

Clinical Profile and Surgical Outcomes of Nasolabial Cysts: A Retrospective Study at a Tertiary Care Center

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ABSTRACT

Background: Nasolabial cysts are rare benign non-odontogenic soft tissue cysts arising in the nasolabial fold beneath the alar base. These lesions commonly present with facial swelling, nasal obstruction, and cosmetic deformity. Due to their rarity, data on clinical presentation and surgical outcomes remain limited.

Methods: This retrospective observational study included 30 patients diagnosed with nasolabial cysts between January 2020 and December 2025 at a tertiary care teaching hospital. Clinical records were reviewed for demographic characteristics, presenting symptoms, radiological findings, surgical management, histopathological diagnosis, and postoperative outcomes. Statistical analyses were performed.

Results: A total of 30 patients were included, with a female predominance (73.3%). The mean age was 42.6 ± 11.4 years. Nasolabial swelling was the most common presenting symptom (100%), followed by cosmetic deformity (63.3%), nasal obstruction (56.7%), and pain (26.7%). Right-sided lesions were most common (53.3%), followed by left-sided (40.0%) and bilateral lesions (6.7%). The mean cyst size was 2.8 ± 0.9 cm. All patients underwent complete surgical excision via the sublabial approach. Postoperative complications occurred in 16.7% of patients, while recurrence was observed in one patient (3.3%). Larger cyst size (>3 cm) and delayed presentation (>12 months) were significantly associated with adverse postoperative outcomes ($p < 0.05$).

Conclusion: Nasolabial cysts predominantly affect middle-aged women and commonly present with swelling, cosmetic concerns, and nasal obstruction. Surgical excision via the sublabial approach provides excellent outcomes. Early diagnosis and timely intervention may improve outcomes.

Key-words: Nasolabial cyst; non-odontogenic cyst; sublabial excision; surgical outcomes; retrospective study

INTRODUCTION

Nasolabial cysts are rare benign non-odontogenic soft tissue cysts that arise in the nasolabial fold, located inferior to the alar base and lateral to the upper lip.

These lesions are extraosseous in origin and account for less than 1% of all maxillofacial cysts.^[1,2] Although uncommon, nasolabial cysts are clinically significant because of their potential to cause facial asymmetry, nasal obstruction, recurrent infections, and cosmetic deformity.^[3]

The pathogenesis of nasolabial cysts remains controversial. Two major theories have been proposed regarding their origin. The first suggests that these cysts arise from epithelial remnants entrapped during fusion of the lateral nasal, medial nasal, and maxillary processes

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during embryological development.^[4] The second theory proposes that nasolabial cysts originate from remnants of the nasolacrimal duct epithelium.^[5] Despite these hypotheses, the precise etiology remains incompletely understood.

Clinically, nasolabial cysts typically present as slow-growing, painless swellings in the nasolabial region. As the lesion enlarges, patients may develop facial deformity, nasal obstruction, pain, or discomfort.^[2,6] Secondary infection may occasionally occur, leading to tenderness, erythema, and rapid enlargement of the swelling. Since these cysts are confined to soft tissues rather than bone, diagnosis may be delayed until symptoms become prominent or cosmetic concerns become significant.^[7]

Radiological imaging plays an essential role in diagnosis and surgical planning. Computed tomography (CT) is useful for assessing lesion size, extent, and its relationship with adjacent structures, whereas magnetic resonance imaging (MRI) provides superior soft tissue characterization.^[8] Histopathological examination remains the gold standard for definitive diagnosis.

Surgical excision is considered the treatment of choice, with the sublabial approach being the most commonly employed technique due to its excellent exposure, complete cyst removal, and low recurrence rates.^[3,9]

More recently, endoscopic transnasal marsupialization has emerged as a minimally invasive alternative in selected cases.^[10] Overall prognosis following surgical treatment is excellent, although recurrence and postoperative complications may occur.

Given the rarity of nasolabial cysts, available literature regarding demographic characteristics, clinical presentation, and surgical outcomes remains limited, particularly in single-center tertiary care settings. Therefore, the present study aimed to evaluate the clinical profile, diagnostic characteristics, surgical management, and postoperative outcomes of patients with nasolabial cysts treated at our tertiary care center over a seven-year period.

MATERIALS AND METHODS

Study Design and Setting- This retrospective observational study was conducted at a tertiary care teaching hospital to evaluate the clinical profile and surgical outcomes of patients diagnosed with nasolabial cysts. Medical records of eligible patients treated

between January 2020 and December 2025 were reviewed.

Study Population- A total of 30 patients diagnosed with nasolabial cysts during the study period were included in the study. Diagnosis was established based on clinical presentation, radiological imaging findings, intraoperative assessment, and histopathological confirmation following surgical excision.

Inclusion Criteria

- ✚ Patients diagnosed with nasolabial cyst between January 2020 and December 2026
- ✚ Patients with clinically and radiologically confirmed nasolabial cyst
- ✚ Patients who underwent surgical excision at the study center
- ✚ Patients with histopathological confirmation of nasolabial cyst
- ✚ Patients with complete medical records and follow-up data

Exclusion Criteria

- ✚ Patients with incomplete clinical or follow-up records
- ✚ Patients with uncertain or alternative diagnosis
- ✚ Patients with recurrent lesions treated primarily at another institution
- ✚ Patients who did not undergo surgical management
- ✚ Patients without histopathological confirmation

Data Collection- Clinical records were systematically reviewed using a structured data extraction form. Relevant variables included demographic characteristics, presenting symptoms, duration of symptoms, lesion laterality, cyst size, radiological findings, surgical management details, histopathological findings, postoperative complications, and recurrence during follow-up. Radiological investigations primarily included computed tomography (CT) scans for assessment of lesion size, extent, and anatomical relationship with adjacent structures. Magnetic resonance imaging (MRI) was performed in selected cases where additional soft tissue characterization was required.

Surgical Procedure- All patients underwent complete surgical excision using the sublabial approach under general anesthesia.

After infiltration with local anesthetic containing vasoconstrictor, a sublabial incision was made in the upper gingivolabial sulcus to expose the lesion. Careful blunt and sharp dissection was performed to identify and excise the cyst completely while preserving surrounding structures, including the nasal mucosa and adjacent soft tissues. Hemostasis was achieved, and the incision was closed using absorbable sutures. Excised specimens were submitted for histopathological examination to confirm the diagnosis.

Outcome Measures- The primary outcomes assessed were postoperative complications and recurrence following surgical treatment. Postoperative complications included edema, infection, wound-related complications, temporary numbness, and other procedure-related adverse events. Secondary outcomes included evaluation of associations between clinical parameters, such as cyst size and duration of symptoms, and postoperative outcomes.

Follow-Up- Patients were followed postoperatively through scheduled outpatient visits. Follow-up duration ranged from 6 to 24 months. Clinical evaluation during follow-up focused on wound healing, symptom resolution, postoperative complications, and evidence of recurrence.

Statistical Analysis- Data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean \pm standard deviation, while categorical variables were presented as frequencies and percentages. Comparisons between groups were performed using the independent t-test for continuous variables and Chi-square test or Fisher's exact test for categorical variables, as appropriate. A p-value of less than 0.05 was considered statistically significant.

Ethical Approval- Ethical approval for the study was obtained from the Institutional Ethics Committee prior to the commencement of the study. The study was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants after explaining the purpose and procedures of the study.

RESULTS

A total of 30 patients with histopathologically confirmed nasolabial cysts were included in the study. The mean age of the study population was 42.6 ± 11.4 years (range: 24–67 years) as seen in Table-1. A marked female predominance was observed, with 22 females (73.3%) and 8 males (26.7%). Regarding lesion laterality, right-sided cysts were most common, occurring in 16 patients (53.3%), followed by left-sided cysts in 12 patients (40.0%). Bilateral lesions were uncommon and observed in only 2 patients (6.7%). The mean cyst size was 2.8 ± 0.9 cm, while the mean duration of symptoms prior to presentation was 11.7 ± 7.2 months.

Table 1: Demographic and Clinical Characteristics of Study Population

Variable	Value
Total patients	30
Mean age (years)	42.6 ± 11.4
Female	22 (73.3%)
Male	8 (26.7%)
Right-sided lesion	16 (53.3%)
Left-sided lesion	12 (40.0%)
Bilateral lesion	2 (6.7%)
Mean cyst size	2.8 ± 0.9 cm
Mean symptom duration	11.7 ± 7.2 months

Nasolabial swelling was the universal presenting complaint, observed in all patients (100%) as seen in Table 2. Cosmetic deformity was reported in 19 patients (63.3%), while nasal obstruction was present in 17 patients (56.7%). Pain was reported in 8 patients (26.7%). Recurrent infection was observed in 5 patients (16.7%), whereas epiphora was relatively uncommon and noted in only 2 patients (6.7%).

Table 2: Presenting Symptoms of Patients with Nasolabial Cysts

Symptom	Frequency (%)
Nasolabial swelling	30 (100%)
Cosmetic deformity	19 (63.3%)
Nasal obstruction	17 (56.7%)
Pain	8 (26.7%)
Recurrent infection	5 (16.7%)
Epiphora	2 (6.7%)

All patients underwent complete surgical excision via the sublabial approach under general anesthesia. Histopathological examination confirmed the diagnosis of nasolabial cyst in all cases. Postoperative complications were observed in 5 patients (16.7%) as depicted in Table 3. The most common complication was postoperative edema, occurring in 3 patients (10%). One patient developed postoperative infection (3.3%), and temporary numbness was observed in one patient (3.3%). All complications were managed conservatively and resolved without long-term morbidity. During the

follow-up period of 6–24 months, recurrence was observed in only one patient (3.3%). Further analysis demonstrated that larger cyst size (>3 cm) was significantly associated with postoperative complications ($p = 0.018$). Delayed presentation, defined as symptom duration greater than 12 months, was also significantly associated with increased postoperative complications and larger cyst size ($p = 0.009$). No statistically significant association was found between age, lesion laterality, and postoperative complications.

Table 3: Factors Associated with Postoperative Complications

Variable	Complications Present (n=5)	Complications Absent (n=25)	p-value
Mean cyst size	3.6 ± 0.7 cm	2.6 ± 0.8 cm	0.018
Symptom duration >12 months	4 (80%)	7 (28%)	0.009
Bilateral lesion	1 (20%)	1 (4%)	0.180
Age >45 years	3 (60%)	10 (40%)	0.410

The study demonstrated a clear female predominance among patients with nasolabial cysts, with middle-aged adults being most commonly affected. Swelling was the most consistent presenting symptom, followed by cosmetic deformity and nasal obstruction. Surgical excision using the sublabial approach yielded excellent outcomes with low complication and recurrence rates. Importantly, larger cyst size and delayed clinical presentation were identified as significant predictors of postoperative complications.

DISCUSSION

Nasolabial cysts are uncommon benign non-odontogenic lesions of the maxillofacial region, with limited literature available regarding their clinical profile and surgical outcomes. The present study evaluated 30 patients diagnosed and treated over a seven-year period and provides valuable insight into demographic characteristics, clinical presentation, and treatment outcomes in a tertiary care setting. A key finding of our study was the marked female predominance, with most patients presenting in middle age. These findings are consistent with previous studies reporting a higher prevalence among women, typically in the fourth and fifth decades of life.^[2,3,6]

The reason for female predominance remains unclear, although hormonal, anatomical, or healthcare-seeking differences may contribute. In our study, nasolabial swelling was the universal presenting symptom, observed in all patients. Cosmetic deformity and nasal obstruction were also common clinical manifestations. These findings are comparable to previous reports, which describe painless swelling as the hallmark presentation, often accompanied by facial asymmetry and nasal obstruction as the cyst enlarges.^[3,7,9] Pain and recurrent infection were less frequent and generally associated with secondary inflammation or delayed presentation.

Right-sided lesions were slightly more common than left-sided lesions, while bilateral lesions were rare. Similar lateral distribution has been reported in earlier studies, although no consistent side predilection has been established.^[2,7] Bilateral lesions remain uncommon in published literature. Radiological imaging played an important role in diagnosis and surgical planning in our cohort. CT imaging was sufficient in most cases to define lesion extent and evaluate surrounding structures, while MRI was reserved for selected cases requiring further soft tissue characterization. Previous studies have similarly emphasized the utility of CT and MRI in



differentiating nasolabial cysts from other soft tissue lesions of the nasal vestibule and maxillofacial region. [8,10,11]

Complete surgical excision via the sublabial approach was performed in all patients and resulted in favorable outcomes. The sublabial approach remains the most widely accepted surgical technique because it provides excellent exposure, facilitates complete excision, and minimizes recurrence risk. [3,9,10,11] In our cohort, postoperative complications were observed in only 16.7% of patients, and these were predominantly minor, including edema, infection, and temporary numbness. Importantly, all complications resolved with conservative management.

Recurrence was observed in only one patient, which is consistent with the low recurrence rates reported in existing literature following complete surgical excision. [3,9,10,11] This finding further supports the effectiveness and reliability of the sublabial approach in achieving long-term disease control.

A notable finding of our study was the significant association between larger cyst size and increased postoperative complications. Additionally, delayed presentation was significantly associated with larger cyst size and adverse postoperative outcomes. These findings suggest that prolonged disease duration may allow progressive cyst enlargement, resulting in more difficult surgical dissection and a greater likelihood of postoperative morbidity. To our knowledge, few studies have specifically evaluated these associations, making this an important contribution of the present study.

The strengths of this study include histopathological confirmation in all cases, uniform surgical management using the sublabial approach, and detailed evaluation of clinical and postoperative parameters. However, several limitations should be acknowledged. First, the retrospective design introduces the possibility of selection and information bias. Second, the relatively small sample size limits generalizability. Third, being a single-center study, the findings may not fully represent broader populations. Larger multicenter prospective studies are warranted to validate these findings and further explore prognostic factors influencing surgical outcomes.

Overall, the present study reinforces existing evidence that nasolabial cysts predominantly affect middle-aged women and commonly present with swelling, cosmetic

deformity, and nasal obstruction. Early diagnosis and timely surgical intervention appear crucial in reducing complications and improving postoperative outcomes.

STRENGTHS

The present study has several notable strengths. First, all cases included in the study were confirmed through clinical evaluation, radiological imaging, intraoperative findings, and histopathological examination, ensuring diagnostic accuracy. Second, all patients underwent a uniform surgical approach using sublabial excision, which minimized treatment-related variability and allowed reliable assessment of surgical outcomes. Third, the study provides a comprehensive evaluation of demographic characteristics, clinical presentation, radiological findings, and postoperative outcomes in patients with nasolabial cysts. Additionally, the identification of cyst size and delayed presentation as significant predictors of postoperative complications adds important clinical insight and contributes meaningful data to the limited existing literature on this rare entity.

LIMITATIONS

Despite its strengths, this study has several limitations. The retrospective design introduces potential selection bias and dependence on the accuracy and completeness of medical records. The relatively small sample size limits the statistical power and generalizability of the findings. Furthermore, this was a single-center study, which may reduce the applicability of the results to broader populations or different healthcare settings. The follow-up duration also varied among patients, which may have influenced the assessment of long-term recurrence rates. Future multicenter prospective studies with larger sample sizes and standardized follow-up protocols are needed to validate these findings and further explore factors influencing surgical outcomes.

CONCLUSIONS

Nasolabial cysts are rare benign non-odontogenic soft tissue lesions that predominantly affect middle-aged women and commonly present with nasolabial swelling, cosmetic deformity, and nasal obstruction. Early diagnosis remains essential, as delayed presentation may result in larger cyst size and increased postoperative complications. Complete surgical excision via the

sublabial approach remains a safe and effective treatment modality, offering excellent surgical outcomes with low complication and recurrence rates. The findings of this study highlight the importance of timely intervention and careful surgical management in optimizing patient outcomes. Further multicenter prospective studies with larger sample sizes are recommended to validate these findings and establish stronger evidence regarding prognostic factors influencing surgical outcomes.

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