



PROSTHODONTIC REHABILITATION OF MAXILLARY DEFECTS USING DEFINITIVE CLOSED HOLLOW BULB OBTURATORS: A CASE SERIES

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ABSTRACT

Aim and Background: Maxillary defects resulting from surgical resection lead to oro-nasal communication, causing significant impairment in mastication, speech, swallowing, and facial esthetics. Prosthetic rehabilitation using obturator prostheses plays a crucial role in restoring these functions. **Case Description:** This article presents two patients with acquired maxillary defects classified as Aramany Class II, involving posterior maxillary regions. The first case involved the 16, 17, and 18 region, while the second case involved the 26, 27, and 28 region. Both patients were rehabilitated with definitive closed hollow bulb obturators following a standardized clinical protocol. **Conclusion:** The prostheses demonstrated satisfactory retention and stability with significant improvement in speech, mastication, and esthetics. **Clinical Significance:** Closed hollow bulb obturators provide an effective and predictable approach for rehabilitation of maxillary defects by reducing prosthesis weight and improving patient comfort.

KEYWORDS : Maxillary defect, Obturator prosthesis, Hollow bulb, Aramany Class II, Prosthodontic rehabilitation

INTRODUCTION

Maxillary defects commonly occur following surgical resection of tumors, trauma, or congenital deformities. These defects create communication between the oral and nasal cavities, resulting in impaired speech, nasal regurgitation, difficulty in mastication, and compromised facial esthetics.

Obturator prostheses are widely used for rehabilitation of such defects. However, large defects increase prosthesis weight, compromising retention and stability. Hollow bulb obturators reduce prosthesis weight and improve patient comfort. The closed hollow bulb design additionally prevents accumulation of fluids and food debris, improving hygiene. This case series presents prosthodontic rehabilitation of two patients with Aramany Class II maxillary defects using definitive closed hollow bulb obturators.

CASE DESCRIPTION

Case 1

Patient History

A 58-year-old female patient reported to the Department of Prosthodontics, Crown and Bridge, Implantology, Vijayawada with complaints of difficulty in mastication, nasal regurgitation, and impaired speech following surgical resection of the maxilla. The patient also expressed concern regarding facial appearance. Medical history was non-contributory.

Clinical Examination

On extraoral examination [Fig 1], the following findings were observed:

- Facial asymmetry on the affected side
- Depression of the midfacial region
- Altered facial profile
- Reduced support of the upper lip

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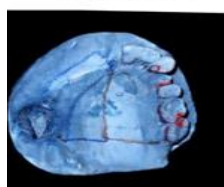
- Unilateral maxillary defect involving 16, 17, and 18 region
- Presence of oro-nasal communication
- Well-healed surgical margins
- Remaining anterior teeth present and periodontally sound
- Adequate mouth opening
- Healthy surrounding mucosa without signs of inflammation



Fig 1: Pre Operative Image



Fig 2 : Intraoral Defect and impressions and cast



On intraoral examination [Fig 2], the following findings were

Based on the extent and location, the defect was classified as Aramany classification Class II.



Fig 3: Resin Trail of prosthesis



Fig 4: Metal trail of prosthesis



Fig 5: Trail Prosthesis

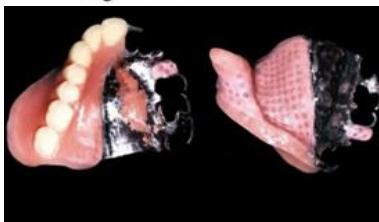


Fig 6: Final Prosthesis



Fig 7: Final Prosthesis Insertion



Patient History

A 47-year-old male patient presented with complaints of difficulty in speech, mastication, and swallowing following surgical resection of the maxilla. The patient also reported nasal regurgitation and dissatisfaction with facial appearance. Medical history was non-contributory.

Clinical Examination

On extraoral examination[Fig 9], the following findings were observed:

- Mild facial asymmetry
- Sunken appearance of the midfacial region
- Altered facial profile
- Reduced upper lip support



Fig 9: Pre Operative Image

On intraoral examination[Fig 10], the following findings were noted:

- Unilateral maxillary defect involving 26, 27, and 28 region
- Presence of oro-nasal communication
- Well-healed surgical site
- Remaining anterior teeth with adequate periodontal support
- No signs of active pathology
- Healthy surrounding soft tissues
- Adequate mouth opening

Based on the clinical findings, the defect was classified as Aramany classification Class II.



Fig 10: Intraoral defect



Fig 11: Impressions and casts



Fig 12 : Resin Trail and Jaw relation



Fig 13: Trail Prosthesis



Fig 14: Final Prosthesis Insertion

CLINICAL PROCEDURE

Preliminary impressions were made after blocking the defect area, and diagnostic casts were obtained. Custom trays were fabricated, followed by border molding and final impressions using elastomeric impression material. Master casts were poured using Type IV gypsum.[Fig 2; Fig 11]

A metal framework was designed to provide support and retention[Fig 3, Fig 4]. Jaw relations were recorded[Fig 12], and trial dentures were evaluated intraorally[Fig 5, Fig 13]. A definitive closed hollow bulb obturator was fabricated to reduce prosthesis weight. The prosthesis was processed using heat-cure acrylic resin, finished, polished, and inserted. Necessary adjustments and post-insertion instructions were given[Fig 6, Fig 7, Fig 14]

RESULTS

Both patients demonstrated satisfactory retention and stability of the prosthesis. Improvement in speech intelligibility, mastication, and swallowing was observed. Nasal regurgitation was eliminated, and facial esthetics improved significantly. The reduced weight of the hollow bulb obturator contributed to improved patient comfort and

prosthesis acceptance [Fig 8, Fig 15].



Fig 8 : Post Operative Image



Fig 15 : Post Operative Image

DISCUSSION

Rehabilitation of maxillary defects is challenging because of compromised retention and stability associated with large defects. Hollow bulb obturators significantly reduce prosthesis weight, thereby improving retention and minimizing dislodging forces.

The closed hollow bulb design used in the present cases prevented accumulation of fluids and debris within the bulb and improved hygiene. The metal framework further enhanced support and retention. The favorable clinical outcomes observed in both patients are consistent with previous literature regarding the effectiveness of hollow bulb obturators in maxillofacial rehabilitation

CONCLUSION

Definitive closed hollow bulb obturators proved to be an effective treatment modality for rehabilitation of Aramany Class II maxillary defects. The prosthesis improved speech, mastication, swallowing, esthetics, and patient comfort while reducing prosthesis weight.

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