

Nasolabial Cyst: A Case Report with Review of literature

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ABSTRACT:

Introduction: Nasolabial cyst is a rare non-odontogenic soft tissue cyst of the nasal alar region with an occurrence of 0.7% cases out of all maxillofacial cysts. Clinically, it mostly presents as painless swelling in the nasal region. Diagnosis is made based on history and clinical examination. Aspiration, radiographic examination, and cross-sectional scans assist in ruling out other odontogenic or non-odontogenic pathologies and also help in locating the lesion. **Case report:** This paper documents case report of nasolabial cyst in a 30-year-old male patient. This article presents clinical diagnosis, investigations, and surgical management of the lesion, along with a review of literature. **Conclusion:** There are various treatment options for the management of NLC. We used a sublabial surgical approach to excise the lesion, followed by histopathological examination, which further confirmed the diagnosis. This lesion has rare reoccurrence and should be considered in differential diagnosis for swelling in nasal alar region

KEYWORDS: Developmental cyst, MRI, CBCT, Non-odontogenic cyst

INTRODUCTION:

Nasolabial cyst (NLC) is a rare benign soft tissue cyst which usually occur in the nasal alar region. It was first described by Zukerkandl in 1882 and by Klestadt in 1953.^{1,2} Usually, these lesions are found in the soft tissues that lie between the maxillary bone and the nasolabial fold.¹ The estimated incidence in a year of the NLC is 1.6 per 100,000 people, 0.7% of all the maxillofacial cysts and 7 out of 8000 oral cysts.^{1,3,4} NLC is a non-odontogenic cyst. Kruger's (1964) classification of jaw cysts included it in non-odontogenic developmental cyst, Lucas (1964) classified it into extra osseous, epithelial cyst, Killey and Kay classified (1966) this under non-odontogenic epithelial cyst, WHO (1992) classified it under non-odontogenic cysts of jaws and in World Health Organization 2017,2022 classification does not consider it into jaw cysts classification.^{5,6} NLC are more prevalent in female especially of East Asian ancestry with a male: female ratio of 1:3.6 and commonly seen in the age range of 40-50 years.^{2,7} Nasal mucoid cyst, nasal wing cyst, nasal vestibular cyst, nasoalveolar cyst, Klestadt cyst, and nasoglobular cyst are some other names which have been used for these lesions.^{1,3} Pathogenesis of NLC is unclear and many theories have been proposed for it which include embryological retention of cells in the medial and lateral nasal wall or in nasolacrimal channel, or trauma can be one of the accelerating factor in its formation.¹ These lesions may go un-noticed or misdiagnosed as they are often asymptomatic with absence of physical signs at early stage and also not visible on radiographs.³ Mostly it is unilateral; the incidence rate of bilateral cysts is about 10%.³ A rare case report mentioned unusual occurrence of this lesion in buccal mucosal region.⁷ These lesions grow slowly and patient may present as localized swelling in nasolabial, alar, upper lip, maxillary sinus and anterior gingival region with nasolabial fold obliteration, increase in size of the lesion may result in nasal obstruction or headache. Infected cyst may result in pain or tenderness at lesion site. Clinically it is soft, palpable spherical swelling, it's size can be in the range of 1-5 cm, which can be fluctuant and usually non-tender.^{2,3,7} Differential diagnosis for painful NLC include cellulitis, periodontal abscess, and maxillary sinusitis.⁴ Diagnosis is given by correlating clinical findings and other diagnostic modalities which can be used include nasal scope, Computed tomographic scan, Magnetic resonance imaging and Ultrasonography.^{2,3} Surgical removal via intraoral or transnasal approach of the lesion can be done as management procedure. Histopathological evaluation confirms the diagnosis; the epithelial

lining of the cyst is pseudostratified columnar epithelium with abundant goblet cells. Some cysts have stratified squamous epithelium as well as cuboidal epithelium⁸ This article which reports a nasolabial cyst in a 30 year old man is accordance to CARE guideline. Informed consent obtained from the patient.

CASE REPORT:

A 30 year old male patient reported with complaint of swelling and mild pain on left side of face adjacent to nose region with history of mild nasal discharge from left nostril from last 4 days. There was no significant systemic, surgical and medical history. Extraorally mild diffuse swelling was observed in left alar nasal region which was tender, spherical in shape, size approximately 2x 2 cm and soft on palpation. Intraorally obliteration of the vestibule was present apical to 21, 22 region. Tenderness on percussion was negative for adjacent teeth. (Figure -1)



Figure1: 1A Extraorally diffuse swelling on left side of the face in nasolabial fold region,1B Mild swelling in left side anterior mucobuccal fold region,1C: Aspirated fluid

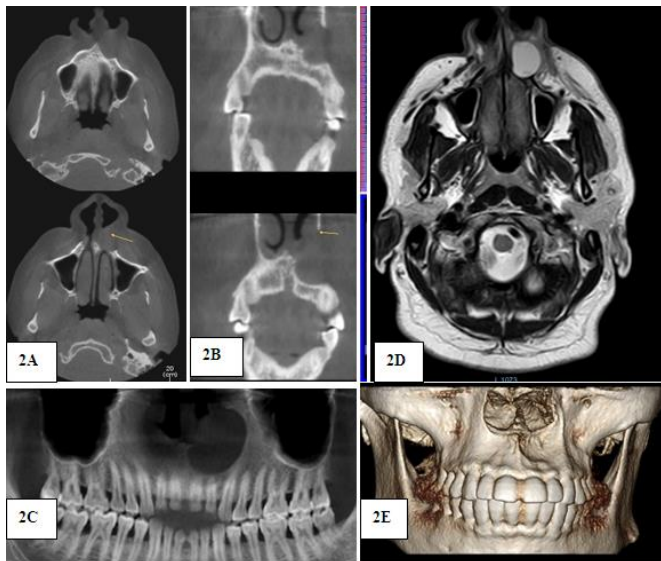


Figure 2: 2A Axial cone beam computed tomography (CBCT) showing hypodense lesion near left ala nasii.,2B Coronal CBCT showing hypodense lesion in left anterior maxillary region ,2C Panoramic section showing oval shaped hypodense lesion apical to 21,22, 2D T2 weighted axial image shows well defined hyperintense lesion on MRI ,2E: 3 Dimensional CBCT shows concavity below left side nasal floor.

Provisional diagnosis of dentoalveolar abscess was considered and radicular cyst, dentigerous cyst and nasolabial cyst were considered as differential diagnosis. Complete blood count and blood sugar was within normal range. Electric vitality test suggested vital teeth which ruled out odontogenic infective lesion. Aspiration of the lesion showed yellowish straw colored fluid . Panoramic radiograph showed

no apparent pathology in relation to swelling region. Cone beam computed radiograph (CBCT) showed a well defined, non corticated , homogenous hypodensity with scalloped margin in left side anterior maxilla and left side nasal floor. Concavity suggestive of erosive changes of bone was seen in anterior maxilla. Mild obliteration of the left side nasal aperture in relation to lesion was also observed. Approximate greatest dimension of the lesion view was 20.18mm (mediolaterally) and 22.00 mm (superoinferiorly). CBCT was suggestive of extrososseous soft tissue pathology. MRI showed well defined homogenous hyperintense lesion in alar nasal region on T2W1 image. Based on investigations dentoalveolar infection and radicular cyst was ruled out and working diagnosis of Nasolabial cyst was considered after correlating history, clinical findings and investigating procedures. (Figure-2).

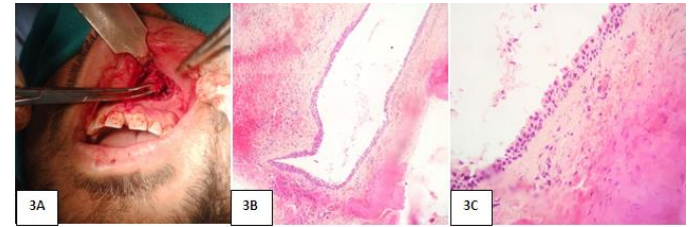


Figure 3:3A Intraoperative surgical access of the lesion, 3B shows 10x histopathology image, 3C shows 100x histopathology image showing cystic epithelium overlying fibrous connective tissue wall.



Figure 4: Postoperative follow up images after 3 months. 4A shows extraoral image, 4B shows postoperative intraoral mucobuccal fold region.

Surgical excision was planned under local anesthesia. Nasopalatine nerve block and bilateral infraorbital nerve block was given. The cyst was excised with intraoral sublabial approach; the incision was given at gingivolabial sulcus, almost 4cm in width. The cyst was excised totally, At some point cystic lining was firmly adherent to the soft tissue and that was also removed and no bony attachment was seen. Part of the mucosa of left nasal cavity region was removed as it was part of the cyst. Dead space was packed with iodinated gauze. The wound was closed by 3.0 vicryl suture and gauze removed from the nose after 24 hours. Histopathology examination revealed a cystic epithelium overlying fibrous connective tissue wall.

The cystic lining epithelium varies from bilayered epithelium to stratified squamous epithelium; Goblet cells were present within the epithelial lining. Focal areas of squamous metaplasia were also evident. The connective tissue walls showed moderately dense bundles of collagen fibers and few inflammatory cells were also seen which is compatible with the diagnosis of nasolabial cyst. (Figure-3) Two weeks follow up showed reduction in swelling. Patient revealed

no signs of recurrence and recovery was uneventful, in one year clinical follow-up. (Figure-4)

DISCUSSION:

The nasolabial cyst is uncommon, and represents only 2.5% of the non-odontogenic maxillofacial cysts.² A Nigerian study showed most common occurrence of NLC in third decade and lesions were found in age range of 4- 73 years.⁵ Most common symptom of the cyst is swelling (95%), pain is reported by 55% of patients, nasal obstruction by 30%, headache and hyposmia by 5% patients with NLC.³ Clinical characteristics distinctive for NLC are submucosal, extraosseous location at the anterior nasal floor and a well localized fluctuating cystic swelling in nasolabial sulcus region. These cysts can grow mostly in three directions: the nasolabial fold, the mouth vestibule, and the nasal vestibule. Infected cysts are usually painful and could rupture to drain into nose or oral cavity. The differential diagnosis of the nasolabial cyst includes long-standing, painless, benign, vestibular soft tissue mass within the anterior maxillary-alar area such as odontogenic, developmental, and neoplastic lesions.⁹ Various differential diagnosis which could be considered for NLC include dentoalveolar abscess, canine space infection, residual cyst, radicular cyst, oronasal cysts, nasopalatine cyst, dermoid cyst, epidermoid cyst, malignant or benign salivary gland tumors, periodontal abscess, nasal furunculosis or facial cellulitis.^{2,10} Radiographs cannot diagnose this soft lesion unless there is significant maxillary bone erosion.¹⁰ USG evaluation shows mostly regular (71%), well defined boundary (76%) whereas 29% were irregular, and the boundaries of 24% were unclear. Cyst showed anechoic (52%), mixed echo (43%) and hypoechoic in 5% of cysts. Hyperechoic region may be detected inside the cysts, which may have been the formation of local precipitation composed of red blood cells, proteins, or cholesterol crystals. The echo distribution of cysts can be heterogeneous (43%) or homogeneous (5%) Thickening of the cystic lining were observed in 29% of the cases. The CT value of the cysts ranged from 12 Hounsfield units (HU) to 86 HU with a mean of 38.2 HU. CT scan is suggestive of extraosseous lesion. In our case CBCT was performed which was also suggestive of extraosseous soft tissue lesion, ruled out any other odontogenic pathology and depressed maxilla at lesion site. CBCT use is being mentioned in recent articles and relatively less literature is available on role of CBCT in evaluating such type of lesions, thus it can be field of further research.^{11,12} USG, CT scan and MRI showed that most of the NLC can cause compression of adjacent bone resulting in arc or fan shaped indentation. MRI manifestations show mostly Quasicircular shape, defined boundaries and some cysts were Irregular, unclear boundaries. T1W1 cysts shows mostly hyperintense or hyperintense lesion and rarely isointensity. Majority of T2 weighted images were hyperintense and rarely isointense. Contrast-enhanced scans revealed no obvious enhanced signs on MRI. Both MRI and USG are based on non-ionizing radiation based imaging thus does not cause radiation induced damage to tissues. Metal artifacts may be seen in the presence of metal implants, which may interfere the clinician judgment. Liu S, et al study showed that USG has better sensitivity and accuracy and a lower missed diagnosis rate than CT and MRI.³ Although, CT scan is described as the imaging modality of choice for evaluation of the lesion borders.² Though MRI gives good soft tissue definition, CT is preferable as it is less expensive.¹

Table1: Summarizes reported case/case series of Nasolabial cyst.

Author and year of publication	Age/Sex Male (M) Female (F)	Patient number	History and Clinical features Investigation/ Radiographic features	Treatment
Johar et al., 2024 ¹²	35 years/M	01	Painless swelling in upper right front teeth region. Intraoral radiograph showed non-corticated radiolucency. CBCT images showed circular, homogeneous lesion in the buccal soft tissue of the right incisor teeth	Lesion surgically removed through intraoral approach.
Tilaveridis I et al., 2023 ¹⁵	54 year /F, 57 years/F	02	Case 1: Swelling on left maxillary area with obstruction of the left nostril. CBCT imaging revealed a low density, ovoid, cystic soft tissue mass. Case 2: CT and magnetic resonance imaging (MRI) images showed an oval lesion with slight peripheral enhancement emanating from the lateral wall of the left nasal cavity	Under general anaesthesia cyst enucleation was done.
Swain SK, Dubey D. ¹³ 2023	13 male and 26 Female	38 cases	22 on left side and, 13 on right side and 3 bilateral. Facial swelling and / or nasal obstruction and / or pain.. CT: Isodense to hypodense lesion in inferior nasal alar region, scalloping effect on maxilla.	32 cases excision through sublabial approach, endoscopic marsupialization for 6 cases. Recurrence of one case treated with endoscopic procedure.
S Kumar et al., ¹ 2022	48years /F	01	Solitary swelling lateral to ala of the nose, soft, cystic with mild tenderness. CT- showed well defined soft tissue lesion in lateral pyriform region.	Intraoral sublabial vestibular incision under local anaesthesia.
BT rodrigues et al., ¹⁰ 2021	76years /F	01	Asymptomatic sessile swelling in upper lip region since 20years.	Surgical excision, no recurrence after 2 years follow up
Liu M et al., ¹⁵ 2021		31	Mass in nasal alar and upper lip region, /mild pain / nasal obstruction.	Intranasal endoscopic microwave ablation.
A Alumtairi et al., 2020. ²	44yrs/M	01	Swelling since three years, mild pain and nasal obstruction Endoscopy showed a mass in right nasal aperture region. CT: Isodense to hypodense lesion in inferior nasal alar region, 3.2x 2.2x 2.5 cm in size, scalloping of maxilla.	Cyst excised with sublabial approach and no recurrence after 14 months follow up.
N Kumar 2020., ⁴	50 yrs/M	01	Swelling and obliteration of nasolabial fold, fullness of right labial vestibule, soft, cystic. Panoramic view: No findings. CT scan: Hypodense lesion of 2.5 cm size and maxillary depression. Aspiration: Yellow straw colour.	Cyst excised with intraoral approach under local anaesthesia And no recurrence after follow up
S Narain 2011., ¹⁶	25yrs/F	01	Non painful lip swelling and nasal asymmetry. partial obliteration of anterior nasal vestibule on left side. Intraorally, there was fullness of maxillary labial vestibule contiguous to maxillary incisors and left canine. Fluctuant and soft swelling, Aspiration: cystic fluid aspirated.	

Various treatment modalities for NLC include surgical excision, incision and drainage, endoscopic marsupialization, injection of

sclerotic agents, simple aspiration and cauterization. Surgical excision and endoscopic marsupialization have least recurrence rate. (2) Marsupialization can be done through sublabial or transnasal approach and surgical excision is considered as best treatment modality. (2,17) The commonest approach is intraoral enucleation under local anesthesia by a sublabial incision. (2) Upper lip of front teeth numbness is one of the most common post-operative complication for intraoral sublabial or transnasal endoscopic approach. (17) Post-operative clinical effect of endoscopic microwave ablation may include one or more of the following such as mild numbness in the upper lip in patients, facial/perinasal swelling, acid bilge of maxillary teeth and toothache. (15) Complications which may occur during surgery include perforation of the mucosa during excision and this should be closed with sutures to avoid oronasal fistula formation and some authors suggested that small perforations can be left with gentle vestibule packing. Other complication includes wound infection, swelling and hematoma. Endoscopic trans-nasal marsupialization for large lesions as described by Su et Follow up the lesion al, is considered as an easier approach, less bleeding and no- postoperative pain or edema and requires less operative time. (2) Tsai WH et al., also considered intranasal endoscopic approach as an alternative to sublabial excision due to fewer complications, shorter hospital stays, diminished need for general anesthesia, and cost savings. (18) Marsupialization convert it into a paranasal sinus with drainage, ventilation functions, and without mucus accumulation. Complication of marsupialization includes mucus accumulation due to scar shrinkage around osteum or cyst recurrence. Another approach to surgically remove the nasolabial cyst is the Neumann incision for complete surgical excision and it is more useful for large cyst and gives better access to the pyriform aperture. (2) Zhang et al., used Nd: YAG laser under local anesthesia for transnasal endoscopic marsupialization in treating NLC. Laser destroys and shrinks the cyst wall through thermal damage. The opening of the cyst will persist for 2–4 weeks to drain secretion and it closes with the contraction of the cyst wall. Laser treatment is similar to cautery, but laser output can be passed through a fiber under the guidance of the endoscope. According to Zhang et al, laser treatment is less extensive, less invasive, less painful, few complications, and can be repeated with low recurrence rates. (19) Histopathology shows mostly respiratory epithelium followed by squamous epithelium, mixed epithelium and cuboidal epithelium.(20)

CONCLUSION:

In conclusion, nasolabial cysts are rare extraosseous, soft-tissue cysts of anterior nasal floor region. It should be considered as differential diagnosis for swelling of upper lip region, anterior nasal floor and anterior maxillary region. Diagnosis is considered based on history and clinical findings. CT scan, CBCT, Ultrasonography and MRI could be advised to locate the lesion. Surgical excision, marsupialization using intraoral oral and transnasal approach could be considered for its management with relatively low recurrence rate.

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