

# Chronic Rhinosinusitis and Nasal Polyposis in Nepal

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## Abstract

Chronic rhinosinusitis and nasal polyposis is more common in the age group of 18 to 25 years. Urban population and housewives are more commonly affected. Common complains were headache and nasal blockage in 80% and 76.6% cases respectively. Polyps were common clinical finding in one third of cases. Subjective complete relief was seen in 83.3% of cases after FESS. Eight cases had minor postoperative complications

**Keywords:** Chronic rhinosinusitis, nasal polyps, FESS.

## INTRODUCTION

Chronic rhinosinusitis (CRS) is commonly encountered ENT disease. Sinusitis is defined as inflammation of the nasal and paranasal sinus mucosa. In addition, osteitis of underlying bone may also occur.<sup>1</sup> Nasal polyps are prolapsed masses of edematous mucosa of the nose and paranasal sinuses. Nasal polyposis continues to be a varied and prevalent disease. The incidence is often stated to be between 1 to 4% of the population. No such data exists in the developing countries. Osteomeatal complex (OMC) is composed of narrow channels and openings that become blocked by anatomical variation, mucosal swelling, secretions, polyps and other such factors. Obstructed sinus drainage can result in inflammation and infection, producing facial pain and headache associated with sinusitis. Although discomfort from sinusitis often presents in the frontal and maxillary regions, the site of primary obstructing pathology is usually within the OMC. The frontal and maxillary sinuses become secondarily infected from blockage of their dependent drainage pathways through the ethmoid sinus.<sup>2</sup> The basic role of functional endoscopic sinus surgery (FESS) is to remove obstructing tissue in the region of OMC and re-establish mucociliary flow. With improved sinus drainage, chronic infection can be cleared. Unlike conventional sinus surgery, inflamed mucosa is not routinely stripped from the sinus, but is left in place to heal with improved ventilation and drainage.<sup>2</sup> The introduction of FESS has changed the approach to surgery of the paranasal sinuses by Messerklinger<sup>3</sup> and Wigand.<sup>4</sup> The goal of this

surgery is to return the chronically inflamed nose and paranasal sinus mucosa to a normal functioning state through conservative surgery rather than completely exenterating the nasal and sinus cavity. The physiological basis of functional sinus surgery rests on the concept of the OMC being the central area of mucociliary clearance mechanism of the nose and paranasal sinuses as well as the site of origin for sinusitis. Eradication of diseases from OMC with adequate ventilation improves the drainage of the inflamed sinuses and thus allows resumption of mucociliary clearance and return of normal physiological function. It is now well known that these mucosal changes are reversible with the opening of the stenotic ostia which leads on to proper aeration of the sinuses. Based on these principles, and with the help of new technology, FESS has revolutionized the treatment of the chronic sinus disease.<sup>3</sup>

Rhinosinusitis develops from an interaction of environmental and host factors. The most common cause in all age groups is a viral upper respiratory infection, with edema or inflammation of the nasal lining and the production of thick mucus that obstructs the paranasal sinuses and allows a secondary bacterial overgrowth. Atopy (mucosal swelling that impairs drainage of the sinus ostia) and anatomical abnormalities (like DNS, concha bullosa, polyps) impinge sinus drainage and thus leading to rhinosinusitis. Less frequent cause includes impaired mucus production or transport from such diseases as cystic fibrosis and immotile cilia syndrome.<sup>5</sup>

The signs and symptoms reported by patients comprise the cornerstone of CRS criteria<sup>6</sup> and are divided into major

and minor factors. A CRS diagnosis requires the presence of at least two major factors, or one major with two or more minor factors, or nasal purulence on examination.<sup>6</sup> Facial pain is not considered to be a symptom of CRS without other nasal signs and symptoms. The duration of symptoms is another diagnostic cornerstone. Symptoms must persist for at least 12 weeks to make the diagnosis of CRS.

### Major Factors

Facial pain/pressure, facial congestion/fullness, nasal obstruction/blockage, nasal discharge/purulence, hyposmia/anosmia, purulence in nasal cavity.

### Minor Factors

Headache, fever, halitosis, fatigue, dental pain, cough, ear pain/pressure/fullness.<sup>1</sup>

## MATERIALS AND METHODS

Thirty consecutive cases of chronic rhinosinusitis and nasal polyposis, who did not improve with medical treatment (antibiotics, nasal decongestants, antihistaminics, and topical nasal steroid sprays) for three months were included in this study. Inclusion criteria were age more than 18 years, patients diagnosed to be suffering from chronic rhinosinusitis as per the CRS criteria. Exclusion criteria were patients less than 18 years of age or any malignant or vascular nasal masses. The cases that met the above criteria and had persistent symptoms even after 12 weeks of medical therapy were admitted in ENT ward. History and thorough ENT examination was carried out. CT of nose and paranasal sinuses coronal and axial cuts (5 mm) was performed to see the extent of disease. All patients were subjected to functional endoscopic sinus surgery. Endoscopic septoplasty, Caldwell-Luc, submucosal diathermy (SMD) of turbinates were done wherever required. FESS was done preferably under local anesthesia or general anesthesia in anxious patients.

### Intraoperative Assessment

Besides confirming the clinical findings, extent of the disease, any discharge, quantity of bleeding, were noted. Anterior nasal packing was done for 48 hours. Broad spectrum antibiotics, analgesics and antihistaminics were given postoperatively. Anterior nasal pack was removed on the second postoperative day. Alkaline nasal douchings were given for two weeks. Postoperative follow-up made by 4 formal visits (1st, 4th, 12th and 24th weeks) and other extra visits as and when necessary. In the first postoperative visit, nasal cleansing was done after spraying the nasal cavity

with 10% xylocaine solution. Any blood clots or crusts were removed. Synechiae were released if present. Improvement of symptoms was noted. In the subsequent visits, similar procedures were done as and when necessary. The response of treatment was assessed depending upon the relief of symptoms. Complete relief 90 to 100% improvement; partial relief: 50 to 90% and poor relief: < 50% improvement.<sup>7</sup>

## OBSERVATIONS

### Age Distribution

Patients were divided on the basis of age groups to evaluate any predisposition due to the age (Table 1).

**Table 1:** Age distribution of patients of CRS

Age groups ( years)	No. of cases	Percentage (%)
18-25	12	40.00
26-35	8	26.66
36-45	2	6.66
46-55	7	23.33
56-65	1	3.33
Total	30	100.00

Two thirds of the cases were below 35 years of age.

### Sex Distribution

Females were more commonly affected than males. Male: Female ratio was 1:1.14.

### Race Distribution

Race distribution included 19 Aryans and 11 Mongols. Thirteen cases were from countryside while 17 were urbanites. Housewives were most commonly affected followed by students.

### Symptomatology

Most of the patients were having headache and nasal blockage as chief presenting symptoms (Table 2).

### Duration of Symptoms (Table 3)

Most of cases had disease for 1 to 2 years.

### Previous Nasal Surgery

Two of the patients had history of previous nasal surgery [Submucosal diathermy (SMD) and antral puncture and wash (APW)].

**Table 2:** Symptoms of patients of CRS

Symptoms	No. of cases	Percentage (%)
Headache	24	80
Nasal blockage	23	76.66
Hyposmia/anosmia	14	46.66
Nasal discharge	13	43.33
Facial pain	12	40.00
Sneezing	12	40.00
Facial fullness	4	13.33
Halitosis	1	3.33
Fatigue	1	3.33
Total	30	100.00

**Table 3:** Duration of symptoms

Duration	No. of cases	Percentage (%)
< 12 months	8	26.66
12-23 months	8	26.66
24-35 months	3	10
36-47 months	2	6.66
48-59 months	5	16.66
> 59 months	4	13.33
Total	30	100.00

## Clinical Observations

Nasal examination showed polyps in eleven cases. Associated deviated nasal septum (DNS) found in six cases (Table 4).

Nasal discharge was present in six cases, mucoid in five while mucopurulent in sixth person.

## Surgery Performed

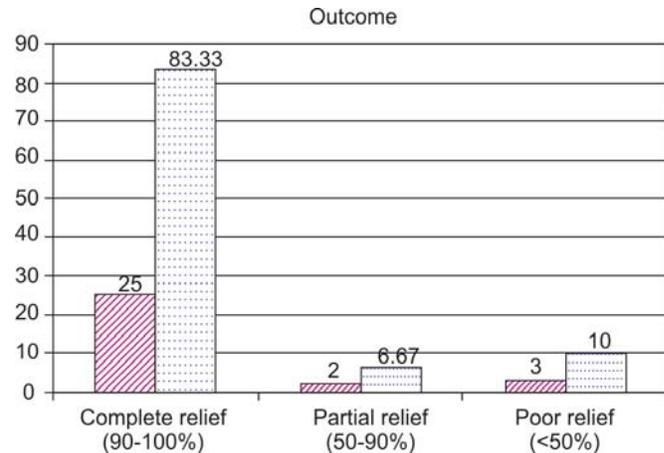
FESS was carried out using standard Messerklinger's technique. Anterior ethmoidectomy was done in 27 cases, while posterior ethmoidectomy in 18 cases, widening of maxillary ostium was carried out in 27 cases, Sphenoidotomy was performed in 4 cases. Combined FESS+SMD was performed in 2 cases, while FESS + CWL one case, FESS + septoplasty in another case. A tooth was also removed from maxillary sinus in one case.

## Subjective Improvement in Symptoms

Final outcome was assessed by asking the patient in improvement of symptoms. Complete relief from symptoms is taken as 100 percent as shown in Figure 1.

**Table 4:** Nasal examination

Pathology (%)	No. of cases	Percentage
Antrochoanal polyps	1	3.33
Ethmoidal polyps	10	30.33
Nasal discharge	6	20.00
DNS	6	20.00
Inferior turbinate hypertrophy	5	16.67
Total	30	100.00

**Fig. 1:** Showing subjective improvement after surgery

## COMPLICATIONS

In four cases, early complications were noted. In two cases, periorbital echymosis was seen while third case had prolapse of orbital fat during surgery. There was posterior nasal bleeding in one patient for which posterior nasal packing had to be done. During follow ups, synechiae were found in four cases which were released subsequently on OPD basis by keeping a piece of X-ray film between the two raw surfaces. Recurrence of polyps was noted in one case in which revision FESS was carried out.

## DISCUSSION

**Age distribution:** The commonest age group affected in this study was comparatively younger; 12 (40%) cases were seen in 18 to 25 years, followed by 8 (26.67%) cases in 26 to 35 years. The age ranged from 18 to 58 years with the mean age of 32.8 years. This is in agreement with the study done by others who found the maximum incidence (35.9%) in the age group of 9 to 76 years.<sup>8-9</sup> Younger patients in the present study could be due to the fact that they are the most

active and exposed to various allergens due to their outdoor activity. Further lot of vegetation around Dharan may also be contributory.

**Sex distribution:** This study showed slight female preponderance (53.3 vs 46.7%). Similar findings were noted by others.<sup>10</sup> In contrast to this many of the studies found male preponderance.<sup>8-10</sup> This may be because Nepalese females are more exposed to pollens as they go out to collect fodder and fire wood in the woods.

**Racial variation:** In this study, 63.33% patients were from Aryan race and 36.67% from Mongoloid race.

**Occupational distribution:** Housewives are most commonly affected group constituting 43.33% of all the cases. It may be because they are the group of the people who are more exposed to house dust and fumes.

**Personal habits:** The present study showed that among all patients, only one patient had habit of smoking and drinking alcohol. So it appears that smoking and alcohol are not contributing factors for CRS and nasal polyposis.

Nothing has been said regarding personal habits or racial variation predisposing to sinusitis in literature.

## PREVIOUS NASAL SURGERIES

In the present study, two (6.67%) of the cases had previous nasal surgery. However, other studies reported high rate of previous nasal surgeries.<sup>7-13</sup> (Rice et al, 6.3 to 10.1%).<sup>11</sup>

## CLINICAL FEATURES

**A comparison of** Clinical features of CRS of present study with previous studies has been done in Table 5.

## NASAL FINDINGS

Comparison of nasal findings has shown in Table 6.

## SURGICAL PROCEDURES

Standard Messerklinger's technique of FESS was used. Anterior ethmoidectomy and widening of maxillary ostium was done in 27 (90%) cases. Posterior ethmoidectomy was done in 18 (60%) cases. Sphenoidotomy in 4 (13.33%) cases. FESS + SMD of inferior turbinate done in 2 (6.66%) cases. FESS + CWL done in 1 (3.33%), FESS + Septoplasty in 1 (3.33%). Similar type of surgery depending on the extent of diseases, were done by various authors (Table 7).

**Table 5:** Comparison of CRS symptoms of different studies

Symptoms	Rice et al <sup>11</sup> (1989)	Levine et al <sup>14</sup> (1990)	Nayak et al <sup>8</sup> (1991)	Winsted Barnett <sup>15</sup> (1998)	Venkatachalam <sup>7</sup> (1999)	Present study
Headache	–	–	75.6%	–	–	80%
Nasal blockage	–	31.6%	75.6%	90%	87.1%	76.67%
Decreased smell	–	15.6%	32%	–	35.7%	46.67%
Nasal discharge	42%	51.2%	78.2%	87%	87.1%	43.33%
Facial pain	88%	36.4%	–	98%	–	40%
Sneezing	15%	25.2%	19.2%	–	22.8%	40%

**Table 6:** Comparison of nasal findings

Findings	Damm et al <sup>16</sup> (2002)	Deal and Kountakis <sup>17</sup> (2004)	Venkatachalam and Bhat <sup>7</sup> (1999)	Nayak et al <sup>8</sup> (1991)	Chaudhary et al <sup>18</sup> (1999)	Present study
Polyps	38%	38.8%	31.4%	20.5%	39.1%	36.6%
Nasal discharge	–	–	35.8%	–	37.7%	20%
DNS	–	–	–	34.6%	45%	20%
Inferior turbinate hypertrophy	–	–	10%	14.1%	27.5%	16.6%

**Table 7:** Comparison of surgeries performed

Surgery performed	Levine et al <sup>14</sup> (1990)	Chambers et al <sup>19</sup> (1997)	Dursum et al <sup>9</sup> (1998)	Damm et al <sup>16</sup> (2002)	Wynn and Har-Ei <sup>10</sup> (2004)	Present study
Anterior ethmoidectomy	100%	51.6%	76.1%	39%	100%	90%
Posterior ethmoidectomy	100%	27.4%	47.5%	61%	100%	60%
Widening of maxillary ostium	100%	80.2%	55.4%	51.3%	100%	90%
Sphenoidotomy	–	9%	23.1%	40%	85%	13.3%
Frontal sinus surgery	–	7.4%	12.8%	35%	85%	–
Fess + inferior turbinate surgery	–	1.6%	–	6%	–	6.6%
Fess + septoplasty	16%	–	2.7%	52.1%	–	3.3%

## OUTCOME

Final outcome was assessed by percentage of total improvement of symptoms. The present study showed that 25 (83.33%) cases had complete relief; 2 (6.6%) had partial relief and 3 (10%) had poor relief. It was comparable to other studies.<sup>8,11,18</sup>

## COMPLICATIONS

Periorbital ecchymosis was observed in 2 cases (6.66%). Similar observation was noted by others.<sup>9,11,12,14</sup> We observed postnasal bleeding in one case, which has been reported by others in past.<sup>7,12,16,18</sup> Late complication like synechiae was found in 4 (13.3%) cases in the present study which is consistent with past studies.<sup>8,18</sup> Recurrence of polyps was seen in 1 (3.33%) cases in the present study for which revision surgery done on later date. It is consistent with the study done by Nayak et al.<sup>8</sup>

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