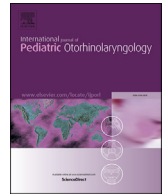




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Quality of life after endoscopic sinus surgery in refractory pediatric chronic rhinosinusitis



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ABSTRACT

Objective: The present study aims to evaluate the role of Endoscopic Sinus Surgery (ESS) in refractory pediatric Chronic Rhinosinusitis (CRS) and to assess the change in quality of life after ESS.

Materials and Methods: This prospective interventional study included 35 children (aged between 6 and 12 years) of refractory CRS, not responding to 4 weeks of maximal medical therapy attending the pediatric ENT clinic of a tertiary referral centre. Study period was from November 2013 to March 2016. This patient pool underwent Non Contrast Computed Tomography scan (NCCT) paranasal sinuses and diagnostic nasal endoscopy and those fulfilling the requisite inclusion criteria underwent Endoscopic sinus surgery. Global assessment of Rhinosinusitis Symptom severity score and SN-5 quality of life score of the patients was assessed preoperatively and 1 year after the surgery.

Results: 91.4% children showed an improvement in the total symptom score with a statistically significant (p value < 0.001) reduction in the mean total score postoperatively. Similarly 91.4% of the children showed an improvement in their quality of life with a statistically significant (p value < 0.001) difference seen in the average SN-5 scores after ESS. No major complications were encountered in any of the cases.

Conclusion: ESS is a safe and effective surgical management for children with CRS refractory to maximal medical therapy leading to an improvement in their quality of life.

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1. Introduction

CRS is defined as symptomatic inflammatory condition of the mucosa of nose and paranasal sinuses for more than 12 weeks [1]. Acute Pediatric sinusitis is expected to complicate approximately 5–10% of upper respiratory tract infection [2]. Pediatric CRS is a frequent problem in children with a prevalence of approximately 8%, which is more common than chronic diseases of tonsils or adenoids affecting approximately 2% of the children [3].

According to the European position paper on Rhinosinusitis and Nasal polyposis (EPOS 2012), CRS in children is clinically defined by two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior or posterior nasal drip), along with facial pain/pressure, cough, endoscopic evidence of sinus disease, or relevant changes on computed tomography scan of the sinuses [4].

The etiology of chronic rhinosinusitis is not completely understood but is derived from the interactions among local host factors, systemic host factors and environmental factors. Diagnosing CRS in children can be more difficult than diagnosing CRS in adults as physician must determine whether the pediatric patient truly has CRS or merely has frequent upper respiratory tract infection, pediatric allergic rhinitis or asthma [5].

The Quality of life and economic impact of pediatric sinusitis is immense. The impact includes days off from school, cost of antibiotics and other medication, number of physician visits, parental days off from work to care for sick child and potential behavioral problems from both chronically sick child and the siblings [6].

Children are usually referred to otorhinolaryngologist when the medical therapy fails, the surgical indications are not well defined and moreover they are not uniform between otorhinolaryngologists and pediatrician. The decision about surgical therapy is difficult. The goal of the surgery is to control symptoms, assure a better quality of life and prevent complications [7].

When surgery is indicated adenoidectomy and Endoscopic Sinus Surgery (ESS) or both are most commonly used surgical procedures

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all over the world. The choice of surgery depends upon the severity of symptoms, associated systemic disease and extent of disease on CT scan [7].

Currently ESS is emerging as the choice of surgery, Functional Endoscopic sinus surgery (FESS) focusses on enlarging the natural ostia of maxillary and ethmoid sinuses, while preserving most or all of the sinus mucosa. In properly selected children results are good with an expected improvement of 80–100% [6].

There is paucity of literature on Pediatric CRS and the affect of surgical management on quality of life. The present study aims to evaluate the role of ESS in refractory pediatric CRS and to assess the change in quality of life after ESS.

2. Materials and Methods

2.1. Study design

This prospective interventional study was carried out from November 2013 to March 2016 in the Department of ENT and Head & Neck surgery of a tertiary referral centre with prior approval from institutional ethical committee.

2.2. Patient sample and approach to the patient

- > A total of 35 children of both sexes aged 6–12 years refractory to maximal medical therapy (at least 4 weeks of Amoxicillin clavulanate potassium 40 mg/kg/day, steroid nasal spray mometasone furoate 200 µg daily, levocetirizine and ambroxol combination once a day and a proton pump inhibitor once a day before breakfast) with CT score of at least >5 (Lund Mackay CT scoring [8]) were included in the study.
- > Children with previous ESS, adenoidal hypertrophy of more than Grade 2 on nasal endoscopy [9], nasal polypi, Craniofacial abnormalities, diagnosed cases of Cystic fibrosis and other systemic disorders like immunodeficiency, primary ciliary dyskinesia and chronic respiratory or cardiac disease were excluded from the study.
- > Written Informed Consent was taken from the patients' caregivers. Detailed History and ENT examination was done of all the patients and clinical grading of symptoms was done preoperatively and 1 year after the surgery by Global Assessment of Rhinosinusitis Symptom Severity Score [10] in which patients' caregivers encircled a number from 1 to 7 based on the severity of symptoms. Patient pool also underwent Diagnostic Nasal Endoscopy (DNE), NCCT PNS and Lund Mackay CT scoring was done.

Those fulfilling the requisite inclusion criteria underwent FESS by Messerklinger technique under general anaesthesia and were evaluated and followed up till 1 year after the surgery.

2.3. Quality of life assessment

SN-5 Sinus and Nasal Quality of life survey [11], a validated disease specific questionnaire, was used to assess the quality of life preoperatively and 1 year after the surgery.

2.4. Statistical analysis

Data was recorded on a pre designed proforma. Data analysis was done by using SPSS (Statistical Package for the Social sciences) software for Windows version 22.0 (SPSS Inc., Illinois, USA). The observations were described in terms of Mean, Percentage, standard deviation and 95% confidence limits for the continuous data. Quantitative data like symptom score and Quality of life score was compared using Paired Student's T Test. A P value of <0.05 was considered as cut off point for level of significance.

3. Observation and results

35 patients of both sexes aged 6–12 years were included in the study. The mean age of the recruited patients was 9.26 ± 2.05 years. There were 27 males (77.1%) and 8 females (22.9%) in the study group.

On Examination 22 out of the 35 enrolled patients (62.86%) had varying degree of deviated nasal septum and all the patients had mucopurulent nasal discharge.

Symptom scoring was done according to the Global Assessment of Rhinosinusitis Symptom Severity score and each symptom was graded from 1 to 7 according to its severity.

Preoperatively, nasal obstruction was the most severe symptom with a mean of 3.89 ± 1.18 followed by anterior nasal discharge 3.43 ± 0.85 . 32 out of 35 patients (91.4%) showed an improvement in the total symptom score postoperatively. Each symptom had shown a statistically significant improvement (Table 1, Fig. 1). Mean of total preoperative symptom score was 22.66 ± 7.10 while that of total postoperative score was 14.20 ± 2.77 and there was a statistically significant improvement between the two (Table 1).

Preoperatively nasal discharge anterior was the most prevalent symptom present in all the 35 patients followed by nasal obstruction which was present in 33 out of 35 patients and post nasal drip in 21 patients. The difference in the prevalence of each symptom pre and postoperatively was statistically significant (Table 1).

Table 1
Global Assessment of Rhinosinusitis Symptom severity score.

Global Assessment of Rhinosinusitis Symptom severity score	Severity					Prevalence				
	Preop		Follow-up		P Value	Preop		Follow-up		P Value
	Mean	±SD	Mean	±SD		n	%	n	%	
Nasal obstruction	3.89	1.18	2.60	1.58	0.001	33	94.3%	12	34.3%	0.000
Nasal discharge anterior	3.43	0.85	1.80	0.90	0.000	35	100.0%	19	54.3%	0.000
Nasal discharge posterior	1.91	0.95	1.31	0.76	0.006	21	60.0%	7	20.0%	0.002
Facial pain/pressure	1.77	1.19	1.06	0.24	0.002	15	42.9%	2	5.7%	0.001
Headache	2.09	1.46	1.31	0.80	0.003	19	54.3%	5	14.3%	0.001
Fatigue	1.63	0.97	1.11	0.32	0.002	12	34.3%	4	11.4%	0.046
Decreased sense of smell	1.43	0.78	1.06	0.24	0.003	9	25.7%	2	5.7%	0.049
Ear pain/pressure	1.17	0.51	1.00	0.00	0.057	4	11.4%	0	0.0%	0.123
Cough	1.74	1.09	1.03	0.17	0.001	16	45.7%	1	2.9%	0.000
Halitosis	1.37	1.19	1.00	0.00	0.074	5	14.3%	0	0.0%	0.063
Dental pain	1.00	0.00	1.00	0.00		0	0.0%	0	0.0%	
Fever	1.23	0.94	1.00	0.00	0.160	2	5.7%	0	0.0%	0.475
Total	22.66	7.10	14.20	2.77	0.000					

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