CASE REPORT

Management of mandibular deviation after mandibulectomy by simplified approach

Varuni Arora, Kamleshwar Singh, Kaushal Kishor Agrawal, Habib Ahmed Alvi

Department of Prosthodontics,
Faculty of Dental Sciences,
KG Medical University
(Erstwhile CSMMU), Lucknow,
Uttar Pradesh, India

Correspondence to
Dr Kamleshwar Singh,
dr_kamleshwarsingh@
yahoo.co.in

SUMMARY

Unfavourable sequelae from mandibular surgeries include malocclusion and temporomandibular joint dysfunction. The management of the situation before these complications arise is largely based on experience. This report presents a case where mandibular deviation is decreased through an additional row of teeth in the maxillary removable partial denture, and by decreasing scar contracture in the surgical site by means of a simple exercise.

BACKGROUND

Tumours in and around the mandible usually require surgical removal of the lesion and extensive resection of the bone. Smaller lesions removed without discontinuity of the bone are relatively simple to restore with prosthesis. Larger lesions that extend to the floor of the mouth may be more difficult to restore with prosthesis even though the continuity of the mandible is maintained.¹ Restoration of function wherein partial or hemimandibulectomy with disarticulation is performed is a complicated procedure. Patients may manifest a reduction in the normal maximal vertical opening with deviation of the mouth. This abnormality may be so severe that it prevents the insertion of stock impression trays and fabrication of dentures.

Prosthesis must be designed to effectively maintain proper muscle balance and a functional occlusion if teeth are present. This prosthesis must be inserted as soon as possible following an operation to prevent deviation of the mandible by the cicatricial tissue. The case illustrates how an additional set of arch with an exercise was used to prevent deviation of the mandible, palatal trauma and enhanced flexibility of the facial skin and muscles.

CASE PRESENTATION

The patient, a 55-year-old man, noticed a white spot which got filled with pus which later ulcerated. He sought consultation immediately and a tissue biopsy of the lesion was diagnosed as a well-differentiated squamous cell carcinoma with 1.2 cm thickness.

He underwent a wide excision of the lower lip with left buccal mucosa, overlying skin, lower hemimandibulectomy, left modified radical neck dissection and reconstruction with pectoralis major myocutaneous flap performed under general anaesthesia. And subsequently reported to the department of prosthodontics, with a chief complaint of difficulty in eating food due to the lack of some teeth, trauma of palate on the right side due to

mandibular teeth, inability to bringing the upper and lower teeth together and feeling of something being pulled at the surgical site with deviation in the lower arch.

An extraoral examination revealed the presence of a scar tissue in the lower left canine region which was created owing to contracture in the pectoralis major myocutaneous flap (figure 1).

INVESTIGATIONS

The orthopantomogram shows tissues resected on the affected side include the condyle, ramus and the body of the mandible distal to the right central incisor (figure 2).

TREATMENT

Before any prosthetic treatment could begin, the patient was asked to follow an exercise regime. It comprised of placing the right thumb inside the corner of the mouth on the left side and to stretch the cheek laterally for three sets of five stretches at least twice a day.

Figure 1 Extraoral examination revealed the presence of a scar tissue in the lower left canine region which was created owing to contracture in the pectoralis major myocutaneous flap.

To cite: Arora V, Singh K, Agrawal KK, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008492

Figure 2 Orthopantogram after surgery.

After about a month, maxillary and mandibular impressions were taken with irreversible hydrocolloid and casts were obtained by pouring in plaster. Special trays were fabricated for taking the mandibular final impressions which were poured in the dental stone.

Jaw relations were registered by manually guiding the mandible and the record was transferred to the mean value articulator. A maxillary removable partial denture with an extra row of teeth on the right side and a mandibular removable partial denture were fabricated in heat cure acrylic resin. This extra row of teeth on the right side helped the patient in mastication, prevented deviation and guided the mandible during closure to avoid palatal trauma.

OUTCOME AND FOLLOW-UP

The patient on showed improved speech, mastication, reduction in scar contracture and deviation of the mandible which assists greatly in improving the quality of life, during a follow-up visit.

DISCUSSION

This is a case of class II hemimandibulectomy according to the Cantor and Curtis.² The tissues resected on the affected side include the condyle, ramus and the body of the mandible distal to the right central incisor.

It seemed like a natural extension of the reconstructive tenets developed for free flaps to use the vastly more secure, regionally transposed pectoralis major myocutaneous flap for dynamic reconstruction of the head and neck regions. This muscle flap not only provides excellent tissue augmentation but is also extremely viable because its pedicled vascular supply is not

Figure 3 Maxillary removable partial denture with two rows of teeth to achieve occlusion.

Figure 4 Mouth opening and deviation before and after treatment.

interrupted during the reconstructive procedure. In addition, it has the capacity to assume a dynamic physiological function.³

After the patient had undergone surgery, his mandible was deviated to the resected side leading to reduction in the maximum oral opening with trauma to the palate. This lead to decreased mouth opening and lateral jaw deviation which made taking impressions for the prosthesis fabrication very difficult. Thus, the patient was put on an exercise regimen for about a month to improve his interincisal distance.

Also the occlusal disharmony created because of contracture in this flap upon healing could as well become a causative factor for future temporomandibular dysfunction. Performing the suggested exercises lead to significant release of tightness in the contracture and helped lessen the deviation of the mandible.⁴

With the loss of buccal and lingual sulci and the presence of the scar tissue, denture stability becomes extremely difficult to achieve. The exercises increased the elasticity of mucosa by breaking the fibrous bands and which helped improve stability by decreasing displacing forces.

There are numerous methods reported in the literature for reducing and minimising mandibular deviation resulting from discontinuity defects including mandibular guidance therapy, resection guidance restorations or implant-supported fixed prosthesis but this patient insisted on a cost-effective treatment which could help him achieve occlusion and mastication.⁵ So, a maxillary removable prosthesis with a palatal ramp and extra rows of teeth was planned (figure 3).⁶

Occlusal ramps or platforms with extra rows of teeth placed on the opposing maxillary prosthesis help guide the mandible into a more desirable maxillomandibular relationship through cuspal interlocking and providing a broad area of occlusal contact.⁷

It may be necessary to accept an occlusion that is not bilaterally balanced in eccentric occluding positions for a resected maxilla or mandible.⁸ Changes in tissue beneath a maxillofacial prosthesis may be more rapid than in those beneath an ordinary complete prosthesis. Therefore, the occlusion and base adaptation must be evaluated frequently. The patient on subsequent visit showed reduction in the deviation of the mandible with improved quality of life (figure 4).

Learning points

- ▶ Appliances are cost-effective treatment which helped achieve occlusion and mastication.
- ▶ Exercise improved the mouth opening and prevented contracture.
- ▶ The appliance in addition to exercise improved the quality of life by removing postoperative scarring.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Adisman IK. Prosthesis serviceability for acquired jaw defects. *Dent Clin North Am* 1990;34:265–84.
- 2 Cantor R, Curtis TA. Prosthetic management of the edentulous mandibulectomy patients. Part I. Anatomic, physiologic, psychological considerations. *J Prosthet Dent* 1972;25:446–57.
- 3 Sachs ME, Conley J. *The kinetic topography of the pectoralis major muscle related to dynamic reconstruction of the head and neck. Plastic and reconstructive surgery of the head and neck*, vol. 137. St. Louis, USA: CV Mosby, 1984:945–50.
- 4 Naylor WP, Manor RC. Fabrication of a flexible prosthesis for the edentulous scleroderma patient with microstomia. *J Prosthet Dent* 1983;50:536–8.
- 5 Schneider R, Taylor TD. Mandibular resection guidance prosthesis: a literature review. *J Prosthet Dent* 1986;55:84–6.
- 6 Mundhe K, Pruthi G, Jain V. Clinical considerations for prosthodontic rehabilitation of intermediate form of osteopetrosis: a report of two cases. *J Oral Biol Craniofac Res* 2012;2:126–30.
- 7 Curtis TA, Cantor R. The forgotten patient in maxillofacial prosthetics. *J Prosthet Dent* 1974;31:662–80.
- 8 Ronald HJ. Principles, concepts, and practices in prosthodontics—1994. Academy of Prosthodontics. *J Prosthet Dent* 1995;73:73–94.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow