ORIGINAL ARTICLE

Frequency of Orbital Cellulitis after Functional Endoscopic Sinus Surgery

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ABSTRACT

Background The paranasal sinuses being adjacent to the orbits and its contents make them prone to surgical trauma by FESS done for diseases of the sinuses.
Aim: To determine frequency of orbital cellulitis as result of FESS performed for CRS.
Methods: This is a descriptive case series and it was conducted in 6 months from June , 2017 till December , 2017 at ENT Department, SGR hospital, Lahore. All 175 patients meeting inclusion criteria were inducted in the study from Department of ENT SGR hospital, Lahore. Patients underwent a complete Otolaryngoogical and Ophthalmic examination. CT scan of Paranasal sinuses was done.
Results: In this study 175 patients meeting inclusion criteria were inducted. The mean age of patients was 38.92 ± 11.61 years with age range of 20-60 years. There were 94(53.71%) male and 81(46.29%) female cases. The mean duration of disease was 21.85±5.26 weeks with minimum and maximum duration as 13 and 30 weeks. There were 18(10.29%) cases who developed orbital cellulitis after FESS.
Conclusion The orbital complications are less frequent after FESS for CRS. The incidence of such complications can be further prevented if we timely consider about extent of the disease and any previous surgery (FESS).
Keywords: Chronic rhinosinusitis, FESS, Orbital Cellulitis.

INTRODUCTION

CRS is inflammation of the nose and paranasal sinuses[1,2]. Its estimated prevalence ranges widely, from 2 to 16%. In Europe a survey revealed an average prevalence of CRS to be 11%[3,4]. Health Surveys from far-east countries and Brazil indicate 5.5 to 8% prevalence of CRS and reaching 10% of the population in some areas of China[5-7]. It is more common in female subjects, aged 18-64 years[8]. By definition the term CRS includes all inflammatory conditions of the nose and paranasal sinuses of more than 12 weeks duration. The etiology of CRS is multifactorial. It may result from bacterial infection or fungal colonization of sinuses. The main symptoms of CRS include nasal stuffiness or obstruction, nasal discharge or postnasal drip, facial pain, headache, or reduced sense of smell[9]. Usually diagnosis is made from symptoms alone at primary care centres, but it is improved by nasal endoscopy, and cultures obtained endoscopically for antibiotic selection are less invasive and have better results[10]. If there is clinical picture of allergy, tests for allergy should be done[11]. CT scan of nose and paranasal sinuses is a pre-requisite for FESS, and for the diagnosis of suspected neoplasia it is a valuable tool[12].

Treatment of rhinosinusitis is highly variable and includes administration of antibiotics, saline instillation, mucolytics, decongestants and corticosteroids. If medical treatment is not successful, FESS should be done for improving the symptoms. FESS has been successfully utilized in the surgical treatment of rhinosinusitis[13,14]. The advantages of FESS in these patients are the avoidance of external ethmoidectomy and its external facial scar, an early drainage of the affected sinuses and a reduced hospital stay[15,16]. Ophthalmic complications related to FESS are well known[17]. They occur due to common areas of work between the two disciplines. Radiologists should be familiar to pick orbital complications of FESS. These can be minor like periorbital ecchymosis, orbital emphysema, transient diplopia, edema and formation of lipogranuloma[18]. On the other hand injury to extra-ocular muscles, nasolacrimal duct or optic nerve, hemorrhage into the orbit, orbital cellulitis or abscesses, cavernous sinus thrombosis, enophthalmos and blindness are major complications[19].

Reporting of incidence of major and minor complications among different authors has been really confusing [20]. The rationale of this study is to determine frequency of ophthalmic complications as a result of FESSS for CRS. In previously reported studies there are inconsistent statistics, for example a local study and an international study reported orbit complications as 13.1%[4] and 27.61% respectively[21]. Moreover, the local study was not done specially in patients with chronic rhinosinusitis. The current study is planned purely on complications of FESS as result of treatment for chronic rhinosinusitis. Through this study we can estimate the exact burden of orbital complications in our population after FESS. If we find high frequency then in future ENT surgeons can adopt safety measures for prevention of these complications.

SUBJECTS AND METHODS

This study is a descriptive case series and it was conducted in 6 months from June 2017 till December, 2017 at ENT Department, SGR hospital / F J Medical University, Lahore. All 175 patients meeting inclusion criteria were inducted in the study from Department of ENT Sir Ganga Ram Hospital Lahore through non-probability consecutive sampling after taking informed consent. Patients from either gender aged 20-60 years planned for FESS for rhinosinusitis were included in the study. Those with revision surgery, with pre-operative orbit abnormality and those with history of malignancy or tumor of head & neck and throat were excluded from the study. Demographic details (such as age, gender) and contact details were obtained prior to surgery. All patients underwent a

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complete Otolaryngoogical and Ophthalmic examination. CT scan of Paranasal sinuses was done. The surgery was done under hypotensive general anesthesia. Orbital complication one week after FESS was determined as per operational definition. The expected frequency of orbital complications was taken as 13.1% with 95% confidence level and 5% margin of error. All data was entered and analyzed using SPSS version 20. Qualitative data such as gender and orbital cellulitis was presented in form of frequency and percentage. Mean ± S.D was used for quantitative data like age of the patients and duration of rhinosinusitis. Data was stratified over age, gender and duration of rhinosinusitis to overcome the effect modifiers. A p- value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 175 patients meeting inclusion criteria were inducted in the study. The mean age of cases was 38.92 ± 11.61 years with age range of 20-60 years. There were 94(53.71%) males and 81(46.29%) females The mean duration of disease was 21.85 ± 5.26 weeks with minimum and maximum duration as 13 and 30 weeks. There were 18(10.29%) cases who developed orbital cellulitis postoperatively. In age group of 20-40 years there were 7(7.5%) cases who had orbital cellulitis while in in 41-60 years of age 11(13.4%) cases had orbital cellulitis. The frequency of orbital cellulitis was almost the same statistically in both age groups (Table-1) and it was the same in both males and females (Table-2). The frequency of orbital cellulitis was also statistically almost the same regardless of duration, i.e. 8.4% in cases who had disease of 13-22 weeks and 12% in which disease duration was 23-30 week (Table-3).

Table -1 Comparison of orbital cellulitis and age groups (years)

		Age groups (years)		Total
		20-40	41-60	
Orbital cellulitis	Yes	7(7.5%)	11(13.4%)	18(10.3%)
	No	86(92.5%)	71(86.6%)	157(89.7%)
Total		93(100%)	82(100%)	175(100%)

Table -2 Comparison of orbital cellulitis and gender

		Gender		Total
		Male	Female	
Orbital cellulitis	Yes	13(13.8%)	5(6.2%)	18(10.3%)
	No	81(86.2%)	76(93.8%)	157(89.7%)
Total		94(100%)	81(100%)	175(100%)

Table -3 Comparison of orbital cellulitis and duration of disease

		Duration of disease (weeks)		Total
		13-22	23-30	
Orbital cellulitis	Yes	7(8.4%)	11(12%)	18(10.3%)
	No	76(91.6%)	81(88%)	157(89.7%)
Total		83(100%)	92(100%)	175(100%)

DISCUSSION

FESS is a common procedure for the treatment of CRS. The orbital structures can be damaged during FESS. If the improvement is elusive within 48 hours of starting medical therapy, early surgical intervention should be done.

In current study the mean age of cases was 38.92 ± 11.61 years with age range of 20-60 years. Out of 175 patients there were 94(53.71%) males and 81(46.29%) female. The mean duration of disease was 21.85 ± 5.26 weeks with minimum and maximum duration as 13 and 30 weeks. There were 18(10.29%) cases who developed orbital cellulitis postoperatively. A local study reported 53 cases. There were 7 (13.1%) with orbital cellulitis following FESS. Another study reported a total of 105 patients who had undergone endoscopic sinus surgery in which 29 (27.61%) patients developed orbital cellulitis [22]. This rate of complications is higher than the one found in current study.

Recently a retrospective study included a large number of patients who underwent FESS for CRS with or without polyps or mucocele. The study reported complications in 0.66% of patients. The conclusion was that orbital complications due to FESS are rare i.e. less than 0.3% and the most common factors predisposing to complications are advanced disease, patients previously undergone FESS and concomitant anticoagulant therapy[23].

In 2014, another retrospective analysis reported complication rate of 0.36% associated with primary FESS which is lower than earlier reports. Age, and extent of surgery were found to increase the risk of major complications following FESS [24]. The above discussion shows that the results regarding frequency of orbital complications after FESS vary among different studies. This may be due to different severity levels of disease in different study groups of patients as well as different levels of skill of surgeons. Hence, further study in this regard is required.

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