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Repositioning of Buccal Corticotomy: An alternative to conventional technique of cyst removal

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Abstract

Aim-is to evaluate the efficacy of repositioning of buccal corticotomy (RBC) for removal of lingually placed mandibular cyst.

Technique-2 patients with diagnosis of mandibular cysts were selected. Patients were sent for CBCT which revealed lingually placed cyst. The cyst caused expansion & perforation of lingual cortex with intact buccal cortex. In conventional technique of cyst removal, a large amount of buccal bone is removed to gain access to the lingually placed cyst. In RBC, buccal corticotomy was done to gain access to the lingually placed cyst, cyst was removed & repositioning of the cortex was done with internal fixation.

Results-RBC provides excellent surgical access to the lingually placed mandibular cysts. Intact buccal bone was preserved in this technique. CBCT was taken after 2 & 6 months. There were no postoperative complications like exposure of hardware.

Conclusion-RBC is a viable alternative to conventional technique of buccal bone removal for lingually placed mandibular cyst.

Key words-Cyst, Buccal Corticotomy, Repositioning, dentigerous, Inferior alveolar nerve injury.

Introduction

Cyst of the mandible is the most common clinical condition dealt by Oral & maxillofacial surgeons in

routine practice. Dentigerous Cyst (DC) is associated with unerupted or impacted tooth[1, 2]. It is developmental cyst of odontogenic origin associated with crowns of impacted mandibular 3rd molars followed by maxillary canines and then mandibular premolars & maxillary 3rd molars[1]. Enucleation is the treatment modality for small size DC [2, 3]. Conventional technique to access the cyst involves removal of thinned out buccal bone. When the cyst is located lingually, a significant amount of intact buccal bone has to be removed for accessing the cyst. Removal of large amount of buccal bone can lead to further resorption of bone & mobility of teeth. This may compromise prosthetic rehabilitation of the patient. SSO has been described in the literature to gain access to the lingually placed mandibular cysts [4, 5&6]. This technique requires surgical skill, expertise & is associated with postoperative disturbances of Inferior Alveolar Nerve [7].

RBC is innovative technique in which buccal corticotomy was performed to gain access to the lingually placed cysts. Osteotomised segment was stored in saline and cystic lining was enucleated & segment was repositioned with rigid internal fixation. This technique is relatively simple & it provides excellent surgical access to mandibular cysts with no postoperative neurosensory disturbances of IAN.

The aim of this paper is to describe a novel technique i.e. repositioning of buccal corticotomy for removal of lingually placed cyst.

Surgical Technique

Two patients with diagnosis of dentigerous cyst of mandible were selected. OPG revealed unilocular radiolucency associated with the crown of impacted mandibular 3rd molar. CBCT of the lesion revealed well defined unilocular radiolucency associated with impacted mandibular 3rd molar (Figure 1). The lesion caused expansion & perforation of lingual cortex with intact buccal cortex. Enucleation of cyst was planned in these patients. Institutional Review Board approval was taken before taking the patients for surgery and all participants signed an informed consent agreement. RBC was done in these patients to gain access to the lingually placed cyst and also to preserve intact buccal cortex.

Patient was taken under general anaesthesia. 2% Lignocaine hydrochloride with adrenaline (1:200000) diluted with equal amount of saline was infiltrated. Mucoperiosteal flap was reflected & buccal cortex exposed. The buccal corticotomy was marked with a surgical marker. HP no.8 round bur was used to mark corticotomy. Bony window was made in region of 46& 47.Care was taken to avoid injury to roots of 1st, 2nd molars. A 10mm osteotome was used to define the cuts & osteotomy was completed & the segment was stored in saline soaked gauze. Cystic lining was visible after removal of the buccal cortex. Cyst was enucleated in toto along with removal of 3rd molar (Figure 2). Haemostasis was achieved. Platelet Rich Fibrin (PRF) was prepared before beginning the surgery. PRF was placed into the surgical defect. Osteotomised buccal segment was repositioned & fixed with titanium plate with five (2x8mm) monocortical screws & two (2x12mm) bicortical screws (Figure 3). Wound closure was done with 3-0 mersilk with suction drain in position. Post-operative medications included IV Inj Cefixime 1gm 12hourly, Inj. Diclofenac 75 mg 8 hourly & Inj. Pantoprazole 40 mg 24 hourly. Postop IV Inj. Dexamethasone 8 mg was continued for 3 days. Simillar procedure was carried out for other patient .CBCT was taken after 2 months & 6 months which showed decrease in the size of radiolucency & presence of hardware in situ. Patients were followed up to 1 year (Figure 4). There was no postoperative complications like wound dehiscence, IAN injury, implant exposure or delayed infection, mobility/ loss of vitality of teeth.

Discussion

Enucleation is the standard surgical procedure for management of dentigerous cyst. In these patients the cyst was associated with impacted mandibular 3rd molar & was small in size, hence enucleation of cyst was carried out [3]. Surgical technique for removal of cyst depends upon the size of cyst, its location & accessibility to the lesion. CBCT of the cysts revealed lingually placed cysts causing perforation of lingual cortex with intact buccal cortex. In these patients, RBC is indicated for removal of small size cyst (Dentigerous) which is lingually placed. Such lesions have been approached by conventional method that is by removing large amount of healthy buccal bone and also by unilateral SSO [5, 6, 7&8]. SSO provides excellent access to the cystic lesions of mandible but requires surgical skill & expertise. The most common complication after unilateral SSO is injury to the inferior alveolar nerve (IAN), resulting in neurosensory disturbances of the lip and chin [7].

RBC provides an alternative to unilateral SSO to access the lingually placed mandibular cysts. Advantages of RBC are relatively simple technique, provides excellent visibility & accessibility.

Bone healing after repositioning is good. There are no postoperative neurosensory complications as seen with SSO. This technique can be performed by beginners/young surgeons & has a short operative time, with small learning curve.

Comparison & outcome of repositioning of buccal corticotomy with conventional treatment of cyst removal i.e. non- repositioning was reported by Suseok Oh et al in 2012 [8]. They found that repositiong of buccal corticotomy was associated with more complications like infection & exposure of hardware. Finding of this study was contradictory to our study.

We used RBC in two patients. This technique was found to be advantageous in small size lingually placed cyst. There were no postoperative complications like exposure of hardware or loosening of device and neurosensory disturbances of IAN.

Conclusion

RBC is a viable alternative to conventional technique of buccal bone removal for lingually placed mandibular cysts. Technique is relatively simple & there were no postoperative neurosensory disturbances of IAN. Therefore we recommend this technique for beginners /young surgeons as an alternative to SSO. Long term follow up needs to be done to demonstrate potential complications associated with this technique.

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Legends

Figure 1 Preoperative CBCT axial view showing well defined radiolucent lesion with expansion & perforation of lingual cortex.

Figure 2 shows cystic lining along with impacted tooth.

Figure 3 shows repositioning & internal fixation of buccal cortex

Figure 4 Postoperative CBCT axial view showing decreased in size of radiolucency & hardware in situ.