



CASE STUDY

MODIFIED REHARMANN FLAP – A NOVEL FLAP TECHNIQUE FOR ROOT RETRIEVAL FROM MAXILLARY SINUS

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ABSTRACT

The aim of this study was to describe the standard diagnostic procedure and the application of the Caldwell-Luc approach for the retrieval of a displaced root from the maxillary sinus and to share our experience in treating this complication. We Demonstrate a modified Reharman flap that can be used for both retrieval of root as well as can be used to advance the buccal flap for closure of oroantral fistula that could be created because of the displaced root or the attempt by the dental surgeon to retrieve it.

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INTRODUCTION

Over 100 years ago, Caldwell Luc surgery has been reported by two surgeons after whom it was named (Macbeth, 1971). With the advent of endoscopic surgery, this surgical procedure has been greatly eliminated. However there is some remote emergency situation, this procedure can be considered. This article describes the situation when it was useful and also describes about the surgeon's operative technique.

Technique

Caldwell- Luc procedure can be done both under local or general anesthesia. After administering local anesthesia with 2% xylocaine with 1:200000 epinephrine. An incision is made with 15 size BP blade a 2 cm above the mucogingival fold from the canine to the 2nd premolar region (Figure1). In our modified technique, we have modified Reharman's Buccal advancement flap (Awang, 1988) by extending the anterior releasing of the incision up to the lateral incisor region and the posterior incision remains the conventional type (Figure 2). This not only allows the surgeon to visualize the canine fossa but also gives mobility for the raised flap to close the oro-antral defect.

Case report

A middle aged male of age 30 years old came with a complaint of broken tooth in the left upper posterior region for the past 3 months. His medical history reveals that he has bipolar disorder under medication (Diazepam & Lithium OD). Patient also gave a dental history of root canal treatment in the left upper back tooth region. His intra oral examination reveals grossly decayed left upper first molar (26) and dental caries in 27 and 28. He was diagnosed to have dental caries with gross destruction of 26,27 (Figure 3). He was advised root canal treatment of 27 and extraction of 26. Patient was taken up for extraction of 26 under local anesthesia. Patient and attender consent was obtained before tooth extraction. On attempting extraction of 26, tooth fractured and palatal root was broken, while attempting to retrieve the root, it suddenly disappeared from the tooth socket. An intraoperative radiograph revealed displaced root in the maxillary sinus (Figure 4). A decision of immediate root retrieval was decided. The modified incision was placed and buccal window of size 5mm in diameter was created in the canine fossa (Figure 5). Caldwell- Luc procedure was decided to be the best procedure adopted (Figure 6). The Maxillary sinus was visualized and fractured palatal root was identified, located and surgically retrieved. Clinical picture showing the retrieved root (Figure 7 & 8). As the oroantral defect size was less than 5 mm in dimension, the defect was sealed with Absorbable gelatin sponge USP(ABGEL).

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Figure 1. Technique of Incision for Caldwell Luc Technique.
 Courtesy :Micah Hill Operative Techniques in Otolaryngology (2010) 21, 117-121

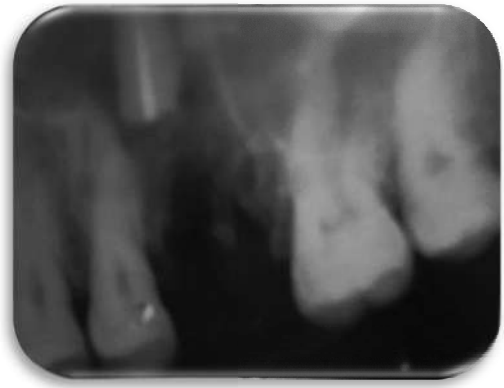


Figure 4. Fractured Tooth – 26 and Immediate Post Extraction Radiograph

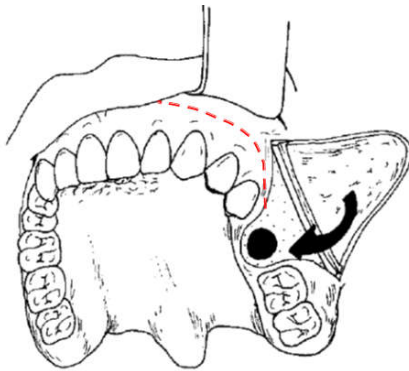


Figure 2 : Modified Reharman's Flap Incision marked in RED DOTTED Line

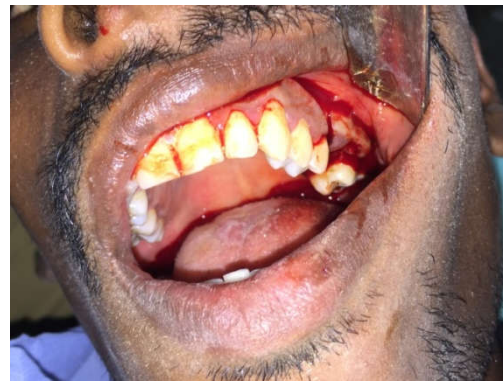


Figure 5. Modified Reharman Flap Being Raised

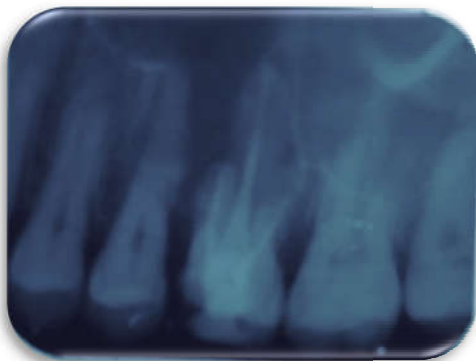


Figure 3. PreOperative Radiograph of the Patient showing Fractured Root Canal Treated – 26



Figure 6. Caldwell Luc Procedure



Figure 7. Root Located in the Maxillary Sinus



Figure 8. Extracted tooth and the Retrieved Palatal Root



Figure 9. Immediate Post Operative Wound Closure With Advancement of Flap



Figure 10. 2 Week Postoperative Intra Oral Image showing good wound healing

The buccal flap was advanced with great ease and water tight closure was done with 3-0 black silk suture material (Figure 9). A 10 day post-operative intra oral image of the patient showing good wound healing with no signs of oroantral fistula (Figure 10).

DISCUSSION

One of the frequently performed procedures in any dental office is tooth extraction. Most of the extraction procedures are quite simple, however dislodgement of tooth or root in the maxillary sinus is quite uncommon. Removal of teeth whose roots are close proximity to the maxillary sinus can lead to the tooth or root being driven into the maxillary sinus thereby creating an oral communication. This can lead to various clinical and legal problems (Yueh Huang *et al.*, 2011). Complications is quite common in maxillary molars and in male patients (Chongruk, 1989). Dental surgeon should be aware of this complication that can occur in treatment procedures that appear to be quite simple extractions on radiographs (Yueh Huang, 2011). It is our aim that this paper will alert the dentist to this complication and encourage them to manage such complications themselves in their private practice. Usually removal of the root can be attempted through the extraction socket, Caldwell-Luc procedure or Functional Endoscopic Sinus Surgery. Approach through the socket requires elevation of buccal flap at the site of the extraction socket, and bone removal until the maxillary sinus cavity is reached and the dislodged root is located. In case if the root is displaced within the space of the maxillary sinus, then Caldwell-Luc technique is indicated as it provides better access through the canine fossa (Yueh Huang, 2011). In Caldwell-Luc approach to the maxillary sinus we do not need to remove the sinus membrane completely as the aim is to retrieve the tooth or root displaced (Chongruk, 1989). Both the above mentioned techniques are invasive but have good success rates over functional endoscopic surgery which is noninvasive but expensive. Reharman Buccal Advancement flap has been frequently used for closure of Oro Antral fistula and Caldwell Luc procedure for root retrieval. This modified technique proposed by us not only helps in retrieval of root tip from the sinus but also plays a crucial role in closure of oroantral fistula, which might require another incision. The modified flap provides better advancement and also provides ease of access for tooth or root retrieval. The flap has good vascularity because of broad base, hence the flap necrosis is greatly reduced.

Conclusion

Tooth or root displaced into the sinus while performing extraction is embarrassing. This complication has to be prevented as far as possible. If it happens then the surgeon should be well prepared to face this complication. This modified Reharman flap seemed to be easy and can be used to double the advantage for root retrieval and closing the oroantral fistula

Conflicting of Interest:

None

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