B-ENT, 2010, **6**, 295-298

Post-rhinoplasty mucous cyst formation of the nasal dorsum

B. Struijs and L. J. J. M. Bauwens***

*Department of ENT, Havenziekenhuis Rotterdam, Rotterdam, the Netherlands; **Department of ENT, Westfries Gasthuis, Hoorn, the Netherlands

Key-words. Mucous cyst; rhinoplasty; nasal dorsum

Abstract. *Post-rhinoplasty mucous cyst formation of the nasal dorsum. Problem*: Formation of a mucous cyst of the nasal dorsum after rhinoplasty is a rare complication, and a limited number of cases has been reported. Located subcutaneously, mucous cysts are thought to arise from traumatically displaced mucosal remnants. This may well be the result of inadequate surgical technique, and preservation of the mucosal lining, whenever possible, is therefore advocated when performing a rhinoplasty procedure.
Methodology: We report a well-documented case of a patient with a mucous cyst of the nasal dorsum, which developed 40 years after the initial surgery.
Results: The cyst was excised through an external rhinoplasty approach. A thin-walled cyst, firmly attached to the bony pyramid, was easily removed from the overlying skin.
Conclusions: Histopathological confirmation of such cysts is emphasized, as well as consideration of the technical aspects of prior surgery, since this may provide insight into risk factors involved.

Introduction

Nasal dorsal mass formation is a rare finding after rhinoplasty. Apart from considering numerous lesions not related to the previous surgery, the following surgery-related lesions should be taken into consideration: mucous cyst, paraffinoma, osteitis, foreign body, and bony or cartilaginous fragments.[1] Most often the nature of such lesions will be apparent, especially when little time has passed since the previous surgery, and therapy is then often straightforward. The occurrence of a cystic nasal mass after rhinoplasty, may, however, represent diagnostic and therapeutic dilemmas.

We present a case in which a mucous cyst of the nasal dorsum developed 40 years after rhinoplastic surgery. The literature on this topic is critically assessed with emphasis on the proposed origin of such cysts and their prevention.

Case report

A 64-year-old man presented with a 2-year history of a slowly enlarging and disfiguring mass on the nasal dorsum (Figure 1). He had no functional complaints. Approximately 40 years previously, he had had cosmetic rhinoplasty including hump reduction with a satisfactory result. Upon examination, a firm, rounded mass 2 cm in diameter was palpable in the midline of the nasal dorsum. It was located at the border of the bony and cartilaginous pyramids. Nasal endoscopy showed no abnormalities. A CT scan showed a subcutaneous cystic mass in close proximity to the ossa nasalia (Figure 2).

Excision under general anaesthesia was performed through an external rhinoplasty approach. A thin-walled cyst was firmly attached to the bony pyramid and easily removed from the overlying skin. During surgery, the cyst perforated, leaking a highly viscous mucous fluid. There was no convincing connection with the nasal cavity. After complete removal of the cyst, an open-roof deformity was corrected by osteotomies and infraction of the nasal bones. A persistent defect of the bony pyramid was reconstructed with a cartilaginous transplant taken from the nasal septum. During surgery, antibiotic treatment was started and continued for 3 days. Minimal soft nasal dressing was removed on the first post-operative day. The post-operative period was uneventful and the cosmetic result was satisfactory (Figure 3). Histopathological examination revealed mucous epithelium with ciliated cells and mucous-secreting

Figure 1
Pre-operative, lateral view

Figure 3
Post-operative, lateral view

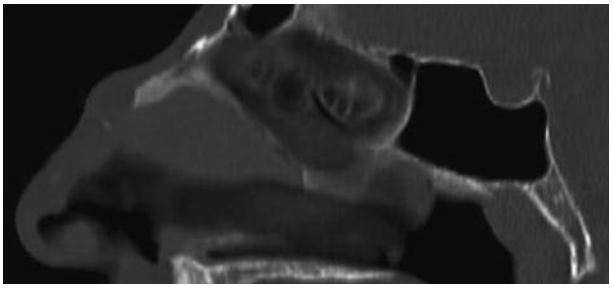

Figure 2
CT scan, sagittal reconstruction

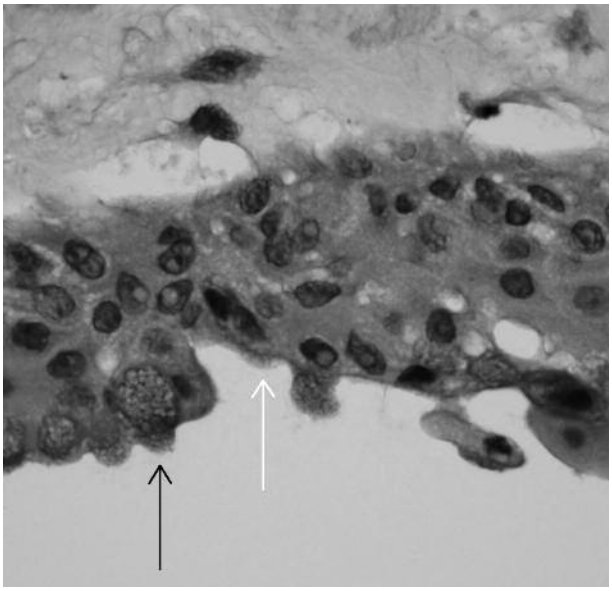

Figure 4
Respiratory epithelium with mucous secreting cells (black arrow) and ciliated cells (white arrow).

cells (Figure 4) leading to the diagnosis of a mucous cyst. There has been no sign of recurrence during the past 2 years.

Discussion

Although a rare entity, the formation of a mucous cyst is a recognized complication after rhinoplasty. Spontaneous formation of such cysts without significant surgical trauma has never been reported. A limited number of 17 cases are reported in the literature, and include a diverse range of cases.[1-8] Unfortunately, several reports lack histopathological investigations of the excised cysts,[4,9-13] and in these cases questions may remain about the etiology of the cyst.[14] Based on histopathological characteristics, post-operative cystic lesions of the nose are commonly divided into mucous cysts and foreign body inclusion cysts, each having very different proposed origins.

Mucous cysts are typically lined with respiratory epithelium, identical to that of the nasal cavity, consisting of ciliated columnar cells and mucin secreting cells. These cysts are thought to originate from displaced nasal mucosa. In contrast, foreign-body inclusion cysts show chronic granulomatous inflammatory cells as the result of a foreign body reaction in the submucous layer to oil-based ointments used in nasal packings after leakage through damaged mucosa. This leads to the formation of cysts containing a petroleum-based substance known as paraffinomas, lipogranulomas, or oilgranulomas as described by Gryskiewicz.[14]

Ten reports on nasal cysts specify the excised mass as a nasal mucous cyst on the basis of

histopathological findings.[1-8] In 6 of these cases, the cyst was located at the nasal dorsum on the border of the bony and cartilaginous pyramids, like in our case.[1,2,4,5,7] In the other 4 cases, the mucous cyst was located paranasally,[6,8] at the nasal radix,[1] and at the alar base.[3] Of the remaining 7 reports on mucous cysts without histopathological confirmation, 6 of the 7 were located on the nasal dorsum.[4,9-13]

The first description of mucous cyst formation following rhinoplasty dates back to 1958 when it was hypothesized that the cyst could be the result of herniation of the nasal mucosa.[13] However, since there is no report of a case in which the cyst was shown to be connected to the nasal cavity, it seems more likely that traumatised nasal mucosa, displaced during surgery, forms these cysts.[1-8,10,11] Furthermore, it is clear that most cysts appear in regions where specific surgical trauma is applied during rhinoplasty. Since the nasal dorsum and paranasal regions are most often affected, several authors have pointed out the possibility that this may be due to trauma induced through osteotomies and hump reduction.[2-4,6,8] Indeed, our case, where the previous rhinoplasty included hump reduction, seems to be in line with this theory. Unfortunately, none of the 6 previous cases including histopathologically confirmed mucous cyst formation of the nasal dorsum report whether hump reduction and/or osteotomies were performed during the previous surgery. Furthermore, of the 6 reports on histopathologically non-confirmed mucous dorsal cysts,[4,10-13] only 1 describes previous hump reduction[10] while the other cases do not address technical aspects of the previously performed surgery. Therefore, the present data are insufficient for drawing conclusions as to the possible role of osteotomies and/or hump reduction in mucous cyst formation. Regardless of the exact nature of the induced trauma during rhinoplasty, virtually all authors agree that preventing the formation of mucous cysts can be largely achieved by careful dissection of tissues with meticulous preservation of the mucosal lining.[1-5,7-11,14] This is further emphasized by Kotzur *et al*.,[4] who reported a mucous cyst connected to implanted crushed cartilage, apparently due to mucosal remnants. Apart from preservation of the mucosal lining, some authors advocate cleaning the surgical field when finishing rhinoplastic surgery in order to prevent mucosal remnants from acting as free mucosal grafts in mucous cyst formation. Gryskiewicz[14] encourages irrigation with a syringe to clear the surgical field at the end of the procedure.

In all previously published cases, the timeframe between rhinoplasty and formation of a mucous cyst varied from 3 months to 10 years.[3,8] In the majority of cases, the cyst developed within 2 years of surgery. Our case, in which the mucous cyst developed 40 years after surgery, appears to represent an extraordinarily long period of time between surgery and cyst formation.

Treatment of a mucous cyst of the nose consists of complete surgical removal and subsequent reconstruction of any resulting defect. This may be achieved through different approaches, which depend on the localisation of the cyst, the surgeon's preference, and the need to reconstruct any resulting defect. Irrespective of the surgical technique applied, recurrence of mucous cysts has never been documented (follow-up ranges between 1-2 years) and, therefore, appears not to be an issue. An endonasal approach via intercartilaginous incision,[1,2,7] external rhinoplasty,[2,15] and direct transcutaneous (open) approaches[4,5] have all been described. Moreover, Bracaglia *et al*.[1] also described an endoscopic excision through an intercartilaginous approach with the apparent benefit of even better exposure. Several authors describe the need for secondary rhinoplasty procedures for correction of remaining deformities.[1,4]

As illustrated by our report, we feel an external approach rhinoplasty offers adequate exposure, enabling resection of the cyst under direct vision. Furthermore, subsequent reconstruction of any resulting defect may be performed as well as correction of other aesthetic deformities.

Conclusion

Mucous cyst formation is a rare complication after rhinoplasty and can develop many years after the initial surgery. At present, data are insufficient to allow evidence-based conclusions as to the supposed traumatic origin of such cysts. Most authors agree that prevention can be largely achieved through careful preservation of the mucosal lining during rhinoplasty procedures. Future reports on nasal mucous cysts should comprise histopathological confirmation, and should focus on the surgical technique used during the previous rhinoplasty procedure since this information may

provide insight into the possible risk factors involved.

References

1. Bracaglia R, Fortunato R, Gentileschi S. Endoscopic excision for postrhinoplasty mucous cyst of the nose. *Br J Plast Surg.* 2005;58(2): 271-274.
2. Harley EH, Erdman JP. Dorsal nasal cyst formation. A rare complication of cosmetic rhinoplasty. *Arch Otolaryngol Head Neck Surg.* 1990;116(1): 105-106.
3. Raine C, Williamson SL, McLean NR. Mucous cyst of the alar base: a rare complication following rhinoplasty. *Br J Plast Surg.* 2003; 56(2):176-177.
4. Kotzur A, Gubisch W. Mucous cyst – a postrhinoplasty complication: outcome and prevention. *Plast Reconstr Surg.* 1997;100(2):520-524.
5. Romo T 3rd, Rizk SS, Suh SD. Mucous cyst formation after rhinoplasty. *Arch Facial Plast Surg.* 1999; 1(3):208-211.
6. Riedel F, Bersch C, Hörmann K. Dorsal nasal mass formation – postrhinoplasty cyst [in German]. *HNO.* 2007;55(6):472-474.
7. Flaherty G, Pestalardo CM, Iturralde JG, Laguinge R. Mucous cyst: postrhinoplasty complication. *Aesthetic Plast Surg.* 1996;20(1):29-31.
8. Karapantzos I, Behrmann R, Simaskos RN. Paranasal mucous cyst: a rare finding following septorhinoplasty. *Rhinology.* 1999;37(4):190-191.
9. Shulman Y, Westreich M. Postrhinoplasty mucous cyst of the nose. *Plast Reconstr Surg.* 1983; 71(3):421-422.
10. Zijlker TD, Vuyk HD. Nasal dorsal cyst after rhinoplasty. *Rhinology.* 1993;31(2):89-91.
11. Dini M, Innocenti A, Agostini V. Postrhinoplasty mucous cyst of the nose. *Plast Reconstr Surg.* 2001;107(3):885-886.
12. Liu ES, Kridel RW. Postrhinoplasty nasal cysts and the use of petroleum-based ointments and nasal packing. *Plast Reconstr Surg.* 2003;112(1): 282-287.
13. McGregor MW, O'Conner GB, Saffier S. Complications of rhinoplasty. I. Skin and subcutaneous tissues. *J Int Coll Surg.* 1958;30(2):179-185.
14. Gryskiewicz JM. Paraffinoma or postrhinoplasty mucous cyst of the nose: which is it? *Plast Reconstr Surg.* 2001;108(7):2160-2161.
15. Tan Ergin N, Akkuzu B. Mucous cyst of the nasal dorsum. *Rhinology.* 2000;38(4):206-207.

L.J.J.M. Bauwens, M.D., Ph.D.
Department of ENT
Westfries Gasthuis
Maelsonstraat 3, 1624 NP Hoorn
The Netherlands

B. Struijs, M.D.
Department of ENT
Havenziekenhuis Rotterdam
Haringvliet 2
3011 TD Rotterdam
the Netherlands
E-mail: b.struijs@havenziekenhuis.nl