

Comparative Study between Functional Endoscopic Sinus Surgery and Caldwell-Luc Approach for Non-Neoplastic Maxillary Sinus Pathologies

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Abstract: To study the various aspects of FESS and Caldwell-Luc approach in non neoplastic maxillary sinus pathologies. Forty patients were selected for the study. The age group ranged from 10-80 years. A male predominance had been seen in the study. In this study, all cases (100%) treated by FESS required General Anaesthesia, whereas, in Caldwell Luc Approach, 13 patients (65%) were operated under General Anaesthesia and 7 patients (35%) were operated under Local Anaesthesia. Subjective Improvement after 6 months of surgery was satisfactory in 90% cases of FESS and 60% cases of Caldwell-Luc Approach.

Keywords: Functional Endoscopic Sinus Surgery, Caldwell-Luc Approach, Non Neoplastic Maxillary Sinus pathologies.

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I. Introduction

Chronic maxillary sinusitis is initially treated medically; if it fails, then surgical management is undertaken. Caldwell-Luc approach is used for treatment of chronic sinusitis, removal of polyps, cysts or foreign bodies, reduction of facial fractures, closure of dental fistulas into the maxillary sinus, visualization of the orbital floor for decompression and access to the pterygopalatine fossa. The disadvantages of this procedure are facial swelling, facial pain and numbness of the teeth and gums, postoperative epistaxis, oro-antral fistula. The purpose of Functional Endoscopic Sinus Surgery is to reestablish ventilation and mucociliary clearance of the sinuses. The disadvantages of FESS are related to the use of costly equipments, and failure due to less expertise.

II. Materials And Methods

This is a descriptive longitudinal study which was undertaken from November 2014 to May 2016, in the Otorhinolaryngology Department of Tripura Medical College with forty patients.

Inclusion criteria: Adult patients of both sex, and cases with clinical and radiologic evidence of non-neoplastic maxillary sinus pathology who were refractory to medical management.

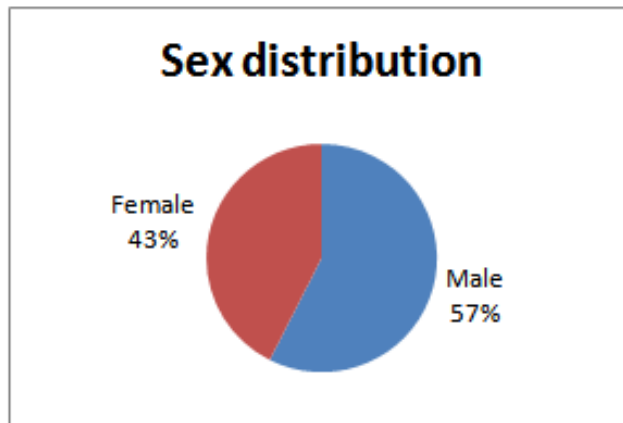
Exclusion criteria: Patients with acute sinusitis, patients with systemic diseases like uncontrolled diabetes mellitus, uncontrolled hypertension, anaemia; patients who did not give consent for participating in the study, patients having clinical and radiologic evidence of malignancy in maxillary sinus and patients with involvement of sinuses other than maxillary sinus. Follow-up was undertaken: 1 week, 1 month, 3 months, and 6 months after the surgery

III. Findings:

1) AGE DISTRIBUTION OF PATIENTS:

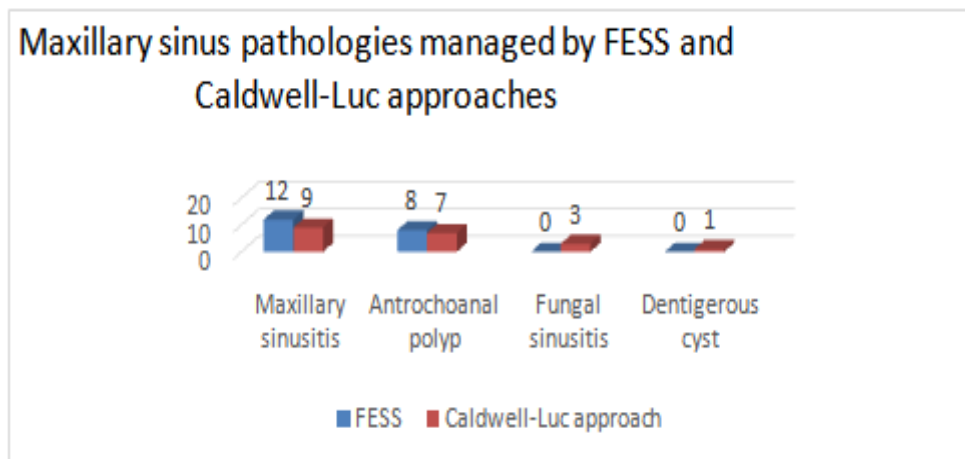
The age of the study group ranged from 10-80 years. Highest incidence was found in the age group of 31-40 years (32.5%). The mean age of patients treated by Functional Endoscopic Sinus Surgery, was 30.8 years whereas by Caldwell Luc approach it was 40.45 years.

2) SEX DISTRIBUTION OF PATIENTS

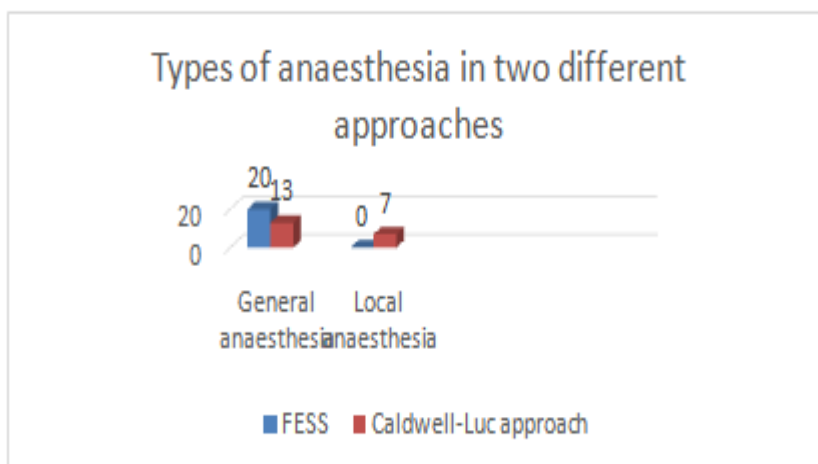


3) PRESENTING FEATURES OF THE STUDY POPULATION-82.5% patients presented with nasal obstruction, followed by nasal discharge, headache and sneezing.

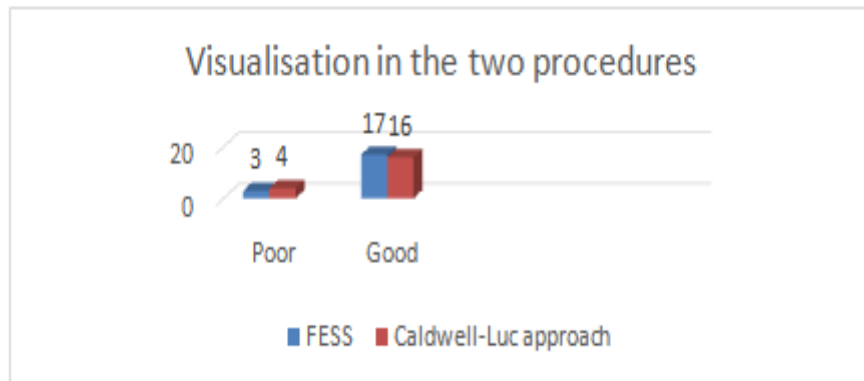
4) MAXILLARY SINUS PATHOLOGIES MANAGED USING TWO TECHNIQUES



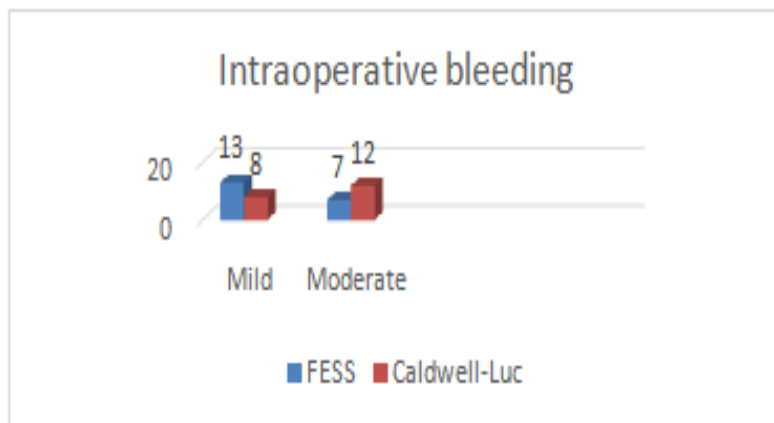
5) TYPES OF ANAESTHESIA IN TWO DIFFERENT APPROACHES



6)VISUALISATION DURING THE TWO PROCEDURES



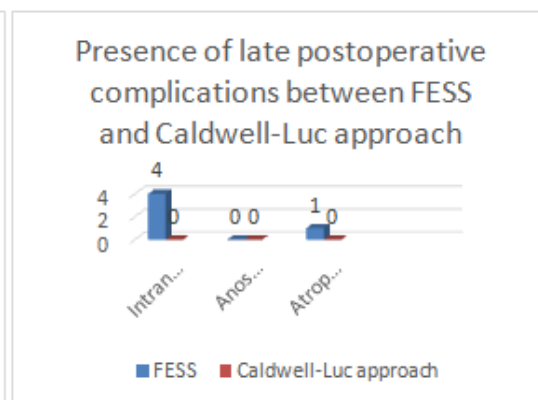
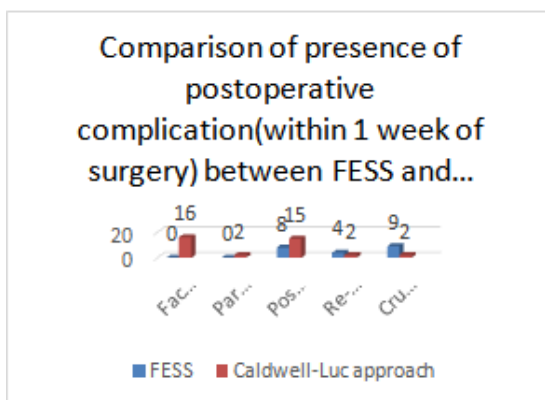
7)INTRAOPERATIVE BLEEDING DURING THE TWO PROCEDURES



8) INTRAOPERATIVE COMPLICATIONS DURING THE TWO PROCEDURES

The intraoperative problem faced during the Caldwell-Luc procedure was injury to the root of tooth that was observed in 2 cases(10%).

9)POSTOP. COMPLICATIONS-1 WEEK OF SURGERY, LATE COMPLICATIONS



10)SUBJECTIVE IMPROVEMENT AFTER 1 MONTH,3 MONTHS,6 MONTHS AFTER SURGERY.

The subjective improvement was satisfactory in 75% of patients treated by FESS, and in 35% of patients treated by Caldwell-Luc approach after 1 month of the respective surgeries.The p value of 0.031 denotes the significant result in favour of FESS. After 3 months of surgery 80% patients treated by FESS, and 45% patients treated by Caldwell-Luc approach, had subjective improvement. As the p value is 0.05, the test is statistically significant. After 6 months it was 90% for FESS and 60% for Caldwell-Luc operation.

IV. Discussion

This study was carried out in Tripura Medical College and Dr. BRAM Teaching Hospital, over a period of one and half years with 40 cases who presented with non-neoplastic maxillary sinus pathologies. The age of the study group ranged from 10-80 years. Highest incidence was found in the age group of 31-40 years(32.5%).The mean age for Caldwell Luc approach is 40.45,whereas for FESS is 30.80.Similar findings were reported by A. Lathi⁵, M.M.A Syed, S.P. Kishve who found that the non-neoplastic masses were common in the age group 11-40 years. Ikeda K.⁴also found the mean age of Caldwell as 49.6, and mean age for ESS as 47.7.In the present study, there was a male preponderance. The male: female ratio is 1.35:1.This male predominance has also been found by Eski E, Imre A, Çallı Ç, Pınar E, Öncel S¹⁴ in their study. Similar findings were also observed by R.K.Datta in his study where out of 53 patients,36 were males and 17 were females. In our study, nasal obstruction was the commonest symptom (82.5%),followed by nasal discharge(40%),which was similar to the findings of A.Lathi. Maxillary sinusitis was observed in 60% of patients treated by FESS, and 45% of patients treated by Caldwell-Luc approach. Barzilai G.² in their study found that (32%) patients had chronic sinusitis, which was the commonest pathology in their study. Antrochoanal Polyps were present in 40% of patients treated by FESS, and 35% of patients treated by Caldwell-Luc approach. Cases of Fungal Sinusitis were observed in 15% of patients treated by Caldwell-Luc approach. In our study, Endoscopic evaluation was done in all cases. X Ray Paranasal Sinuses revealed haziness in maxillary sinuses in few cases and mucosal thickening in other cases. CT Scan Paranasal Sinuses further helped in correlating the findings and Fungal Sinusitis showed hyperdense areas. A preoperative suggestion of fungal sinusitis is often helpful by prompting the surgeon to obtain appropriate samples during surgery and alerting the pathologist prior to histopathologic processing for proper identification of allergic mucin, and fungal elements. Hence, the combination of diagnostic endoscopy with CT provides the maximum information, with one modality enhancing the accuracy of the other.In this study,all cases (100%) treated by FESS required General Anaesthesia, whereas, in Caldwell Luc Approach, 13 patients (65%) were operated under General Anaesthesia and 7 patients(35%) under Local Anaesthesia. The test is significant as the p value of 0.009 is less than 0.05, in favour of FESS with respect to undergoing surgery under General Anaesthesia.Good visualization was noticed in 85% cases of FESS and 80% cases of Caldwell-Luc approach.The intraoperative bleeding was moderate in 35% cases of FESS, and in 60% cases of Caldwell Luc. Similar findings have been described by Ikeda K.⁴ who observed less blood loss in ESS than CL.No major adverse effects like orbital haematoma, blindness, or CSF rhinorrhoea or injury to lamina papyracea were encountered during FESS in this study.There was no oroantral fistula,Nasolacrimal Duct obstruction, or discoloration of tooth. This observation is similar to the findings of R.K Datta¹. Facial swelling was observed in 80%cases of Caldwell-Luc Approach.Similar findings were described by RK Datta(79%).Paraesthesia was observed only in Caldwell Luc Approach. Postoperative pain was observed in 75% cases treated by Caldwell Luc Approach. Synechiae has been observed in between the middle turbinate and the septum in 20% cases in our study. The study conducted by Steven D.Schaefer, Scott Manning, LannyG.Close⁶ also observed synechiae mostly between the middle turbinate and the nasal septum. Anosmia had not resulted in any of the cases in our study NarkioMakela M, studied the treatment modality of chronic and recurrent maxillary sinusitis by ESS or Caldwell operation¹¹. Subjective Improvement after 1 month of surgery was satisfactory in 75% cases of FESS and 35% cases of Caldwell-Luc. The p value of 0.031 denotes a statistically significant value and that the subjective improvement after 1 month is better in FESS than Caldwell-Luc surgery. Similar findings were observed in the study conducted by PenttillaMA¹⁰ where marked improvement in 50.7% of the C-L group and 76.7% of the FESS group were observed. It has been observed that FESS provides immediate relief in most cases of medically resistant sinusitis and polyps, and hence patients are more satisfied with FESS compared to Caldwell-Luc approach.

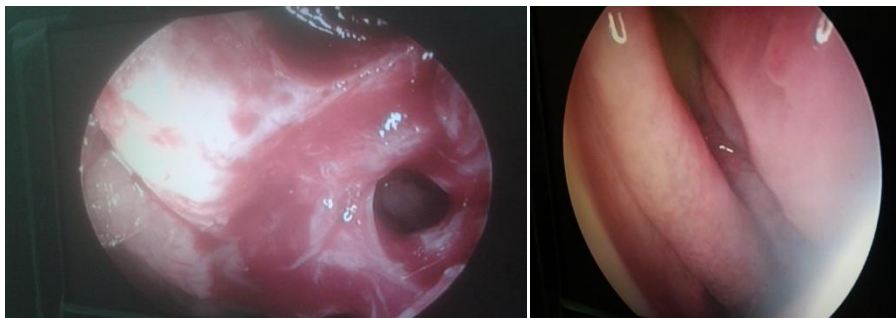


Fig: Postoperative view-immediate postoperative and 6 months postoperative view of FESS

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