

# Safety Of Fess In Maxillary Sinus Foreign Body Removal In Children

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## Abstract

Metallic Foreign bodies in maxillary sinus are rare. Caldwell- Luc (CWL) procedure is used for their removal, but it is associated with complications like oro-antral fistula, gingivolabial fistula, dacrocystitis, and devitalized tooth. Moreover the potential problem of altered facial development as a result surgical treatment in children is well recognized. Functional endoscopic sinus surgery (FESS) has emerged as a better alternative. A case of an 8 year old male child with a metallic pellet due to gun shot injury in maxillary sinus is being presented and the effect of FESS and CWL procedure in pediatric population are discussed.

## INTRODUCTION

A metallic foreign body impacted in the maxillary sinus is very rare. Management of para-nasal sinus pathology has undergone a sea change in recent years. Functional sinus endoscopic surgery (FESS) has almost replaced the Caldwell-Luc (CWL) procedure. FESS is associated with lower complications and do not effect the facial growth patterns in pediatric population.

A case of a child with a metallic foreign body in the maxillary sinus following a gun-shot injury, managed by FESS is being presented.

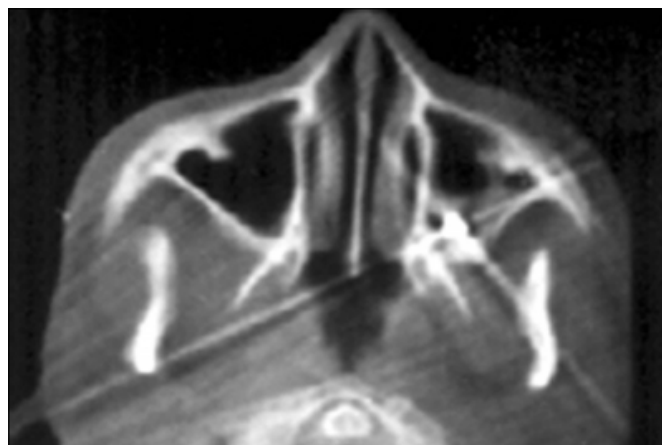
## CASE REPORT

A 8 year old male child presented with a history of a ballistic injury in a marriage party, when a gun accidentally went off and a small particle hit him just below the left eye, following which he developed pain and swelling around the eye. The patient took treatment from local doctor in the form of oral antibiotics and analgesics, but the pain over the maxillary sinus persisted though the swelling reduced. He was brought to the Otorhinolaryngology OPD on 7<sup>th</sup> day of injury.

On examination a scar mark 1cm x 0.5cm was present just below the left lower eyelid. There was no swelling over the face. Tenderness was present over the left maxillary sinus. There was no discharge in the nasal cavity. CT scan PNS revealed a metallic pellet in the left maxillary antrum, with surrounding mucosal hypertrophy.( Fig1).

## Figure 1

Figure 1: A metallic foreign body lodged in the left maxillary antrum, surrounded by mucosal hypertrophy



Since the entry wound was healed and due to the possible complications of Caldwell-Luc operation, patient was undertaken for FESS under general anesthesia. After uncinectomy and middle meatal antrostomy the foreign body was visualized engulfed in the mucosal hypertrophy. It was held with forceps and removed. No post operative complications were noted.

After four years of follow up the patient's facial growth is normal.

## DISCUSSION

After almost 100 years and over one million applications the Caldwell-Luc (CWL) procedure remains controversial therapy for chronic maxillary sinusitis and other antral

pathologies. The standard CWL operation involves a gingivo-labial mucosal incision from the region of the canine tooth to the first molar. The anterior maxillary periosteum is elevated to the point at which the inferior orbital nerve can be identified and protected. The anterior antrostomy is created with mallet and chisel or burr. After the antrum is adequately cleared of disease, an inferior meatal antrostomy is created. Temporary antral and meatal packs are inserted and the gingivo-labial incision is closed. CWL is associated with complications and morbidity ranging from 10-40%. The immediate complications are: facial swelling, cheek discomfort, epistaxis. Long term complications reported are: facial asymmetry, facial parasthesia, oro-antral fistula, gingivolabial fistula, dacrocystitis, devitalized tooth, recurrent polyp, recurrent sinusitis and synechiae formation

1,2 .

The potential problem of altered facial growth development as a result of chronic rhino-sinusitis and surgical treatment is recognized. There is a rapid development of maxillary and ethmoid sinuses in children of age group of 1-4 years. The size ratio between the ethmoid and maxillary sinus region changes from 2:1 in infant to 4:5 in the adult <sup>3</sup>. Libersa et al reported that, maxillary sinus development occurs rapidly until the age of two and half years, after that a slower evolution is noted until seven and half years. The maximum width is attained around 11 years of age, whereas the height may continue to increase up to 16 years <sup>4</sup>.

Asymmetry of the maxillary sinus is common and by 10<sup>th</sup> year the maxillary sinuses assume the usual symmetry in the adult. Sinus development is intimately linked to the facial growth. Sinuses tend to not only passively occupy the space created by the bony development but also possess a development potential of their own <sup>4,5</sup>.

Many studies document that surgical interventions such as a cleft lip, cleft palate and mandible fracture repairs may impede facial growth. It's well known that those individuals with repaired cleft lip and palate may have adverse maxillary growth. The precise etiology of the deficient growth is not known, although it seems probable that a substantial proportion of this is due to the scarring produced by the primary surgical repair and as a result of disruption of facial growth plates <sup>6,7</sup>.

The potential problem of altered facial growth development as a result of chronic rhino-sinusitis and surgical treatment is also recognized. Mair et al studied the impact of FESS on facial growth in newly weaned piglets. FESS was performed

unilaterally and CT scan was used to compare the growth of surgical and non-surgical side. The maxillary and ethmoid sinus on the operated side reached 57% and 65% respectively of the size of the same sinus on the non-operated side <sup>8</sup>.

Carpenter et al also noted alterations in the snout, mid snout and maxilla after uncinectomy, MMA and ethmoidectomy in a piglet model <sup>9</sup>.

Bothwell studied population aged 1-4 years, because most rapid growth of the sinuses is between 1-4 years, and this group is most susceptible to any potential long term growth deformity resulting from surgery. The patients were followed up to age of 10-14 years and the authors found no evidence of clinically significant facial growth alterations. The uncinate process, hiatus semilunaris, ethmoidal bulla are well developed in the new born and make consistent landmark for endoscopic sinus surgery <sup>5</sup>.

Wolf et-al in a review of 124 post FESS children concluded that no clinically significant disturbances in facial bone development were seen <sup>10</sup>.

FESS is associated with lesser complications. It doesn't disrupt the facial growth when performed in children and is a safer alternative to CWL surgery in pediatric age group.

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