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IS INFERIOR MEATAL ANTROSTOMY STILL NECESSARY? A REVIEW

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ABSTRACT

Maxillary sinus pathology are very frequent Cald well-luc along with inferior meatal antrostomy (IMA) are the stereotype surgical procedure to treat them. However, IMA has been criticised as the surgery, lead to early loss of the sinusotomy, injury to nasolacrimal duct, epistaxis from sphenopalatine artery moreover, deviation from the normal sinus pathology. The role of IMA is to give dependant drainage to the sinus. Although IMA has declined in popularity it may still be a useful procedure in the management of pathologies. In individual with ciliary dyskinesia, as in cystic fibrosis, dependent drainage through inferior antrostomy may benefit patients with disturbed mucociliary transport from mucosal stripping. If too large antrostomy is fashioned, related anatomy is jeopardize and therefore the dimension must be carefully judged if long term patency is desired.

KEYWORDS: Maxillary sinus, nasal antrostomy, inferior meatus, cald well-luc procedure.

INTRODUCTION

IMA was a common procedure in the management of sinus disease.[1] However, has declined as a result of characterization of mucociliary transport towards the maxillary ostium and with increasing use of middle meatal antrostomy as a preferable method in promoting sinus drainage.[2]

The mechanism through which IMA was used as a surgical treatment of maxillary sinusitis involved dependant drainage of mucopurulent secretion.

The importance of re-establishing ventilation and drainage in the management of sinus pathologies is well known.[3] However the effectiveness of an antral window in treating antral pathologies and the exact location of such window has been controversial.

Friedman and Toriumi, however, have demonstrated with radionuclide studies in rabbits that IMA does not hinder mucociliary clearance towards the maxillary ostium. In their experiment study with rabbits, Kennedy and Shaalan ,[3] noted that there was no tendency for the mucociliary clearance pattern to become reoriented following either a separate antrostomy or radical removal of the mucosa.

Whenever mucocilliary clearence was present, it was towards the natural ostium leading to some disruption of normal mucocilliary clearance pattern.[3] The cilliary mucosa in the vincity of natural ostium should not be manipulated.[5]

A cilliary membrane may regenerate after extensive removal of antral mucosa. Despite the regenerative capacity of the sinus epithelium, removal of huge segment of mucosa in the region inferior to the natural ostium can result in significant alteration of mucocilliary clearence.

The normal anatomy of the maxillary sinus (MS), especially it's vascular anatomy, and its's relationship with the teeth and alveolar process have been well documented. The sinus is pyramidal in shape and it is the largest among the paranasal sinuses. The anterior surface of MS is formed by the facial surface of the maxilla and it is internally grooved by the canalis sinuous. The posterior wall is formed by the infratemporal surface of the maxilla. The superior surface is wall by the fragile, triangular orbital floor, with the infraorbital groove running through it. The roof of the sinus thickens toward the orbital margin, with a mean thisckness of 0.4mm medial to the infraorbital canal and lateral to it. The medial wall of MS seperated the sinus from the nasal cavity. The floor of sinus is formed by alveolar and palatine processes of the maxilla and lies below the nasal cavity. The floor of the sinus is seperated from the molar dentition by a thin layer of compact bone.

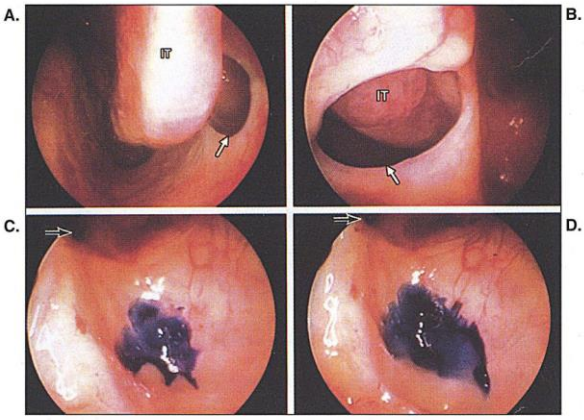
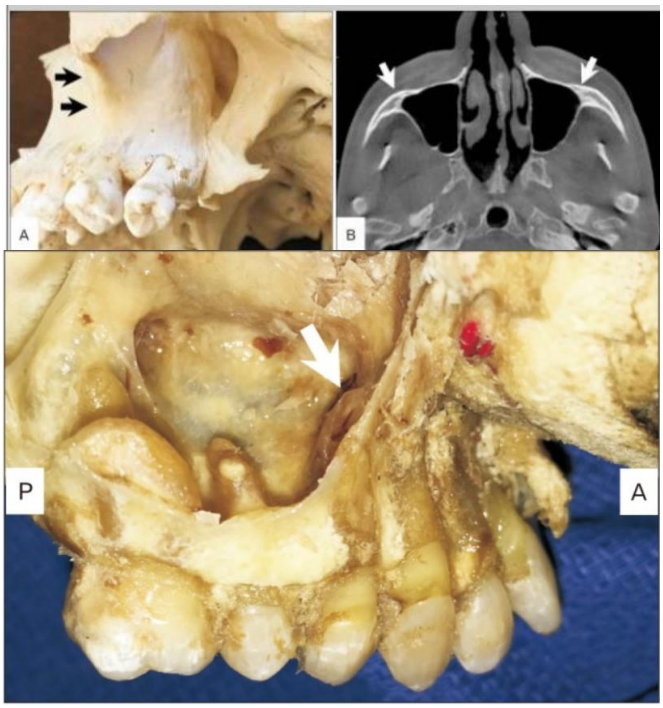


Figure. A. Intranasal telescopic view (0 degree) of the left inferior meatal antrostomy lateral to the inferior turbinate (IT). **B.** Transantral telescopic view (0 degree) of the left inferior meatal antrostomy (arrow) of the same patient shown in Figure A. Note the inferior turbinate (IT) seen through this window. **C.** Trans-canine fossa telescopic view (0 degree) of methylene blue placed on the regenerated mucosa of the posterior inferior wall of the left maxillary sinus. Note the natural ostium in the superomedial portion of the sinus. **D.** Trans-canine fossa telescopic view (0 degree) of the same methylene blue as shown in Figure C, 45 minutes after the instillation of the dye. Note that no dye reached the natural ostium (arrow).



DISCUSSION

According to Mikulics in 1887, IMA or intranasal antrostomy was a common surgical procedure in the management of MS disease. Friedman and Toriumi have illustrated with radionucleotides in rabbits that IMA does not hinder mucocilliary clearance towards the maxillary ostium. In their experimental study with rabbits, Kennedy and Shaalan noted that there was no tendency for mucocilliary clearance pattern to become re-orientated following either a separate antrostomy or radical removal of the mucosa. They also demonstrated the normal rate of mucocilliary clearance towards the maxillary ostium to be appropriately 10-15mm/min. The patient symptoms improved following IMA although he required intermittent nasal irrigation, this procedure greatly facillitate antral drainage.

Since the introduction of endoscopic techniques in the 1990s, functional endonasal sinus surgery (FESS) have been performed to resect Maxillary sinus mucocele and antrochoanal polyp, instead of the cald-well-luc procedure, such as endoscopic partial medial maxillectomy and endoscopic middle and inferior meatal antrostomy.

In the clinical experiment by Yin Zhao, Jingpu Yang and Ping Li suggested, if lesions were located in the

anteromedial wall or anterolateral wall or floor of the maxillary sinus, the endoscopic enlarging Maxillary Sinus ostium approach can still be difficult, even if an angled endoscopy is used. To fully expose the medial and inferior aspects of the MS, inferior meatal antrostomy was performed to resect the lesion. However, the medial wall of the postoperative maxilla via the inferior meatal fenestration approach formed a permenant window through which the maxillary sinus and the nasal cavity can communicate. The result may lead to circualtion of the secretions of MS. Consequently there was improved inferior meatal fenestration. They made vertical incision below the cephalic end of the inferior turbinate to the nasal floor, the whole mucosa if inferior meatus is carefully stripped and inferior turbinate flap was repositioned to its previous orientation and the incision is sutured. The aim of this approach is to keep the nasal lateral wall intact.

In retrospective analysis of causes, 8 of 34 cases were recurrence and were treated by second surgery modified endoscopic inferior meatal fenestration with a mucosal flap, mostly located in the anteromedial or anterolateral part of inferior wall.

The lesion in these area are reletively easy to relapse. Therefore, Jinzhang Cheng illustrated in their discussion that the lesion could be resected via medoified endoscopic inferior meatal fenestration with a mucosal flap. It allows preservation of Maxillary sinus structure and function. This modified procudure is easy and safe moreover, wound healing is rapid.

According to Fouad A Al-Belasy at no time was there a statisically significant difference in cheek swelling between the treated group ($P>0.05$). No infection or failure of treatment was encountered.

However, some patients in both groups had numbness or parasthesia of the cheek, upper lip, upper front gingiva and the teeth.

These complaints were transient and lasted for several weeks. For postoperative care according to SIL VIU ALBU and ALINA GABRIELA DUTU postoperative period mucus and crusts are easily eliminated through the inferior window. When supplementary postoperative treatments are demanded, instruments and medication are easily introduced through the IMA. Combining the two windows in the maxillary mucoceles provided long term symptomatic relief.

According to Al-Belasy, using these procedures, an opening at the inferior meatus was created to prevent obstruction between nasal cavity and maxillary sinus. However, it did not appear ot be useful because cilliary movement of the remaining mucosa after the procedures continued to act toward maxillary ostium at the middle meatus. Al-Belasy reported that it was not useful to create the opening at the inferior meatus if the patient had abnormal maxillary sinus ostium and no anatomic abnormalities. In addition, many references have emphasized that antrostomies were closed naturally at a high rate even though inferior meatal antrostomy was performed.

CONCLUSION

Based on evidence, it does not seem neccesary to perform antrostomy at the infrior meatus, provided the patient has a patent osteomeatal complex and no anatomic abnormalities.

REFERENCES

1. De Freitas J, Lucente F.E The Caldwell-Luc procedure: Institutional review of 670 cases: 1975–1985. Laryngoscope. 1988; 98: 1297
2. Low W.K Complications of the Caldwell-Luc operation and how to avoid them. Aust N Z J Surg. 1996; 66: 119
3. Saito H, Takanami N, Saito T et al. Studies on the Caldwell-Luc operation with or without counteropening at the inferior meatus. ORL, 1990; 52: 249.
4. Linuma T, Oosawa H, Haruyama K et al. Morphology of the inferior nasal meatus. Pract Otol Kyoto, 1982; 75: 931.
5. Hilding A Experimental sinus surgery. Ann Otol Rhinol Laryngol, 1941; 50: 379.
6. Bingham B.J.G, Hawthorne M.R Synopsis of operative ENT surgery. Butterworth-Heinemann Ltd, Oxford, England, 1992: 193.
7. Alusi H.A A new approach to the surgical treatment of chronic maxillary sinusitis. J Laryngol Otol. 1980; 94: 1145
8. Benninger M.S, Kaczor J, Stone C Natural ostiotomy vs inferior antrostomy in the management of sinusitis. Otolaryngol Head Neck Surg, 1993; 109: 1034.
9. Arnes E, Anke I.M, Mair I.W A comparison between middle and inferior meatal antrostomy in the treatment of chronic maxillary sinus infection. Rhinology, 1985; 23: 65.
10. Davis W.E, Templer J.W, Lamear W.R Patency rate of endoscopic middle meatus antrostomy. Laryngoscope. 1991; 101: 416.
11. Kennedy D.W, Shaalan H Reevaluation of maxillary sinus surgery. Ann Otol Rhinol Laryngol, 1989; 98: 901.
12. Yoon J.H, Kim S.S, Kim K.S et al. Creation of large maxillary sinus ostium. Laryngoscope, 1999; 109: 672.
13. El-Hennawi D.M Combined functional endoscopic sinus surgery (FESS). Rhinology, 1998; 36: 196.
14. Kennedy D.W, Zinreich S.J, Shaalan H et al.
15. Endoscopic middle meatal antrostomy. Laryngoscope, 1987; 97: 1.
16. Schaefer S.D, Manning S, Close L.G Endoscopic paranasal sinus surgery. Laryngoscope, 1989; 99: 1.

17. Stefansson P, Andreasson L, Jannert M Caldwell-Luc operation. Acta Otolaryngol Suppl, 1988; 449: 97.
18. Pradhan K.A, Baser B Caldwell-Luc operation without facial swelling. Auris Nasus Larynx, 1990; 16: 223.
19. Low W.K Complications of the Caldwell-Luc operation and how to avoid them. Aust N Z J Surg, 1995; 65: 582.
20. Ghosh P Sublabial antrostomy. J Oral Maxillofac Surg, 1985; 43: 142.
21. Yarington C.T The Caldwell-Luc operation revisited. Ann Otol Rhinol Laryngol, 1984; 93: 380.
22. Google Scholar, Murray J.P Complications after treatment of chronic maxillary sinus disease with Caldwell-Luc procedure. Laryngoscope, 1983; 93: 282.