This design provides excellent esthetic replacement of missing teeth and the associated soft tissue, resulting in a natural appearance and improved facial support. The prosthesis also enhances phonetics by restoring proper tooth and tissue contours. The removable pontic segment facilitates effective oral hygiene by allowing easy access for cleaning beneath the prosthesis, thereby promoting long-term periodontal health. Stress is distributed more favorably through the fixed retainers, improving the biomechanical performance of the restoration. In addition, Andrew's bridge offers a conservative treatment option by minimizing the need for extensive

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ridge augmentation procedures and serves as a cost-effective alternative to implant-supported prostheses while delivering satisfactory functional and esthetic outcomes.

This type of prosthesis is more retentive and stable with minimal extension. The system avoids transfer of unwanted leverage forces to the abutment teeth by acting as a stress breaker. Preiskel listed few more advantages of this system are: 1)The RPD with reduced bulk (minimal vertical and horizontal extensions); 2) Good retention with little wear [8]; 3) Duplicate removable prostheses can be made quickly because special transfer sleeves are available.

The present cases illustrate successful rehabilitation in patients with traumatic tooth loss and localized anterior ridge defects. Clinical outcomes demonstrated satisfactory esthetics, function, and patient acceptance.

Although implant-supported prostheses are considered the gold standard for the replacement of missing teeth in many clinical situations, Andrew's bridge remains an excellent alternative in selected cases. It is particularly indicated in patients with severe alveolar ridge defects where optimal esthetic and functional rehabilitation is challenging. The prosthesis is especially beneficial when bone augmentation procedures are not feasible because of anatomical limitations, systemic conditions, or patient preference. It also serves as an effective treatment option for patients who decline implant therapy or have financial constraints that preclude implant-supported rehabilitation. Furthermore, the removable pontic segment facilitates easy cleaning and maintenance, making Andrew's bridge an ideal choice for patients in whom long-term oral hygiene is a primary concern.

Conclusion

Andrew's bridge remains a valuable treatment option for managing localized anterior ridge defects. By combining the stability of a fixed prosthesis with the hygiene benefits of a removable pontic assembly, it offers predictable esthetic and functional rehabilitation. The three cases presented demonstrate that Andrew's bridge is a conservative, economical, and patient-friendly solution for complex anterior restorative situations.

Clinical Significance

Andrew's bridge is particularly indicated for the rehabilitation of patients with Seibert Class II and Class III ridge defects, where significant hard- and soft-tissue deficiencies compromise esthetics and function. The prosthesis effectively restores both the missing teeth and the associated alveolar tissues, thereby improving facial appearance, phonetics, and masticatory efficiency. Its removable pontic segment facilitates excellent oral hygiene by allowing easy access for cleaning beneath the prosthesis, contributing to long-term periodontal health. Andrew's bridge provides highly satisfactory esthetic and functional outcomes while serving as a reliable and conservative alternative for patients in whom implant therapy is contraindicated, not feasible, or declined.

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