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A study on impact of fess in the outcome of management of active mucosal type of CSOM

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ABSTRACT

Background: Chronic suppurative otitis media is one of the commonest diseases in the developing countries. The route of infection of ear is predominately through the Eustachian tube orifice. One of the potential risk factor for CSOM is the persistent post nasal discharge associated with chronic sinusitis. This study is done in Tirunelveli Medical College is aimed to document the impact of FESS on the active mucosal type of CSOM.

Methods: 80 patients of active mucosal type of CSOM with radiologically proved chronic sinusitis were taken and were subjected to FESS. In those patients 104 ear perforations (including bilateral disease in 24 cases) are categorised into 25 small, 32 medium and 47 large sized perforation depending on the number of quadrants involved. Post-Operative reduction in ear discharge and size of the perforations are noted.

Results: Significant changes are seen in ear discharge by 6 weeks. 18 ears out of 104 ears with perforation became dry. 55 and 57 ears became dry post operatively at 3 months and 6 months respectively. Reduction in the size of perforation seen at 3 months and significant changes seen in small and medium perforation categories. 11 out of 25 small sized perforation got closed at 6 months. No significant reduction is seen in large perforation category.

Conclusions: There is significant impact of FESS in the outcome of treatment for active mucosal type of CSOM. Significant impact is seen in Small perforations in which more than one third of ears got healed and need not be operated. In others, by making into dry ear the success rate of following ear surgery can be increased.

Keywords: Chronic suppurative otitis media, Chronic rhino-sinusitis, Functional endoscopic sinus surgery

INTRODUCTION

Chronic suppurative otitis media is one of the commonest diseases in the developing countries. It is classified into mucosal and squamous types. Mucosal type is more frequent than the squamous type. Aggravation of mucosal type of disease is often associated with upper respiratory infections. Also persistent or recurrent active mucosal disease is associated with focal sepsis. One of potent site for focal sepsis for ear infections is the nose and paranasal sinuses. These infections in the nose cause significant changes in the Eustachian tube orifice and thereby influence ear. This study is targeted to know

about the impact of clearance of focal sepsis by FESS on active mucosal type of CSOM.

METHODS

This study is conducted in the department of ENT, Tirunelveli Medical College, Tirunelveli, Tamil Nadu, India which is affiliated to The Tamil Nadu Dr MGR Medical University.

The study population are those attending the ENT OPD with nasal and ear complaints. Patients with active mucosal ear disease and nasal complaints were examined

and those with radiologically proven sinusitis were selected for study. Patients with history of allergy were excluded. During the period of December 2013 and September 2015, 80 patients were included in the study.

Study method

All the 80 patients were subjected to diagnostic nasal endoscopy and various anatomical variations including deviated nasal septum, enlarged bulla, enlarged and pneumatised middle turbinate, medialised uncinate process, and presence of polyp were noted.² CT PNS scoring was done according to Levine and May classification.³ Detailed otoscopic examination of ear is done for all the 80 patients and perforation size are noted. For this study the perforations are classified into small, medium and large depending upon the involvement of number of quadrants. Perforations occupying single quadrant are small, those involving 2 quadrants are medium and more than 2 quadrants are classified into large one. All patients were counselled and taken for Functional endoscopic sinus surgery as a first procedure with proper informed consent. Functional endoscopic sinus surgery is a dependable procedure for clearance of disease in chronic rhino sinusitis. 4,5 Post-operative care is

given and data are collected at their follow up at 6 weeks, 3 months and 6 months after discharge from hospital. The comparison of pre and post-operative variables was statistically analysed using McNemar (χ^2 paired) test. The comparison of CT scan variables was done using Karl-Pearson chi-squared (χ^2) test. The above statistical procedures have been performed by the statistical package namely IBM SPSS Statistics -20. The P values less than 0.05 (p<0.05) were considered as significant.

RESULTS

In this study of 80 patients, 44 were males and 36 were females. All age groups were represented in the study (Table 1). But a majority belonged to 35-44 age category. Out of 80 patients 24 had bilateral disease and remaining 56 had unilateral disease (Table 2) both of these when combined there were 104 perforations. Out of these 104 ears with perforation, 25 belong to small, 32 belong to medium and 47 belong to large types. In diagnostic nasal endoscopy deviated nasal septum was noted in 57 patients and Ethmoidal polyps were seen in 11 patients (Table 3). With the CT PNS scoring majority were having 2+ score (Table 4).

Table 1: Age and sex wise distribution.

| Age group (in yrs) | Male | | Female | | Total | |
|--------------------|--------|------|--------|------|--------|-------|
| | Number | % | Number | % | Number | % |
| <15 | 0 | | 2 | 5.6 | 2 | 2.5 |
| 15-24 | 12 | 27.2 | 6 | 16.7 | 18 | 22.5 |
| 25-24 | 15 | 34.1 | 7 | 19.4 | 22 | 27.5 |
| 35-44 | 9 | 20.5 | 16 | 44.4 | 25 | 31.25 |
| 45-54 | 4 | 9.1 | 2 | 5.6 | 6 | 7.5 |
| >55 | 4 | 9.1 | 3 | 8.3 | 7 | 8.75 |
| Total | 44 | 100 | 36 | 100 | 80 | 100 |

FESS alone was done in 23 patients and the remaining 57 underwent both FESS and septoplasty.

Table 2: Distribution laterality of ear perforations.

| Sex | Unilateral | Bilateral |
|-------------|------------|-----------|
| Male (44) | 34 | 10 |
| Female (36) | 22 | 14 |
| Total | 56 | 24 |

Table 3: Frequency of anatomical variations in the study population.

| Diagnostic nasal finding | Frequency (n=80) | % |
|---------------------------|------------------|-------|
| Deviated septum | 57 | 71.25 |
| Enlarged middle turbinate | 43 | 53.25 |
| Medialised uncinate | 48 | 60 |
| Enlarged bulla | 61 | 76.25 |
| Prominent aggar | 13 | 15.6 |
| Polyps | 11 | 15.75 |

At 6 weeks of post-operative follow up, 18 ears were dry (Table 5) and remaining were wet. No significant reduction in perforation size was noted.

At 3 months follow up, significant changes were seen. 55 (52.9%) ears were dry (p<0.01). 8 (32%) perforations of small category got reduced in size, 2 (6.2%) of medium category got reduced in size. The reduction in small category was statistically significant (p<0.05).

At 6 months follow up, 57 (54.8%) ears were dry (p<0.01). 14 (56%) of small perforation got reduced, 26(81.2%) of the 32 of medium size perforation got either reduced or became small size. Both these were statistically significant (p<0.05).

 $11\ (44\%)$ perforations got completely closed in small size category (p<0.05) at 6 months follow up (Table 6).

In comparing preoperative CT SCORE with ear dryness, out of 57 dry ears at 6 months,13 (22.8%) belong to 4+ score, 16 (28.0%) belong to 3+, 24 (43.8%) belong to 2+ and 4 belong to 1+(7.1%).

Table 4: CT score of the patients and its comparison with post-operative ear discharge.

| | Pre OP | | Post OP | | | | | | |
|----------|-----------|-----------|-----------|-----------|-------------------------|---------------------|--|--|--|
| CT score | Number of | Number of | Number of | Number of | Percentage of | % of dry ears among | | | |
| | patients | wet ears | wet ears | dry ears | conversion into dry ear | total dry ears | | | |
| 1+ | 16 | 18 | 14 | 4 | 22.2 | 7.1 | | | |
| 2+ | 39 | 45 | 21 | 24 | 53.3 | 42.1 | | | |
| 3+ | 15 | 24 | 8 | 16 | 66.6 | 28.0 (p<0.01) | | | |
| 4+ | 10 | 17 | 4 | 13 | 76.4 | 22.8 (p<0.01) | | | |
| Total | 80 | 104 | 47 | 57 | - | 100 | | | |

Table 5: Impact on ear discharge after fess.

| Size of perforation | Number of dry ear at 6 weeks | Number of dry ear at 3 months (p<0.01) | Number of dry ear at 6 months (p<0.01) |
|---------------------|---------------------------------|--|--|
| Small | 11 | 21 | 22 |
| Medium | 5 | 19 | 23 |
| Large | 2 | 15 | 12 |
| Total | 18 | 55 | 57 |

Table 6: Pre and postoperative comparison of size of the perforation.

| Size of perforation | Pre OP | Post OP | | | | | | | |
|-------------------------------|--------|------------|---------|----------------------|---------|--------|----------------------|---------|--------|
| | | At 6 weeks | | At 3 months (p<0.05) | | | At 6 months (p<0.05) | | |
| | | Same | Reduced | Same | Reduced | Healed | Same | Reduced | Healed |
| Small (single quadrant) | 25 | 25 | - | 17 | 8 | - | - | 14 | 11 |
| Medium (involving 2 quadrant) | 32 | 32 | - | 30 | 2 | - | 6 | 26 | - |
| Large (more than 2 quadrant) | 47 | 47 | - | 47 | - | - | 47 | - | - |

DISCUSSION

CSOM is one of the commonest diseases in developing countries. In India the prevalence of CSOM is around 6%. 6-8 According to WHO, a prevalence of more than 4% itself is considered to be a major public health problem.⁷ There are numerous risk factors associated with persistence or recurrent attacks of CSOM. Among these, recurrent upper respiratory attacks remain the most important. These attacks play a role by bringing inflammatory changes in the pharyngeal end of Eustachian tube orifice and thereby influencing middle ear. Post nasal discharge from chronic sinusitis also contributes to significant changes in the Eustachian tube orifice. Chris de zousa in his study proposed that for the successful treatment and prevention of recurrent Otitis Media, these problems in the nose and PNS must be addressed on a first priority basis. Hence this study is aimed at identifying the impact of removal of focal sepsis in sinuses on the mucosal type of CSOM.

In CT PNS, deviated nasal septum was seen in 57 patients which is about 71.25% which was attended by septoplasty. In study by Vandana et al deviated nasal septum was found in 66%. But the presence of haziness in various sinuses is also comparable with the study by Vandana et al.

Various studies done in different parts of country also proves the positive influence of FESS and septal correction on mucosal disease. In a study by Yeolekar in 2011, 63.91% of active mucosal disease patients shown dry ear after surgery. Also 20.61% of perforations got healed. In a study done in Kilpauk in 2012 by Sankaranarayanan, out of 60 patients 52 had shown improvement in middle ear status. In these studies response of different types of perforation were not analysed which is done in our study.

In our study after surgery, significant changes were seen at 6 weeks by reduction in the number of discharging ears. 18 ears were seen to be dry at 6 weeks. This increased to 55 and 57 at 3rd and 6th months follow up respectively. Though there is a significant difference between 6 weeks and 3rd month, there is no statistically significant difference between these values of 3rd and 6th month. It can be inferred that there is not much difference after 3 months of period regarding dryness. Patients can be taken up for ear surgery by this time if ear discharge persists.

Out of identified 104 ears, 25 small sized perforations improved statistically by showing reduction in size in 14 ears and complete closure in 11 ears by 6 months. Early changes started in one third of ears by 3 months itself. No

changes were seen at first 6 weeks. This signifies that the impact of FESS is more on this category comparing others.

Among 32 of medium size perforations, few showed (2 ears) reduction in size at 3 months. A large change was seen only at 6 months follow up. 26 (81.2%) ears shown reduction in size and none was seen to get closed completely.

In large perforation group, there were no cases which shown reduction in size. This may be due to the loss of much of the epithelium prior to our intervention.

Pre-operative CT score seems to be a good indicator of expectation of post-operative dry ear. In our study 13 (76.4%) out of 17, 4+ score became dry ear.16 (66.6%) out of 24, 3+ score became dry. 24 (53.3%) of 45, 2+ score became dry. 4 (22.2%) out of 18, 1+ score became dry. With the highest percentage of wet ear turning out to be dry, 4+ score is statistically significant (p<0.01). This shows that higher the pre op CT score higher the expectation of dry ear following FESS.

CONCLUSION

This study shows that there is significant impact of FESS in the outcome of treatment for active mucosal type of CSOM. Significant impact is seen in Small perforations in which more than one third of ears got healed and need not be operated. In others, by making into dry ear the success rate of following ear surgery can be increased.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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