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A Case report on remarkable healing by secondary intention in a hemi-maxillectomy patient rehabilitated with obturator prosthesis

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Abstract

This case report describes a situation in which an impressive recovery through secondary intention occurred in a patient who had a hemi-maxillectomy, and this was followed by comprehensive rehabilitation involving multiple disciplines. The pre-surgical prosthetic planning was done before the surgical excision of the tumour. Phased treatment was executed with a surgical obturator immediately post resection, hollow-bulb interim obturator during the healing phase and cast partial denture definitive obturator after recovery. Rapid healing was achieved by secondary intention, and a drastic reduction in the volume of defects was observed. Follow-up revealed successful patient rehabilitation to lead a good quality of life.

Keywords: Fibroma, Hollow bulb interim obturator, Healing by secondary intention.

1. Introduction

Around 15% of patients reporting to dental hospitals are diagnosed with odontogenic cysts and tumours [1]. Extensive resection is the common treatment modality, creating large maxillofacial defects [2]. In many cases, treatment leaves the person in a state worse than the disease. Hence, it is paramount that multidisciplinary treatment planning for such patients should start way before the resection, from the time of diagnosis itself. This ensures the rehabilitation of the individual to lead a good quality of life.

Case reports on the healing of oral surgical defects by secondary intention are limited. Type of dressing [3,4], maintenance of asepsis and post-surgical rehabilitation play major roles in the amount of tissue repair observed [5]. In this case, healing by secondary intention drastically reduced the defect volume within 3 months and the patient was returned to a near-normal state of life affordably.

2. Case Report

A young female patient, 23-years-old visited Government Dental College and Hospital, Kadapa with a complaint of swelling in the left middle third of her face for 2½ years. On clinical examination, an oval swelling of 3.5X3.5 cm was observed. Intraorally the swelling was seen obliterating the buccal vestibule anterio posteriorly extending from 23 to mesial of 28 (Figure 1). Teeth 23 to 28 showed no mobility, pain or pulpal response. The swelling was provisionally diagnosed as a benign odontogenic cyst. Examination of OPG and para-nasal sinus view revealed a faint radiolucent lesion superimposed on the normal bone architecture extending distally from the canine to mesial part of 3rd molar, from the cervical region of roots to the upper third of sinus, displacing the roots (Figure 2). CT and MRI of the face showed a large slightly calcified mass in the left midfacial region (Figure 3).

Figure 1. Intra-oral view; swelling seen to obliterate buccal vestibule

Histopathologic analysis of biopsy samples revealed plump fibroblasts arranged in a whorled pattern, round hematoxyphilic areas resembling cementum and focal areas of osteoid. The tumour was diagnosed as cementifying fibroma involving the left maxilla.

Pre-surgical treatment planning was done by a multidisciplinary team consisting of the oral pathologist,

maxillofacial surgeon, and prosthodontist. Impressions of both arches were made using irreversible hydrocolloid impression material (Tropicalgin, Zhermack, Italy). Mock surgery was done, and a modified maxillary cast was prepared. The prosthodontist fabricated a clear acrylic surgical obturator (DPI RR cold cure acrylic, India) withretentive loops into the defect, to aid in holding the filling and dressing material.

Figure 2. Para-nasal sinus view showing radiolucent lesion in left maxillary sinus.

Figure 3. CT Scan.

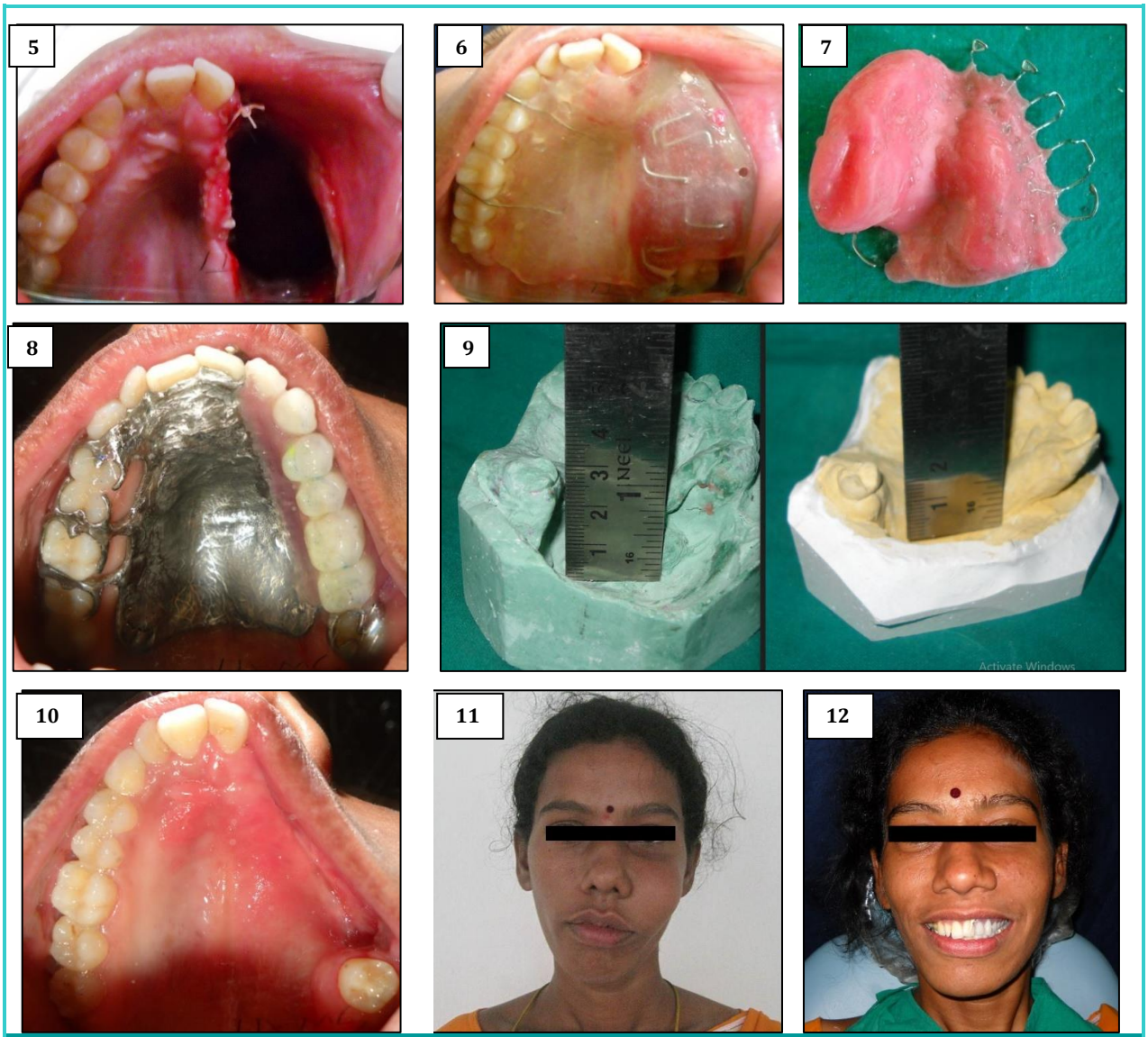
An intra-oral sulcular incision was given under local anaesthesia and the tumour was excised (Figure 4). The defect was large hence, it was left to heal by secondary intention (Figure 5). Immediately after surgery, the impression compound [6] was placed in a mouldable state into the defect, and retained on the retentive loops of the surgical obturator to adapt to the defect (Figure 6). Care was taken to prevent the impression compound from extending into undercut areas so that the obturator could be easily removed and replaced. Retention was ensured by wrought wire clasps on 13 and 16. Surgical medicament was placed on top of the compound on sterile gauze. The surgical obturator was specially designed to make it easy to change the surgical pack.

Figure 4. Excised tumour mass sent for histopathologic analysis.

Regular follow-up was done for four weeks to change the dressings on the surgical obturator. After confirmation of successful wound healing by the surgeon, an interim obturator was planned. The site was cleaned with normal saline. Clinical examination revealed a large defect extending to the orbital floor with oro-antral and oro-nasal communication. It was classified as Armany's class 2 defect. The acrylic interim obturator (DPI heat cure acrylic, India)was designed without teeth and kept out of occlusal contact to prevent pressure from falling on the healing tissues (Figure 7). The "Lost salt technique" was used to make the bulb hollow and reduce the weight of the obturator [7]. The patient was trained to remove, replace and self-clean the defect area. Interim obturator restored the facial fullness, prevented regurgitation of food, and water and helped in healthy healing.

The interim prosthesis required regular trimming in follow-up appointments to accommodate tissue re-contouring and healing by secondary intention. After 3 months of follow-up, a treatment plan to construct a definitive obturator (removable cast partial denture) was formulated. Primary casts were surveyed, and necessary mouth preparations were planned. A tripodal design was employed. Rest seats were prepared on 14, 15, 16, 17, 21, and 28 and guide planes were refined. The cast partial denture prosthesis was fabricated and tried in (Figure 8). Retention was ensured by placing an embrasure clasp, additional simple circlet clasps, engaging the scar band of the defect and close adaptation to the remaining post-palatal seal area of the defect side.

The prosthesis was processed, finished, and polished. Insertion was done and post-insertion instructions were given. The patient received follow-up appointments three days after the initial visit, and then again one week later, continuing with appointments until one year had passed. Swallowing and masticatory ability were successfully restored with the definitive obturator. The patient was satisfied with her ability to handle liquids and secretions without discomfort. Cheek fullness, normal smile line and facial appearance were restored satisfactorily. This brought back the patient's self-esteem and rebuilt her quality of life.



Figures 5-11. 5. Post-operative view, 6. Surgical obturator, 7. Interim obturator, 8. Insertion of cast partial denture, 9. Cast measurments showing reduction in depth of defect, 10. Post healing intra oral view, 11. Pre-operative image and 12. Post-operative image.

3. Discussion

A well-coordinated interdisciplinary method was crucial to the treatment's success at every phase. Cementifying and ossifying fibromas are non-aggressive benign, and reactive [8]. Hence a conservative surgical approach was suggested by an oral pathologist. Following the prosthodontist's opinion, the surgeon considered to; 1) preserve bone around the remaining teeth, 2) preserve the distal most tooth and 3) preserve the anterior soft palate. Ensuring that the soft palate makes functional contact with the posterior surface of the prosthesis is important for facilitating speech and swallowing, as well as assisting in the retention of the prosthesis. The preservation of tooth 28 contributed to enhancing retention.

Microvascular free flaps are the commonly used surgical procedures for defect closure. However, they are frequently associated with increased hospitalization and high morbidity in the flap donor area [9-11]. Complete closure is not possible in some large resections. The alternative is to allow the wound to heal by secondary intention. It was remarkable to note that healing by secondary intention greatly reduced the depth of the defect. Measurements were made on the working cast during the interim obturator stage to the definitive obturator stage, from the deepest point of the defect to the level of distal marginal gingiva of 18. There was a 40 % reduction in defect depth seen within 3 months (Figure 9). The horizontal extent of the defect had also drastically reduced (Figure 10). Hence, the definitive obturator didn't require a hollow bulb. Such rapid healing by secondary intention is an uncommon finding. The reasons for this could be maintaining cleanliness at the wound healing location, the patient's age, and the specific type of filling and dressing [5]. Figures 11 and 12 are the pre- and post-operative images.

The ideal material for filling should maintain moisture at the wound site, minimize trauma during removal, lower bacterial load, and ultimately promote the healing process

[3,4]. Impression material was used to obturate the defect in the initial phase because of its inert, easily mouldable nature. Obturators made of acrylic resin can be customised to the required dimension accurately, are impervious to oral fluids and are non-conductive to bacterial colonization owing to their smooth finish. They prevent food, and infective material from coming into contact ensuring good wound healing. They allow easy change of surgical dressings, aid self-care of the healing site, and restore speech, normal diet improving nutrition hence giving great psychological support to the patient. The obturator was more effective in promoting wound healing compared to gauze, hydrocolloids, foam, or other dressings.

4. Conclusion

Maxillofacial rehabilitations when treated in a multidisciplinary approach show a good prognosis. Prosthetic rehabilitation of large maxillary defects is a viable alternative to extensive surgical reconstructions. Timely treatment with surgical and interim obturators can be speculated as reasons for the excellent tissue repair and rapid healing by the secondary intention of the defect.

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