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A Cross-sectional Study on Nasoalveolar Cyst, Its Risk Factors and Management Among Patients in West Bengal: A cross-sectional study

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Abstract

Background: Nasoalveolar cysts are rare non-odontogenic soft tissue cysts located in the nasolabial fold, often underdiagnosed due to their deep anatomical location. Their exact etiology remains unclear, though several congenital and acquired factors have been proposed. Objective: To determine the clinical profile, risk factors, and management outcomes of nasoalveolar cysts in patients attending tertiary care hospitals in West Bengal. Methods: A cross-sectional study was conducted with 28 patients diagnosed with nasoalveolar cysts. Data were collected regarding demographic details, risk factors, clinical features, and management modalities. All patients underwent clinical examination, radiological investigations, and surgical management followed by histopathological confirmation. Results: Majority of patients were female (71.4%), with most cases occurring in the 30–50 year age group. Common presenting symptoms were nasal obstruction (78.6%) and swelling in the nasolabial region (85.7%). Identified risk factors included trauma (32.1%), infection (25%), and congenital predisposition (21.4%). All patients were managed surgically—85.7% underwent endoscopic marsupialization while 14.3% had cyst excision via sublabial approach. Conclusion: Nasoalveolar cysts, though rare, should be considered in patients with swelling in the nasolabial fold. Early diagnosis and appropriate surgical intervention result in excellent prognosis and minimal recurrence.

KEYWORDS: Nasoalveolar Cyst, trauma.

INTRODUCTION

Nasoalveolar (also known as nasolabial) cysts are rare, non-odontogenic cysts located in the soft tissue anterior to the nasal aperture. First described by Zuckerkandl and later detailed by Klestadt, they are lined by respiratory epithelium and believed to arise from epithelial remnants or embryonic fissures[1]. Due to their extraosseous location, they are often missed in early stages.

Nasoalveolar cysts, also known as nasolabial cysts, are relatively rare, accounting for only about 0.7% of all maxillofacial cysts. They are typically found in the soft tissue of the upper lip and nasal vestibule. While considered rare, they are more common in women and typically develop in the fourth and fifth decades of life[2].

Key Points: Rarity: Nasoalveolar cysts are uncommon, representing a small fraction of all maxillofacial cysts. Prevalence: They occur in approximately 1 out of 20,000 patients. Location: These cysts develop in the soft tissue between the upper lip and nasal vestibule[3].

Age: They are most frequently found in adults, with the highest prevalence in the fourth and fifth decades of life. Gender: Nasoalveolar cysts show a predilection for women, with a female-to-male ratio of 3.5:1 or 6.5:1. Bilateral Occurrence: While most cases are unilateral, bilateral occurrences have been reported, though they are rare[4-10].

Clinical Presentation: Patients typically experience swelling in the nasal alar region, which can cause nasal obstruction and facial asymmetry Although uncommon, they are clinically significant due to their potential to cause cosmetic deformity, nasal obstruction, and discomfort. This study aimed to evaluate the prevalence, risk factors, and surgical management of nasoalveolar cysts in a West Bengal population[11].

METHODS

This study was conducted in a tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 28 patients in the department of Otolaryngology at a tertiary care centre from January / 2020 to July/2020.

Total 28 participant were approached to project among them No one were excluded in this study and Total 28 Confirmed cases were included on the basis of fulfilling of the eligibility criteria. The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination

Study Design:

Cross-sectional observational study.

Study Setting and Duration:

Tertiary care hospitals in West Bengal over a 12-month period.

Sample Size:

28 patients diagnosed with nasoalveolar cysts.

Inclusion Criteria:

- Patients aged 18–60 years
- Clinically and radiologically diagnosed with nasoalveolar cysts
- Provided informed consent

Exclusion Criteria:

- Patients with odontogenic cysts
- Prior surgical intervention at nasolabial region
- Immunocompromised patients

Data Collection:

- Demographic data (age, sex, occupation)
- Clinical presentation
- Risk factor history (trauma, infection, congenital anomalies)
- Imaging (CT/MRI as needed)
- Surgical management details
- Histopathological findings
- Postoperative follow-up and recurrence

Data Analysis:

Descriptive statistics were used to summarize data using percentages and frequencies.

The data collected was entered in excel spread sheet. The data was analyzed by using SPSS statistical software version 20. Statistical analysis in the form of percentages was done. Data analysis was performed using

Statistical package for social sciences (SPSS, IBM, USA) version 20.0. Results were reported as mean ± standard deviation for quantitative variables Statistical Analysis: SPSS v28, $p < 0.05$ significant.

RESULTS

In this study we found that Nasoalveolar Cyst is associated with demographic profile of patient. 31–50 age group patient suffered of Nasoalveolar Cyst its prevalence is 53.6% followed by 50> age group its prevalence is 25%.

Female are more prone to suffered of Nasoalveolar Cyst. its prevalence is 71.2%(Table 1)

Demographic Profile Table 1:

Variable	Frequency (n=28)	Percentage (%)
Age Group (years)		
18–30	6	21.4
31–50	15	53.6
>50	7	25.0
Gender		
Male	8	28.6
Female	20	71.4

Risk Factors for Nasoalveolar Cyst are Facial trauma, Recurrent infections, Congenital predisposition and No identifiable cause,

Risk Factors Identified Table 2:

Risk Factor	Number of Patients	Percentage (%)
Facial trauma	9	32.1
Recurrent infections	7	25.0
Congenital predisposition	6	21.4
No identifiable cause	6	21.4

Clinical Features:

- Nasolabial swelling: 85.7%
- Nasal obstruction: 78.6%
- Pain/discomfort: 39.3%

Management:

- **Endoscopic marsupialization:** 24 patients (85.7%)
- **Sublabial surgical excision:** 4 patients (14.3%)

Histopathological Findings:

All confirmed nasoalveolar cysts with pseudostratified columnar epithelium and goblet cells.

Postoperative Outcome:

- No recurrence noted during 6-month follow-up.
- Mild swelling in 2 cases post-op, resolved conservatively.

DISCUSSION

This study confirms the higher prevalence of nasoalveolar cysts among middle-aged females, consistent with literature[12]. The leading symptom remains nasolabial swelling and nasal blockage. While trauma and infection are common triggers, congenital epithelial entrapment remains a suspected underlying cause.
Nasoalveolar cysts, also known as nasolabial cysts, are more common in adults, particularly between the fourth and fifth decades of life. They are more frequently found in females, with a male-to-female ratio of approximately 1:3.6. While usually unilateral, bilaterality is reported in about 10% of cases. Dark-skinned individuals may also have a higher incidence[13-18].
Here's a more detailed breakdown: Age: Nasoalveolar cysts typically present in adulthood, with the majority of cases occurring between the ages of 40 and 50. Sex: Females are more likely to be affected than males. Race: Some studies suggest a higher incidence in dark-skinned individuals[19]. Laterality: Most nasoalveolar cysts are unilateral, meaning they occur on one side of the face, but bilateral cases have been reported. Location: These cysts are usually found in the nasolabial sulcus (the groove between the nose and upper lip) and the nasal alar base (the lower part of the nostril). Symptoms: Nasoalveolar cysts often present as a painless, slow-growing swelling in the nasolabial area. In some cases, they may cause nasal obstruction or displacement of the inferior turbinate [20] .
Risk factors are not clearly defined, but age (typically 40-50s) and sex (more common in females) are noted, and some theories suggest a link to developmental factors and potential entrapment of epithelial cells[21].
Possible Risk Factors: Developmental Origin: The two main theories for the origin of nasolabial cysts involve developmental factors: Epithelial entrapment: During the fusion of the maxillary and nasal processes in facial development, epithelial cells can become trapped and form cysts. Nasolacrimal duct remnants: Epithelial remnants of the nasolacrimal duct may persist and develop into cysts. Age and Sex: Nasolabial cysts are more commonly found in individuals in their fourth to fifth decades of life, with a female predilection. Unilateral or Bilateral: While typically unilateral, bilateral cases have been reported[22]. Trauma: Some studies suggest that trauma may play a role in cyst formation or enlargement. Infection:
Secondary infection of the cyst can occur, potentially causing pain, swelling, and other symptoms. Radiological imaging, especially CT, played a critical role in diagnosis. Endoscopic marsupialization has emerged as a minimally invasive and effective technique with minimal morbidity and no recurrences in our cohort. Sublabial excision remains reserved for cases not amenable to endoscopy. Our findings emphasize the importance of early diagnosis, imaging, and tailored surgical intervention.

CONCLUSION

Nasoalveolar cysts, although rare, are clinically important lesions with distinct presentation and favourable prognosis following surgical intervention. Endoscopic marsupialization is a safe and effective treatment option. Increased awareness among clinicians will aid in early identification and reduce patient morbidity

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CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal

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