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## Case Report

# Rehabilitation of mandibular defects using unconventional approaches: A case series

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## ABSTRACT

In cases of orofacial rehabilitation, quality of life depends upon the outcome of treatment provided by a maxillofacial management team that usually includes oral surgeons, radiologists, prosthodontists, speech specialists and plastic surgeons. Patients with maxillofacial defects often suffer from disturbed psychological status and are often treated as stigma to the society. Prosthodontists have a key role in restoring aesthetics and occlusion of such patients which ultimately aids improve the psychological status and quality of life of such patients. The prosthetic rehabilitation on compromised tissue beds requires meticulous treatment planning and precise execution. Short-listing treatment options become an enigma if conventional approaches for maxillofacial rehabilitation are contraindicated. The following series describes cases of suspected Brown's tumour (primary hyperparathyroidism) and an odontogenic keratocyst of the mandible in which conventional grafting and implant prostheses were not indicated.

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## 1. Introduction

Hard and soft tissue integrity is compromised due to congenital or acquired or developmental abnormalities, accidental trauma and acquired disfigurement due to maxillofacial surgeries.<sup>1</sup> Midline defects including complete or partial involvement of jaws affect basic functions such as phonation, mastication, and aesthetics thereby affecting quality of life, psychological, and social behaviour of the patient. Such defects are managed by a maxillofacial rehabilitation team requiring maxillofacial prosthodontics to restore the function and appearance.<sup>2</sup> When conventional treatment options cannot be adopted due to compromised tissue support, modifications in the fabrication of prostheses aid in refurbishing speech, deglutition, and facial aesthetics.

## 2. Case Report I

A 32 year old female came to the department of Prosthodontics with a complaint of facial asymmetry. She had a swelling in the maxillary left and mandibular right region and a history of thyroid-related surgery (Figure 1). The bony lesion was suspected due to primary hyperparathyroidism and was operated on by the department of Oral Surgery (Figure 2). Intraoral findings revealed a deviated mandible with left canine and premolars in severe cross bite while an open lesion in maxillary left molar region with missing second premolar and first molar (Figures 3 and 4). Rehabilitation using implants was ruled out considering expansile nature of the lesion.<sup>3,4</sup> A removable partial denture was planned to aid in the function of mastication and correct the deviation in dental midline by acting as a guiding device. It was modified so as to support the right corner of the mouth and act as a lip-

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bumper appliance to reduce facial asymmetry. Impressions were made and temporary record bases were fabricated. Jaw relation was recorded by compensating the deviation (Figure 5) and mounted on the articulator. Try in was done and approved by the patient followed by denture delivery (Figures 6 and 7).



**Fig. 1:** Post-surgical scar and facial disfigurement



**Fig. 2:** Post-operative radiograph

### 3. Case Report II

A 35 year old male patient was diagnosed with odontogenic keratocyst (OKC) of right mandible (Figure 8) and referred to the Department of Prosthodontics. The cystic lesion was enucleated, satellite cysts were removed and a particulate tooth graft was placed before closing the defect. The teeth involved in the line of the lesion were sacrificed (Figure 9). A regular follow up was maintained for six months and wound healing was monitored (Figure 10). For prosthetic rehabilitation, a cast partial denture was planned after examining that the remaining teeth were in proper occlusion. Implants were not indicated due to the aggressive nature and high recurrence rate of the cystic lesion.<sup>4</sup> Impressions were made and a cast partial denture



**Fig. 3:** Maxillary arch intraoral view



**Fig. 4:** Mandibular arch intraoral view



**Fig. 5:** Jaw relation



**Fig. 6:** Post-operative view



**Fig. 7:** Post-operative view.



**Fig. 8:** Pre-operative radiograph



**Fig. 9:** Post surgical view

design was planned (Figure 11). Embrasure clasps were provided on both premolars and molars to aid in the retention of the prosthesis (Figure 12). The framework was tried, occlusion was established on the defect side and a definitive prosthesis was delivered to the patient (Figure 13).

#### 4. Discussion

Surgical reconstruction of the mandible may achieve the goal of restoration of acceptable external aesthetic appearance but does little for restoration of oral function. Petrovic et al (2018) have mentioned favourable outcomes of implant rehabilitation post resection of odontogenic tumours by grafting the discontinuous mandibles.<sup>5</sup> However, implant-retained prostheses were difficult to manage in prosthodontic rehabilitation of skin grafted lesions because of massive surgical defects,



**Fig. 10:** Post-surgical radiograph (6 months)





**Fig. 11:** Impression of defect area



**Fig. 12:** Cast partial denture framework



**Fig. 13:** Post-operative view

continuous contracture of the wound, and side effects of radiotherapy. Patil PG (2009) constructed a spring denture for the rehabilitation of a maxillectomy defect.<sup>1</sup>

Nidoli G. et al documented two cases in 1989 of patients with Brown's tumour with maxillary involvement that was restored using interim and definitive obturator prostheses.<sup>6</sup> Sequelae of surgery of bone lesions may cause bone expansion on chewing. In the present case report (II), the patient presented with an expansile bony lesion that was surgically recontoured. A removable appliance was the treatment of choice as it could be relined as per the patient's needs and was the most predictable approach. It also acted as a lip-bumper and a guiding device.

Odontogenic keratocyst is a cyst derived from the remnants of dental lamina, with a biological behaviour similar to a benign neoplasm. It has the potential to behave aggressively, recur and be associated with certain syndromes.<sup>7</sup> Thamizhchelvan et al (2011) documented case of odontogenic keratocyst as an accidental finding in an edentulous maxilla which was rehabilitated using complete denture.<sup>8</sup> A few documented case reports have suggested implant placement in rehabilitation of such defects.<sup>9</sup> However, a recurrence rate of enucleated lesions as described in a retrospective study of 12 years by Karaca et al (2018) was 14.8%.<sup>10</sup> Hence, in the presented 2 case reports, a more predictable approach of removable cast partial denture was chosen to rehabilitate the patient.

## 5. Conclusion

A patient-centred approach is crucial while planning maxillofacial prostheses as the end results affect their quality of life. In the above case reports, young patients were presented with odontogenic pathologies that could not be resolved using conventional methods and required modifications in their removable denture to restore form and function. The dentures provided calculated outcomes in terms of scar tissue contracture, expansile nature of lesions and their anticipated recurrence. Removable prostheses assured ease of maintenance and compliance to modification if required in future. This approach also reduced the financial burden on the patients to some extent.

## 6. Conflict of Interest

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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