

Content available at: <https://www.ipinnovative.com/open-access-journals>

IP Annals of Prosthodontics and Restorative Dentistry

Journal homepage: <https://www.aprd.in/>

## Case Report

# Prosthodontic management of monostotic fibrous dysplasia of the maxilla – A case report

Deepak Kalia<sup>1,\*</sup>, Ulrika Diana Pereira Kalia<sup>2</sup>, Prerna Raje Batham<sup>3</sup>

<sup>1</sup>Army Dental Centre (R&R), Delhi Cantt, Delhi, India

<sup>2</sup>Jaipur Dental College, Jaipur, Rajasthan, India

<sup>3</sup>Government College of Dentistry, Indore, Madhya Pradesh, India



## ARTICLE INFO

### Article history:

Received 17-09-2022

Accepted 18-10-2022

Available online 24-11-2022

### Keywords:

Acquired maxillary defect

Monostotic fibrous dysplasia

Immediate surgical prosthesis

Interim prosthesis

Definitive prosthesis

## ABSTRACT

Prosthetic rehabilitation of patients with acquired defects of the maxilla presents a challenging task for a prosthodontist. These goals are achieved by early diagnosis, definitive interdisciplinary management, and restoration of the defect with a definitive prosthesis. This case report describes the complete prosthodontic rehabilitation of a rare case of monostotic fibrous dysplasia of the right maxilla in a middle-aged woman.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Defects of the maxillary arch can be either congenital or acquired. While the congenital defects are confined to the lines of union, acquired defects vary in their clinical presentation based on their etiology. The most common cause of these defects is the surgical resection of tumor masses. They might even present in patients with trauma eg. road side accidents, gunshot wounds or with disease eg. osteomyelitis. The resection of the tumor mass can predispose the patient to cosmetic deformity and psychosocial problems. These cases also present a challenge in achieving proper retention stability and support for the prosthesis while preserving the remaining tissues. Rehabilitation of these defects is well documented.<sup>1-10</sup> The size and location of the defects influence the degree of impairment.<sup>11</sup> A definitive inter disciplinary approach both presurgically and postsurgically is vital in achieving the best possible results in the rehabilitation of the patient.<sup>12</sup>

## 2. Case Report

A 49yr old female patient was referred to the prosthodontic division of the Dept of Dental Surgery for the preparation of a surgical plate. The patient had a swelling on the right upper jaw (Figure 1). The duration of the swelling at the time was two years with an onset of pain two days prior to reporting. She complained of spacing between the teeth and pain while chewing food. A detailed case history was recorded with no relevant findings. The CT-Scan revealed a ground glass appearance of bone (Figure 2). Biopsy of the sample showed increased osteoblastic activity. She was diagnosed as a case of monostotic fibrous dysplasia of the right maxilla.

Maxillary and mandibular primary impressions were made using an irreversible hydrocolloid impression material (Chromatic Jeltrate, Dentsply India) with a stock tray. The maxillary cast was altered as per the planned surgical approach and all the teeth from the right central incisor to the right second molar were scrapped off till the cervical level using a sharp instrument (Figure 3). A modelling wax sheet (Maarc Modelling Wax, Shiva Products, India) was

\* Corresponding author.

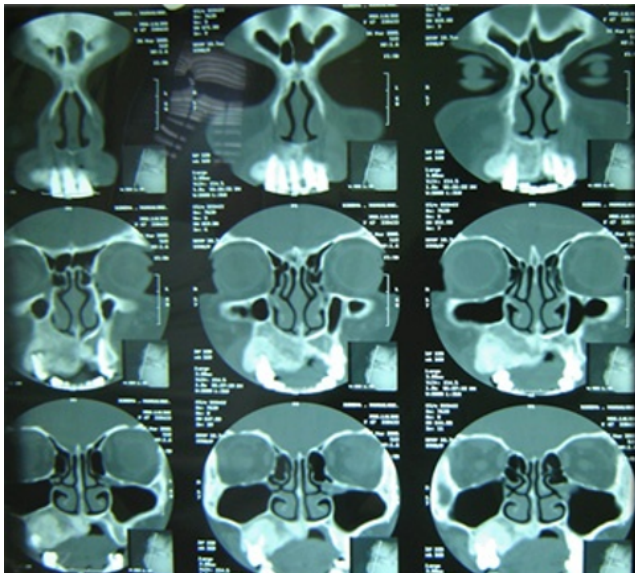
E-mail address: [aprosthodontist@yahoo.co.in](mailto:aprosthodontist@yahoo.co.in) (D. Kalia).



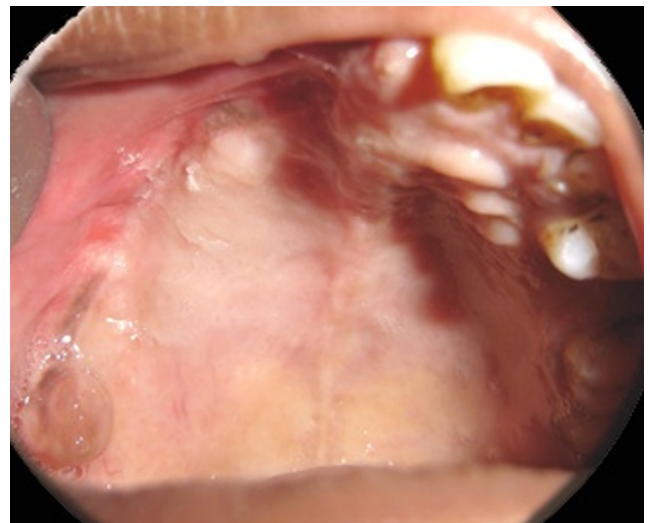
**Fig. 1:** Swelling on the right side of the upper jaw.



**Fig. 4:** Interim prosthesis with anterior teeth to provisionally restore esthetics.



**Fig. 2:** CT-Scan reveals ground glass appearance of bone.



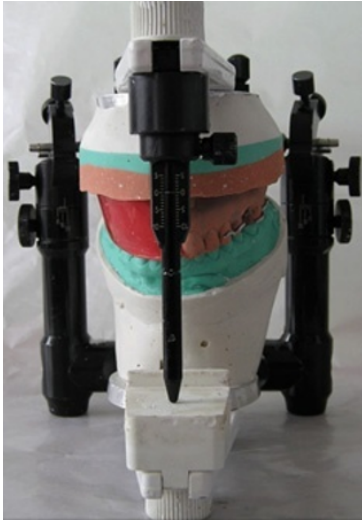
**Fig. 5:** Post-surgical healed resection site, Kennedy's class II edentulous arch.



**Fig. 3:** Altered cast for immediate surgical prosthesis.



**Fig. 6:** Metal framework try in.



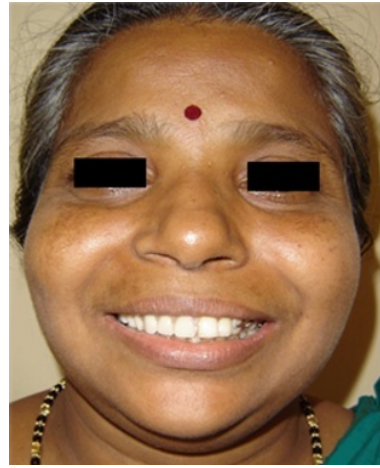
**Fig. 7:** Maxillomandibular relation articulated on a semi adjustable articulator.



**Fig. 8:** Wax try in of finished prosthesis



**Fig. 9:** Loss of lip support, cheek support and teeth in the right maxillary arch.



**Fig. 10:** Lip support, cheek support and esthetics restored.

adapted on this altered cast to cover the proposed maxillary defect. This was then processed in polymethyl methacrylate (PMMA) resin using standard procedures.

The patient underwent resection of the defect preserving the base of the maxillary bone to prevent oro-antral communication. The immediate surgical prosthesis was fit in the patient's mouth post surgery and left in place for ten days to allow for initial healing of the tissues and was adjusted regularly according to the patient's comfort.

After ten days maxillary and mandibular primary impressions were made using irreversible hydrocolloid impression material (Chromatic Jeltrate, Dentsply India) with a stock tray. A permanent polymethyl methacrylate (PMMA) resin denture base was adapted on the denture bearing area along with clasps on the abutment teeth. The anterior teeth were replaced to afford for esthetics during the healing phase. This interim prosthesis was left in place for ten weeks to allow for healing of the tissues and bone and was adjusted regularly according to the patient's comfort. (Figure 4)

After three months post surgery (Figure 5) the patient was taken up for definitive prosthesis. The defect conformed to Kennedy's Class II type of edentulous arch.<sup>2</sup> A set of maxillary and mandibular primary impressions were made using irreversible hydrocolloid impression material (Chromatic Jeltrate, Dentsply India) with a stock tray. The surveying and tripodding of the primary cast was done using a surveyor to design a cast partial denture. Mouth preparation was done and rest seats created as per the final proposed design. The maxillary impression was remade using a polyvinylsiloxane impression material (Dentosil, Dento One Inc, Germany). The master cast obtained was surveyed to evaluate the retentive undercuts and survey lines. Block out was done, duplication was carried out and a refractory cast was obtained. The preformed wax patterns were then adapted as per the final proposed design.

A maxillary complete coverage major connector design extending till the midline was given with loops for retention of the acrylic denture base on the defect side. Embrasure clasps were given in relation to the 23, 24 and the 25, 26 for direct retention with corresponding rest seats. The refractory cast was invested and casting was carried out. The casting was divested and the sprue cutting and polishing was done. The fit was checked and adjusted on the master cast. The metal framework was adjusted and properly seated in the patient's mouth (Figure 6). The occlusal rims were fabricated on the framework. The maxillomandibular relations were recorded in the patient's mouth and the casts were articulated on a semi adjustable articulator (Figure 7). Teeth arrangement was done after doing a proper teeth selection and shade matching. Try in of the waxed up denture was done in the patient's mouth (Figure 8). This was then processed and replaced with a PMMA base and adjusted in the patient's mouth. Selective grinding was carried out and post insertion instructions were given. After the initial adjustment phase the patient was kept on a three month recall.

### 3. Discussion

Tumors of the maxilla are infrequent in incidence, making up less than 10% of lesions in the head and neck region.<sup>13</sup> Malignant tumors of the maxilla are more common than benign tumors.<sup>14</sup> Monostotic fibrous dysplasia in the long bones occurs most frequently in adolescence. In the jaws it is found mainly in early adult life. The disease is equally distributed in both sexes. Reactivation may occasionally occur in later life and in pregnancy. The successful surgical treatment is by no means always easily achieved, and requires, in addition to the problems of fracture fixation and the correction of deformity, careful consideration of the age of the patient, the activity of the lesion and the extent to which it involves the cortical bone.<sup>15</sup> A successful prosthetic design for functional restoration of the maxillectomy defect utilizes the remaining palate and dentition to maximize the support, stability and retention of a prosthesis.<sup>16</sup> Post-surgery in this Kennedy's Class I surgical defect the restoration of function, lip support and esthetics was paramount (Fig 9). The patient's prosthodontic rehabilitation was carried out in three phases. The first phase was to visualize and fabricate an immediate surgical prosthesis to restore and maintain oral function at reasonable levels. The second phase was to fabricate an interim prosthesis to provide the patient with a comfortable and functional prosthesis and provisionally restore her esthetics until the healing was complete. The third phase was to design and fabricate a definitive prosthesis three months post-surgery after the surgical site was well healed and dimensionally stable to restore the patient's masticatory function, phonetics, lip and cheek support and esthetics.

(Figure 10).

### 4. Conclusion

Proper diagnosis and treatment planning and an interdisciplinary approach coupled with definitive prosthodontic treatment modalities are a must in treating any patient with acquired surgical defects of the maxilla. This in turn leads to improved psychosocial well being and a better quality of life.

### 5. Source of Funding

No financial support was received for the work within this manuscript.

### 6. Conflict of Interest

None declared.


### References

1. Applegate OC. The cast saddle partial denture. *J Am Dent Assoc Dent Cosmos*. 1937;24(8):1280–91.
2. Leupold RJ, Kratochvil FJ. An altered cast procedure to improve tissue support for removable partial dentures. *J Prosthet Dent*. 1965;15:672–8. doi:10.1016/0022-3913(65)90038-7.
3. Zarb GA, Bergman B, Clayton JA, Mackay HF. Prosthodontic treatment for partially edentulous patients. St. Louis: C.V. Mosby; 1978.
4. King GE, Gay WD. Application of various removable partial denture design concepts to a maxillary obturator prosthesis. *J Prosthet Dent*. 1979;41(3):316–8. doi:10.1016/0022-3913(79)90015-5.
5. Smith BJ. Esthetic factors in removable partial prosthodontics. *Dent Clin North Am*. 1979;23(1):53–63.
6. Becker CM, Kaiser DA, Goldfogel MH. Evolution of removable partial denture design. *J Prosthodont*. 1994;3(3):158–66. doi:10.1111/j.1532-849x.1994.tb00147.x.
7. Beumer J, Curtis T, Marunick M. Maxillofacial rehabilitation: prosthodontic and surgical considerations. St. Louis: Ishiyaku EuroAmerica; 1996. p. 233–7.
8. Feit DB. The altered cast impression technique revisited. *J Am Dent Assoc*. 1999;130(10):1476–81. doi:10.14219/jada.archive.1999.0059.
9. Yamashita S, Sakai S, Hatch JP, Rugh JD. Relationship between oral function and occlusal support in denture wearers. *J Oral Rehabil*. 2000;27(10):881–6. doi:10.1046/j.1365-2842.2000.00602.x.
10. The Glossary of Prosthodontic terms. *J Prosthet Dent*. 2005;94(1):10–92. doi:10.1016/j.prosdent.2005.03.013.
11. Aramany MA. Basic principles of obturator design for partially edentulous patients. Part I: classification. *J Prosthet Dent*. 1978;40(5):554–7. doi:10.1016/0022-3913(78)90092-6.
12. Keyf F. Obturator prostheses for hemimaxillectomy patients. *J Oral Rehabil*. 2001;28(9):821–9. doi:10.1046/j.1365-2842.2001.00754.x.
13. Murad N, Zakirullah, Ghani F. Types of maxillary tumours and the resulting post-surgical defects in patients at a teaching hospital. *JPMI*. 2012;26(1):106–10.
14. Harrison DF. The management of malignant tumors of the maxillary and nasal sinuses. *Otolaryngol Clin North Am*. 1990;33:417–22.
15. Henry A. Monostotic fibrous dysplasia. *J Bone Joint Surg Br*. 1969;51(2):300–6.
16. Okay DJ, Genden E, Buchbinder D, Urken M. Prosthodontic guidelines for surgical reconstruction of the maxilla: A classification system of defects. *J Prosthet Dent*. 2001;86:352–63.

**Author biography**

**Deepak Kalia**, Assistant Professor  <https://orcid.org/0000-0002-2730-0236>

**Ulrika Diana Pereira Kalia**, Ex. Professor

**Prerna Raje Batham**, Assistant Professor  <https://orcid.org/0000-0002-2228-2681>

**Cite this article:** Kalia D, Kalia UDP, Batham PR. Prosthodontic management of monostotic fibrous dysplasia of the maxilla – A case report. *IP Ann Prosthodont Restor Dent* 2022;8(4):220-224.