

# Functional Endoscopic Sinus Surgery In Children

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## Citation

S Gulati, J Gulia, Anita. *Functional Endoscopic Sinus Surgery In Children*. The Internet Journal of Otorhinolaryngology. 2007 Volume 8 Number 1.

## Abstract

Caldwell- Luc (CWL) procedur 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.

Dear Sir,

A case with entrapment of a metallic foreign body in the maxillary sinus following a ballistic injury, which was managed by functional endoscopic sinus surgery (FESS) is being presented.

## CASE REPORT

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

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

## Figure 1

Figure 1: CT scan PNS showing a metallic pellet in the right 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 mucosal hypertrophy. It was held with forceps and removed. No post operative complications were noted.

Patient after four years of follow up his facial growth was 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. The uncinate process, hiatus semilunaris, ethmoidal bulla are well developed in the new born and make consistent landmark for endoscopic sinus surgery <sup>3</sup> .

There is a rapid development of maxillary and ethmoid sinuses in children of age group of 1-4. The size ratio between the ethmoid and maxillary sinus region changes from 2:1 in infant to 4:5 in the adult <sup>4</sup> . Libersa et al reported, 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>5</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>3,5</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 disruption of facial growth plates

6,7 .

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 of 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>4</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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### References

1. Defreitas J, Lucente FE. The Caldwell- Luc procedure: Institutional review of 670 cases: 1975-1885. *Laryngoscope* 1988;98 1297-1300.
2. Murray P. Complications after treatment of chronic maxillary sinus disease with Caldwell-Luc procedure. *Laryngoscope* 1983; 93: 282-284.
3. Bothwell MR, Piccirillo JF, Lusk RP, Ridenour BD. Long-term outcome of facial growth after functional endoscopic sinus surgery. *Otolaryngol Head Neck Surg* 2002; 126: 628- 634.
4. Wolf G, Anderhuber W, Kuhn F. Development of the paranasal sinus in children: Implications of the paranasal sinus surgery. *Ann Otol Rhinol Laryngol* 1993;102: 705-11.
5. Libersa C, Laude M, Libersa JC. The pneumatization of the accessory cavities of the nasal fossae during growth.

Anat Clin 1981;1: 265-73.

6. Farkas LG, Posnick JC, Hreczko TM, Pron GE. Growth patterns of the naso-labial region: a morphometric study. Cleft Palate Craniofac J 1992; 29: 318-324.

7. Roberts- Harry D, Semb G, Hathorn I, Killingback N. Facial growth in patients with unilateral clefts of the lip and palate; a two- center study. Cleft Palate Craniofac J 1996; 33: 489-93.

8. Mair EA, Bolger WE, Breisch EA. Sinus and facial

growth after pediatric endoscopic sinus surgery. Otolaryngol Head Neck Surg 1995; 121: 547- 52.

9. Carpenter KM, Graham SM, Smith RJ. Facial skeletal growth after endoscopic sinus surgery in the piglet model. Am J Rhinol 1997; 11: 211-17.

10. Wolf G, Greistorfer K, Jebeles JA. The endoscopic endonasal surgical technique in the treatment of chronic recurring sinusitis in children. Rhinology 1995; 33: 97-103.

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