Review Article

Nasolabial Cyst: A Narrative Review

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Abstract

The nasolabial cyst is a soft-tissue cyst, nonodontogenic in origin that occurs in the sublabial area and anterior maxillary region. The nasolabial cyst is a rare lesion found behind the ala nasi, extending backward into the inferior meatus of the nasal cavity and forward into the labio-gingival sulcus. The patient with nasolabial cyst often presents with painless swelling and sometimes nasal obstruction. The diagnosis of nasolabial cyst is usually diagnosed in an early stage due to cosmetic facial deformity. The final diagnosis of the nasolabial cyst needs a correlation of the clinical presentations, surgical findings, and histopathological information. There are several treatment options described for the treatment of nasolabial cysts. The current treatment of choice for nasolabial cyst is complete excision through sublabial approach. The postoperative complications may include facial/perinasal swelling, facial numbness, and toothache. The postoperative chance of recurrence is rare. The objective of this review article is to familiarize the readers with this uncommon clinical entity such as nasolabial cyst with its prevalence, etiopathology, clinical presentation, diagnosis, and treatment.

Keywords: Facial deformity, intraoral sublabial excision, nasal obstruction, nasolabial cyst

Introduction

Nasolabial cysts are very uncommon nonodontogenic soft-tissue lesions of the nasal vestibule, canine fossa, and sublabial region.[1] Nasolabial cysts are rare cystic lesions situated close to the alar cartilage of the nose, extending to the lower nasal meatus, the upper gingivolabial sulcus, and the floor of the nasal cavity near the vestibule.[2] The nasolabial cyst causes painless swelling at the sublabial fold, lips, and face and causes the nasal block.[1] The diagnosis and treatment of the nasolabial cyst should be done in early stage as these lesions manifest cosmetic deformity and rarely becomes large.[3] This cyst is commonly found in the 4th–5th decades of life and more in black women.[4] They are usually found submucosally in the anterior nasal floor and can displace the inferior turbinate medially.[5] It is thought that its incidence is more than reported in the medical literature; although, indexes are limited due to high rates of misdiagnosis.[4] The diagnosis of the nasolabial cyst is mainly done by imaging such as computed tomography (CT) scan and magnetic resonance imaging (MRI).[6] The treatment of choice is surgical excision. There are several surgical techniques are available; however, the recurrence rate varies according to the technique, but it is rare. The purpose of this review article is to review the epidemiology, etiopathology, clinical characteristic, diagnosis, and treatment of vertigo in children.

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Methods of Literature Search

Multiple systematic methods were used to find current research publications on the nasolabial cyst. We started by searching the Scopus, PubMed, Medline, and Google Scholar databases online. A search strategy using Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines was developed. This search strategy recognized the abstracts of published articles, while other research articles were discovered manually from the citations. Randomized controlled studies, observational studies, comparative studies, case series, and case reports were evaluated for eligibility. There were a total number of articles 65 (18 cases reports; 24 cases series; 23 original articles) [Figure 1]. This paper focuses only on the nasolabial cyst. This review article describes the prevalence, etiopathology, clinical presentations, diagnosis, and treatment of nasolabial cysts.

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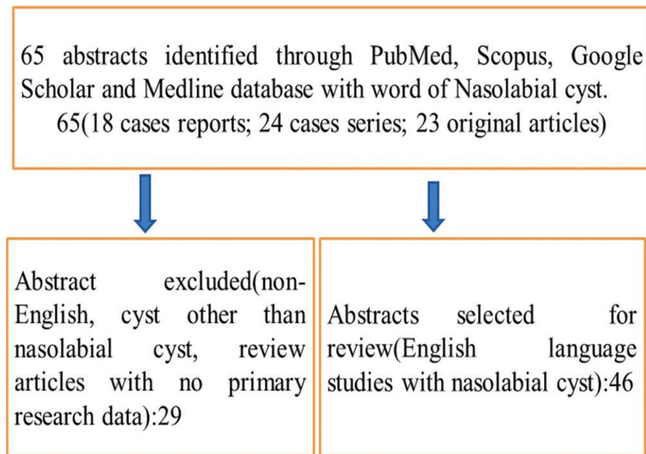

Figure 1: Methods of literature search

This review article provides a better understanding for easy diagnosis of nasolabial cyst which will provide prompt treatment. It will also serve as a catalyst for additional study into a newer diagnostic and treatment protocol for the nasolabial cyst.

Prevalence

Out of 8000 cystic lesions of the oral cavity over 10 years, Allard found only seven patients with nasolabial cysts.[7] In another series, Kuriloff documented 26 cases of nasolabial cysts over 18 years.[8] One recent study documented 8 cases in 1 year and suggested that nasolabial cysts may be more common than previous records.[9] Many cases of nasolabial cysts remain undetected unless and until they become infected or associated with deformity in the facial region. The incidence of nasolabial cysts in western countries is relatively low. One report suggested that the incidence of nasolabial cysts may be more common in other parts of the world.[10] In this study with a largely Oriental population, 18 cases were found over 5 years.[10] The incidence of the nasolabial cyst is 0.7% in overall chin cysts.[10] Nasolabial cysts are bilateral [Figure 2] in <12% of the cases.[10]

Etiopathology

The exact pathogenesis of the nasolabial cyst is not fully understood. The origin of the nasolabial cyst is thought to be developmental. It arises from the nonodontogenic epithelium. There are two theories are proposed for explaining the pathogenesis of the nasolabial cyst.[7] The first theory suggests that the cyst originated as inclusion cysts derived from the epithelial cells which retain in the mesenchyme after fusion of the medial and lateral nasal processes and maxillary prominence during the development of the facial skeleton. The second theory suggests that the cysts are derived from the persistence of the epithelial remnants of the nasolacrimal duct which extended between the lateral nasal process and maxillary prominence.[7] These two theories may not be mutually exclusive. There is a report of the rare syndrome in a family consisting of nasal deformity, oxycephaly, hair growth on the skin at the base of the nose, and cyst formation on the bilateral upper lip with aplasia of both nasolacrimal ducts, supporting a relationship between the nasolacrimal development and formation of the nasolabial cysts.[11] The current prevailing theory is that the nasolabial cysts are remnants of embryonic nasolabial duct tissues. This hypothesis is reinforced by the fact that the nasolacrimal ducts are lined by pseudostratified columnar epithelium and the same epithelium frequently seen in the nasolabial cysts.[12] Aikawa *et al*. proposed the etiology of nasolabial cyst is chronic inflammation and scarring.[13] From its typical location, the nasolabial cyst may grow in three possible directions such as toward the nasolabial fold, toward the vestibule of the mouth, and the nasal vestibule.[14] As the close anatomical relation of the nasolabial cyst with the nasal cavity and teeth, it may be easily infected and infection is the initial presentation in approximately 30% of the cases. One study series showed half of the cases with nasolabial cysts are associated with infections.[8] The nasolabial cyst may cause pressure erosion of the underlying bone and even cause erosion of the maxillary alveolus.[12] In that study, a patient underwent cleft lip and palate repair along with rhinoplasty surgery. No abnormal lesions were seen on the side of the cleft during surgery. However, a months later, a swelling appears from the alar base on the cleft side and that was excised and histopathologically reported as the nasolabial cyst.

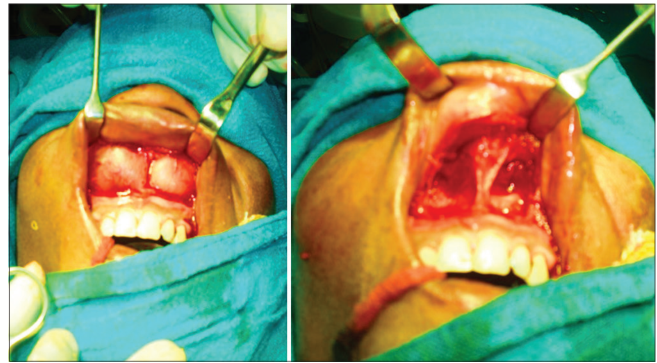

Figure 2: Intraoperative picture of bilateral nasolabial cysts

Clinical Manifestations

Classically, the nasolabial cysts are typical in location and clinical presentations. Although the nasolabial cysts are developmental in origin, they do not manifest themselves until adult age.[1] The clinical feature such as facial deformity of the nasolabial is often considered pathognomonic for easy diagnosis.[3] The submucosal position at the anterior nasal floor is a very characteristic and constant feature of the nasolabial cyst. The most common clinical presentation of nasolabial cyst is facial asymmetry. The patient may present with midfacial soft tissue swelling that is either intranasal, perinasal, or gingival. The nasolabial cyst is more common in women and the left side and is less frequently seen on both sides.[15] Patients with nasolabial cyst often present with slow

painless enlargement/swelling at the nasolabial area over several years, but patients may present with an acutely painful swelling if the nasolabial cyst becomes infected. There is less chance of extension of infection from these nasolabial cysts. The infected nasolabial cyst may mimic facial cellulitis, acute maxillary sinusitis, periodontal abscess, nasal furuncle, and acute maxillary sinusitis.[16] The patient also usually complains of nasal blockage due to the proximity of the nasolabial cyst to the inferior turbinates, the cyst may be diagnosed as inferior turbinate hypertrophy. These patients are often confused with certain other sinonasal diseases such as allergic rhinitis or rhinosinusitis. Physical examination reveals an obliterated nasolabial fold and the anteriorly placed nasal alae. Anterior rhinoscopy shows raised nasal floor. The gingivobuccal sulcus is usually obliterated on the affected side. The nasolabial cysts are usually better palpated bimanually with one finger on the floor of the nasal vestibule and another finger in the labial sulcus.[3] Palpation of the nasolabial cyst mass confirms a firm smooth, fluctuant, spherical, fluid-filled, and nontender structure. 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.[17] The nasopalatine ductal cyst or incisive canal cyst are often confused with nasolabial cysts. The cysts of the incisive canal are midline inclusion cysts that originate from the epithelial remnants inside the incisive canal and are intraosseous. The extraosseous site of the nasolabial cysts often makes the differential diagnosis straightforward. The other soft-tissue lesion found in this location includes periapical inflammatory lesions such as granuloma, cyst, or abscesses that eroded the bone.[18] The aggressive developmental odontogenic lesions like keratocysts invade through the bony cortex to result in swelling of the soft tissues. However, these cystic lesions have a short history and a different site. Other nonodontogenic cysts are epidermoid or epidermal inclusion cysts; however, these uncommon cysts do not have the bluish or pink coloration of the nasolabial cyst.

Diagnosis

The diagnosis of the nasolabial cyst is usually done based on clinical presentations, imaging findings, and histopathological studies.[19] When the nasolabial cysts are small and uncomplicated, the diagnosis is often difficult for clinicians. Radiological examinations are very important for differentiating the diagnosis of the odontogenic and nonodontogenic cysts in the nasolabial area.[19] There is often no bone erosion in the early stage of the disease.[20] The safety of the teeth in the nasolabial area is clinically important for differentiating from other pathologies. CT scan and MRI is helpful to reveal the origin of the nasolabial cyst and avoid unwarranted fine needle aspiration or any dental surgery.[21] A diagnostic CT scan has very high significance and relatively less cost. CT scan [Figure 3] is described as the imaging modality of choice for the assessment of the cystic lesion and its border.[22]

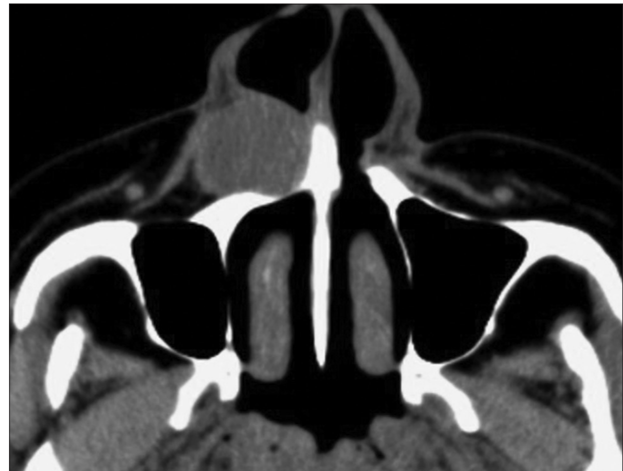

Figure 3: CT scan (axial cut) of nose and paranasal sinuses showing right side nasolabial cyst. CT: Computed tomography

Hence, CT is considered the essential preoperative imaging for the assessment of the nasolabial cyst.[23] Although CT and MRI are helpful to define the nasolabial cyst, ultrasonography may be a cost-effective option for delineating the nasolabial cysts. In MRI, the nasolabial cyst is described as a homogeneous mass with varying intensities concerning T1- and T2-weighted images that do not enhance with contrast.[24] Ultrasonography is an office-based diagnostic tool for nasolabial cyst.[25] Ultrasonography is useful in the diagnosis of the nasolabial cyst but cannot accurately depict the bone erosion or lesions.[26] As ultrasonography is operator-dependent, the most important factor for detecting the borders of the nasolabial cyst via ultrasonography is the experience of ultrasonography.[27] A definite diagnosis of the nasolabial cyst can be obtained by histopathological study.[16] Hence, the excision of the nasolabial cyst is both diagnostic and curative by allowing histopathological study.[28] The characteristic of histopathology study in the nasolabial cyst is the respiratory epithelium and pseudostratified ciliated columnar epithelium with goblet cells. The differential diagnosis of the nasolabial cyst includes nonodontogenic masses like neoplasms and odontogenic mass like follicular periodontal and residual cysts.[10]

Treatment

The most common approach for excision of the nasolabial cyst is through a sublabial incision at the upper buccal sulcus [Figure 2]. This surgery allows complete excision of the cyst and is performed under local or general anesthesia. This surgical approach allows a surgical field to be wider and guarantees complete excision without making injury to nasal mucosa or entering the maxillary sinus.[29] Most patients with nasolabial cysts find it acceptable to be done under local anesthesia.[30] Grossly, the nasolabial cyst appears as a cystic mass surrounded by a thick fibrous capsule. Most of the cysts contain mucoid or yellow serous fluid. There may be brown fluid in the nasolabial cyst, due to hemorrhage and mucopurulent material when associated with acute infection.

In the histopathological study of the nasolabial cyst, there is pseudostratified columnar epithelium lining in the majority of cases, although stratified squamous and cuboidal epithelium, and goblet cells may be seen.[1] The supporting connective tissue of the nasolabial cyst is fibrous, and usually contains components of the adjacent skeletal muscles. Care should be taken not to rupture the cyst and should be removed intact. Recurrence does not occur if the wall of the wall is completely removed. However, there has been no evidence of recurrence of these cysts after rupturing of the cyst intraoperatively. If the nasal mucosa is breached during surgery, it can be repaired, however, this may not be required. The floor of the nasal cavity epithelizes rapidly with small nasal packing at the vestibular area. Grossly, the nasolabial cyst appears as a cystic mass covered by a thick fibrous capsule. The majority of the cysts contain mucoid or yellow serous fluid. In the cyst, the brown fluid may be seen in cases of hemorrhage and infected mucopurulent material. The histopathological examination of the cyst is usually lined by pseudostratified columnar epithelium, although stratified squamous and cuboidal epithelium, and goblet cells may be seen.[10] The supporting connective tissue is fibrous and usually contains components of the adjacent skeletal muscles. One report described an endoscopic assisted modified lateral rhinotomy approach for excision of the nasolabial cyst. In this technique, a modified lateral rhinotomy incision is made and the cyst is decompressed with a needle and followed by removal of the cyst.[31] This surgical technique is often associated with no complications or recurrences. One study demonstrated the benefits of the endoscopic transnasal marsupialization of nasolabial cyst where an incision is made over the cyst in the nasal cavity and is followed by marsupialization.[32] There is reported a case of malignant degeneration of the cyst.[33] Needle aspiration, injection with a sclerosing agent, destruction of the cyst by cautery, marsupialization, and incision and drainage are also some treatment options but with a high chance of recurrence.[34] Aspiration of the nasolabial cyst followed by enucleation is practiced by a few authors that yield a low recurrence rate.[7] Janardhan *et al*. described a sublabial approach by the application of cryosurgery in patients with the nasolabial cyst.[35] In this technique, following conventional sublabial excision of the cyst, a cryoprobe is placed on the tissues of the bed of the cyst at a temperature of − 30°C to − 40°C for 1 min, then the wound is closed.[35] The cryosurgery technique is helpful in infected nasolabial cysts remnants that have not been adequately delineated from normal sublabial soft tissues.[35] No evidence of complications or any recurrences were seen in this study.[35] Common postoperative complications following sublabial excision of the nasolabial cyst are facial/perinasal swelling, facial numbness, and toothache. As the nasolabial cysts are found near the floor of the nasal cavity, perforation of the nasal mucosa during excision can occur. This complication is not rare and once it happens, should be closed with sutures for avoiding oronasal fistula formation. If there is a small perforation, it can be left untreated with gentle nasal/vestibule packing.[36] However, the larger size rupture is sutured. The recurrence following sublabial excision of the nasolabial cyst is very uncommon. One study compared the sublabial approach versus endoscopic transnasal marsupialization where endoscopic transnasal marsupialization leads to reduced operative time, a lower chance of facial swelling and pain with an overall rate of complications.[36] However, there is no statistically significant difference in postoperative facial or perinasal swelling, pain or recurrence rate.[31]

Conclusion

Nasolabial cysts are a rare clinical entity but can manifest cosmetic deformity and nasal obstruction. The diagnosis and treatment of the nasolabial cyst are simple but there should be made a differential diagnosis with odontogenic, nonodontogenic cysts of the nasolabial area. Nasolabial cyst must be kept in mind by clinicians in the differential diagnosis of the nasal vestibule, nasal base, and sublabial area. Intraoral sublabial excision of the nasolabial cyst is popularly performed among patients. Endoscopic transnasal marsupialization is a relatively newer alternative with fewer complications. Although uncommon, the postoperative complications include swelling, pain, and recurrences.

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Conflicts of interest

There are no conflicts of interest.

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