Dorsal Nasal Mucocele- A Delayed Complication of Rhinoplasty

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Introduction:
Mucous cyst formation is an exceedingly rare and preventable complication of rhinoplasty. Given the large number of rhinoplasty operations performed (in the United States there were 243,772 rhinoplasties performed in 2011 alone), there have only been 26 documented cases of rhinoplasty complicated by the post-operative development of a mucous cyst. Of the reported cases, most mucous cysts developed over the gabora or the bony and cartilaginous nasal dorsum. Fewer cases occurred in the lateral cartilages, patellar region, inner canthus and nasal tip. The time course of mucous cyst development can vary widely. Most cysts present within 12 months of surgery, but cases can take 7 years (Bu et al), 10 years (Shuman), or 20 years (Raine et al) to develop.

Although the etiology of post-operative nasal mucous cysts remains unclear, there have been 4 theories proposed regarding their development. The first theory arose from the first documented case of nasal mucous cyst, which was reported by McGregor in 1968 after a female patient blew her nose on post-operative day 5 and subsequently developed a cyst. McGregor theorized that the mucous cyst was the result of nasal mucous tissue being forced herniated through the infraestructure. The second theory proposed by Rettinger et al is that cysts develop following the occlusion of sebaceous glands by scar tissue formation. A third theory was developed by Flaherty et al in 1994, which considers a small cut-off after nasal mucosa grows post-operatively through osteotomy lines into subcutaneous pockets. The most likely theory however, was presented by Mouly, who noted in 1970 “these cysts are reflections of encystations of mucosal epithelium that has not been cleared from the surgical field. Rather than herniations, these are probably free mucosal grafts in an ectopic position.” Evidence is lent to Mouly’s theory by the fact that most nasal mucocles develop as single well encapsulated lesions without tracking or connections to the nasal mucosa proper. Here we report a case of very delayed mucous cyst formation treated surgically via an open rhinoplasty approach. We also emphasize the importance of careful histological analysis to rule out other benign entities, as well as the prevention of nasal mucosal cyst formation by employing good surgical technique.

Case Report:
A 51 year old man presented to our clinic with a 2 year history of a slowly growing asymptomatic mass on the side of his nose which was lateral to midline, cephalic to the lower lateral cartilages, and superficial to the upper lateral cartilages while remaining deep to the subcutaneous tissue. There was no drainage and no history of infection or recent trauma. The patient claimed to have received a septoplasty 2 years ago to correct a traumatic malformation of his nose, but denied ever having nasal implants. On physical exam, the mass was found to be firm and moderately mobile within the subcutaneous pocket with no apparent adhesions. A fine needle aspiration was performed to better characterize the lesion, but was non-diagnostic as only epithelial cells were identified. CT imaging studies indicated a 1 cm low density, discrete to characterize nodule on the inner aspect of the right internal valve. The patient was taken to surgery and an open rhinoplasty approach was used to access the mass. It was a well demarcated, gelato fluid cystic cyst that did not track to either skin or the nasal vault surface. Initially, despite the patient’s desire of rhinoplasty, an intercartilaginous incision was noted following lighting and exposure during surgery that well healed and visualized. The mass was easily removed and the nose closed without complication. Histopathological analysis of the mass demonstrated findings consistent with a simple benign mucous retention cyst, as the cyst was found to be lined with squamous as well as respiratory type epithelium. We did not observe recurrence or any other complications in a follow-up period of over six months. It is likely that the patient had mucosal tissue from the nasal vault trapped subcutaneously during closure of inter-cartilaginous incisions during his septo rhinoplasty 21 years ago. After this initial seeding, the mucosal tissue continued to grow very slowly until it became cosmetically symptomatic and warranted surgical excision.

Discussion:
Post-rhinoplasty nasal mucocoele formation is a rare and presumably highly preventable complication of intranasal surgery. We believe that our patient’s case is consistent with Mouly’s hypothesis that nasal mucous cysts are the result of displaced or ectopic mucosal tissue proliferating outside of the nasal vault. The idea that nasal mucocles are the result of herniated tissue cannot be disproven, but is less likely given the absence of any connection between the mass and nasal mucosa proper as noted in all other documented nasal mucocles. Given this, the complication of nasal mucocoele could be prevented completely by ensuring meticulous removal of all possible mucosal seedling tissue from the surgical field, including mucosal tissue fragments, bony remnants, and cartilaginous debris. Also pivotal are the careful completion of all cosmesis, and meticulous maintenance of mucocanal integrity during all intranasal procedures. To this effect, Kotar et al recommends accessing bony structures during rhinoplasty via a mucoperichondral flap to protect the nasal mucosa from damage or fragmentation.

The differential diagnosis for nasal mucocles must include inclusion cysts, benign skin adnexal tumors, dermoid cysts, abscesses, foreign body retention, granulomatous disease, infections, epidermal cysts, minor salivary gland neoplasms, and lymphomas. Given the rare nature of nasal mucous cysts, and the potentially devastating consequences of missing a more dire diagnosis, the importance of histopathology cannot be overemphasized. Nasal mucocles will be notable for the presence of ectodermal respiratory epithelium as well as mucin on histological examination.

The definitive treatment for nasal mucocyes is excision. Many surgical approaches have been discussed in the literature, including open rhinoplasty approach (as in our case), intranasal approach, endoscopic excision, and direct external cutaneous removal. The choice of approach is largely mandated by cosmetic consideration and the location of the mucocoele. Dorsal or nasal tip lesions are generally more treatable via open and intranasal techniques, and glabellar or paranasal cysts generally requiring a cutaneous approach. Regardless of the approach employed, great success with minimal complication has been seen following complete excision of the nasal mucous cyst capsule.

References: