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Interim Prosthetic Rehabilitation of a Rare Case of Generalized Embedded Dentition: A Case Report

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ABSTRACT
Abstract: *Failure of tooth eruption leading to complete clinical edentulism in young adults is exceedingly rare. When compounded by embedded dentition and altered bone morphology, prosthetic rehabilitation becomes complex due to compromised ridge form, limited retention areas and undercuts. This report describes a young adult in her early twenties presenting with complete absence of erupted teeth, despite radio graphic evidence of full permanent dentition retained within the jaws. Panoramic imaging revealed generalized embedded teeth but no associated bony expansion or discrete intraosseous mass. These findings were consistent with a rare developmental eruption failure with secondary fibro-osseous changes. The patient was unable to secure employment due to loss of dental function and esthetics, sought prosthetic rehabilitation after being denied treatment at higher centers.*
Management and Outcome: *A conventional prosthodontic approach was modified to accommodate the irregular ridge anatomy. Through careful impression techniques and strategic use of anatomical undercuts, satisfactorily denture retention and stability were achieved. The rehabilitation significantly improved the patient's mastication speech, facial esthetics, and psycho-social well-being.*
Conclusion: *This case highlights the prosthodontic challenges and management strategies for restoring function and esthetics in generalized embedded dentition. Accurate diagnosis and individualized prosthetic design and occlusion can yield favorable outcomes even in complex anatomical situations. Furthermore, this case emphasizes that even a conventional interim complete denture, when strategically planned and executed, can significantly improve function, esthetics, and patient well-being.*
Keywords: *Generalized embedded dentition; Eruption failure; Complete edentulism; Juvenile ossifying fibroma; Prosthodontic rehabilitation; Complete denture; Residual ridge anatomy; Denture retention*

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I. INTRODUCTION

Tooth eruption is a highly coordinated developmental event regulated by interactions between molecular signaling pathways, bone remodeling, and eruption processes.[1] Disruption of this network can lead to eruption failure. While localized eruption failure is relatively common, generalized failure involving the permanent dentition in adults is exceptionally rare and presents significant diagnostic and rehabilitation challenges.[2]

Patients with delayed eruption may exhibit normal odontogenetic development, but the teeth remain within the alveolar bone due to dysfunctional eruption pathways.[3] These anomalies may be associated with fibrous dysplasia, altered bone density, periodontal abnormalities, or developmental disturbances.[4] Radiographically, such cases may show intact cortical boundaries without evidence of an expansive lesion, although clinically the patient may appear completely edentulous, leading to aesthetic and functional limitations.[5]

Prosthodontic rehabilitation in such cases is challenging due to irregular submucosal anatomy, reduced bone surface area, and unpredictable undercuts, which compromise denture retention and stability.[6] Management requires careful assessment and modification of conventional techniques.

These patients often experience reduced facial aesthetics, speech difficulties, and social limitations.[7] This report describes the prosthodontic management of a young woman in her early 20s with complete clinical edentulism despite radiographic evidence of fully developed but unerupted permanent dentition, highlighting the

diagnostic complexity and importance of appropriate treatment planning.

II. CASE REPORT

A female patient reported to a private clinic after being denied prosthetic rehabilitation at a reputed government institute due to insufficient anterior bone height, inadequate vestibular depth, and reduced intra-arch space for complete denture fabrication.

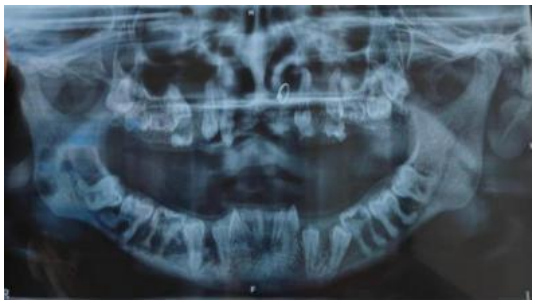

Figure1. OPG showing embedded dentition with incomplete root formation

History

The patient had a 15-year history of recurrent gingival overgrowth in the anterior maxillary region, for which she underwent multiple surgical excisions. Five months prior, she had been operated upon, for an ossifying fibroma involving the anterior maxilla. Past radiographic records and the current OPG revealed multiple unerupted permanent teeth (fig.1) with incomplete root formation and a history of exfoliation of over- retained primary teeth. Due to incomplete root formation, orthodontic extrusion could not be attempted.

A. Extra- oral examination (fig. 2)

The patient exhibited no facial disfigurement and both frontal and side profile views of the patient were within normal limits. The lips were competent. Other mental and physical development of the patient were normal.

Figure 2. A) Front profile B) Side profile

B. Intra-oral examination(fig 3)

The maxillary arch was completely edentulous, with significant loss of anterior ridge height and obliteration of labial vestibule secondary to excision of the fibro-osseous lesion. Posteriorly embedded teeth created palpable protuberances, with cusp tips visible in a few localized areas. The mandibular arch was also fully edentulous, presenting a noticeable anterior bony protuberance from unerupted teeth. A mild mandibular prognathism was noted, with reduced inter-arch space.

A. B.

Figure 3. Intra-oral images of mandible(A) and maxilla(B)

C. Clinical procedure

Primary impressions were made using stock trays and irreversible hydro-colloid, after fabrication of primary casts, custom trays were fabricated after selectively blocking out minor undercuts with wax. Spacer design was modified to utilize the areas which could bear masticatory stress and the areas requiring additional relief. Sectional border molding was done with low fusing compound (fig. 4) with special attention to achieving an anterior maxillary seal. An addition silicone final impression was made and finally the casts were poured using die stone (fig. 5). Surveying of the casts was done (fig. 6). Jaw relations were recorded on record bases and occlusion rims, followed by facebow transfer and mounting on a semi-adjustable articulator. Tooth selection was done using Ivoclar Vivadent teeth, and a class III set up and trial denture arrangement was verified intraorally. The definitive maxillary and mandibular dentures were processed using ProBase material. ProBase is a heat cure acrylic resin base material which is a proper choice due its balance of strength, durability and esthetics. During processing special care was taken to judiciously block out the undercuts so that retention was not hampered with the dentures.

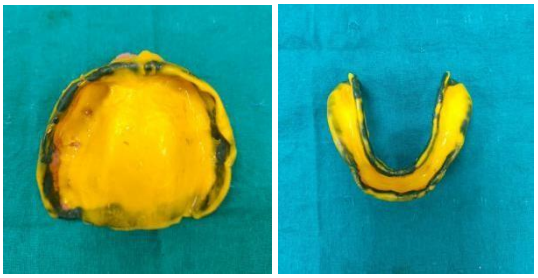

Figure 4. Special tray with border molding & final impression using ZOE

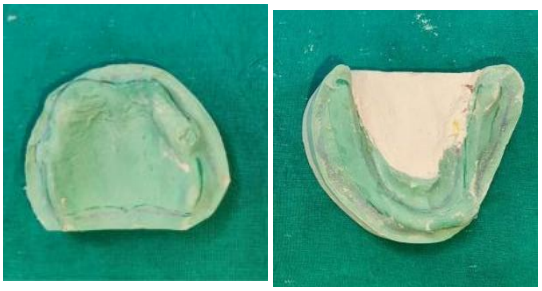

Figure 5. Maxillary and Mandibular master cast showing ridge protuberances and undercuts.

Figure 6. Surveying of maxillary and mandibular casts

Figure 7. Maxillary and Mandibular Jaw record

D. Post insertion findings

At denture delivery, the maxillary denture showed good retention and stability and did not require any adjustments. However, the mandibular prosthesis lacked adequate retention. A temporary soft liner (Mollosil) was applied to enhance adaptation and retention. Because of the resulting reduction in thickness of mandibular denture due to bulky anterior ridge, a permanent soft liner could not be incorporated without compromising prosthesis thickness.

Figure 8. Try -In of maxillary and mandibular denture

Figure 9. Trial and delivery of Interim denture

E. Prosthodontic challenges faced

Rehabilitation was complicated by irregular ridge morphology due to embedded dentition, resulting in reduced denture-bearing area and compromised support. Loss of anterior maxillary ridge height and vestibular obliteration made achieving an adequate border seal difficult. Submucosal embedded teeth created uneven ridges and undercuts, complicating impression making and denture insertion. Limited prosthetic space from anterior bony protuberances affected denture base thickness and restricted the use of permanent soft liners. Additionally, mild mandibular prognathism and poor mandibular retention further challenged occlusal stability and overall denture performance, while implant therapy was not feasible due to the risk of significant bone loss.

III. DISCUSSION

Implant placement was not considered a viable treatment option due to the presence of completely embedded permanent teeth, as their surgical removal would have resulted in significant loss of alveolar bone.[8] In such cases, preserving the residual ridge is critical, especially in young patients.[9] Therefore, an interim complete denture was fabricated to restore esthetics and masticatory function, thereby improving the patient's confidence and quality of life.

Achieving an adequate border seal in the maxillary denture was challenging due to anterior sulcus obliteration and inadequate bone support. Literature suggests that retention in such compromised cases relies heavily on maximizing available anatomical structures and utilizing any favorable undercuts.[10] In this case, the posterior ridges were relatively well formed and exhibited mild undercuts, which helped compensate for the deficient anterior seal. These undercuts were effectively utilized to enhance the retention of both maxillary and mandibular dentures.

The mandibular arch exhibited slight prognathism, which was managed by establishing an edge-to-edge occlusion with minimal overjet and overbite which was aesthetically acceptable to the patient. This approach is supported by prosthodontic principles, as it helps maintain stability and minimizes displacing forces in patients with unfavorable jaw relationships.[11]

A temporary soft liner was used to improve denture retention and patient comfort, particularly in the presence of compromised ridge anatomy. Resilient lining materials are known to aid in stress distribution and adaptation in such cases.[12] However, due to inadequate denture base thickness, the use of a permanent soft lining material was not feasible.

The patient's smile and confidence was restored and she was able to secure employment, highlighting the effects and functions of interim denture prosthesis.[7]

IV. CONCLUSION

Generalized embedded permanent dentition presents a rare and challenging clinical condition, particularly when associated with altered ridge anatomy and limited prosthetic support.[2] In such cases, implant-based treatment may not be feasible, making conventional prosthodontic rehabilitation the primary option.[8]

This case demonstrates that, despite compromised anatomical conditions, satisfactory retention, stability, and function can be achieved through careful modification of conventional denture techniques, including precise impression procedures, utilization of available undercuts, and appropriate occlusal adjustments.[10],[11] The use of a soft liner further aided in improving denture adaptation and patient comfort.[12] Overall, an individualized and conservative prosthodontic approach can successfully restore esthetics, function, and patient confidence, even in complex clinical scenarios.[6]

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