Endoscopic Surgical Treatment of Paranasal Sinus Mucocele

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SUMMARY

Historically, the recommended treatment for paranasal sinus mucoceles is the complete excision of through an open approach to achieve a cure. Though with the advent of Endoscopic sinus surgery, transnasal Endoscopic sinus surgery has gained more attention in order to manage the sinus mucocele. The aim of this study is to present the efficacy of the Endoscopic marsupialization of sinus mucoceles. From 2001 to 2005, 18 patients with paranasal sinus mucoceles were treated endoscopically. This series includes 6 fronto-ethmoidal, 2 maxillary, 4 ethmoid, 2 sphenoid, and 4 middle turbinate. The presenting signs, symptoms, and radiological findings were reviewed. All patients underwent endoscopic-wide marsupialization of the mucocele; the mean follow up was 13 months. There are 10 male and 8 female subjects who were of an age range of 29-72 years. Patients were treated with endoscopic marsupialization of the mucocele. There were no recurrences in the mean 13-month follow-ups in 17(94%) of patients. Only one patient needed revision endoscopic surgery. Mucocele happens to be the most commonly benign lesion, which causes the paranasal sinus to expand. There is increasing evidence that endoscopic marsupialization of sinus mucocele results in long-term control with very low recurrence rate at or close to 0%. Thus this technique is safe and less invasive than external approaches.

KEY WORDS:
Mucocele, Paranasal sinuses, Endoscopic surgery

INTRODUCTION

The mucocele is a pseudocystic formation with a secretive epithelial layer filled with a dense liquid, aseptic and slimy mucous. It occurs when a sinus ostium or a compartment of a septated sinus becomes obstructed, which causes the sinus cavity to be filled with mucus and to become airless[1]. Mucocele is an expanding lesion which gradually breaks down the sinuses walls due to dynamic osteogenetic processes and bone resorption[2]. They can progressively expand over years and destroy the surrounding bones, which may result in severe complications such as orbital infection, intracranial lesions, and occasionally hemorrhage into the mucocele and suddenly may causes severe headaches or retro-orbital pain[3]. The most common causes of paranasal sinus mucocele reported in literature are chronic infection, allergic Sino nasal disease, tumor, trauma, and previous surgical manipulation[4]. In addition; post traumatic mucocele may appear many years later with devastating intracranial or orbital sequellae. The cause in some patients remains unknown[5]. Traditional treatment has emphasized the need for complete removal of sinus mucocele lining to achieve a cure. In the present study, a series of 18 patients with paranasal sinus mucocele is reported. All were treated endoscopically by the marspialization of the mucocele. The Clinical presentation, surgical management, and results are discussed.

MATERIALS AND METHODS

From 2001 to 2005, 18 patients with paranasal sinus mucocele were treated endoscopically. The presenting symptoms, finding on endoscopic office nasal examination, and the radiological appearance on preoperative coronal and axial CT scans were studied.

Surgical technique

All patients were operated under general anesthesia and decongestions of the mucosa with cotton pled- get soaked in xylocaine and adrenaline 1/1000. The details of the surgical technique of endoscopic marsupialization in brief are as follow, uncinectomy for all mucoceles, then for maxillary mucocele wide middle meatal antrostomy and marsupialization. For ethmiod and sphenoid mucoceles, compete ethmoidectomy first, and then the anterior and inferior aspects of the sphenoid mucocele are removed, thus marsupializing the cavity to the ethmoid, nasal and nasopharyngeal space. For fronto-ethmoid mucoceles, anterior ethmoidectomy, widening of frontal recess (a minimum of Draf type 2 procedures), and marsupialization are done. For mucoceles of middle tubinate, only the lateral wall of middle concha was removed. Patients have been observed at weekly follow-up with secretion aspirated and sinunasal washing with saline solution until one month after the surgery. Patients are checked upon at follow-ups every three-months, for the first year, then once a year.

RESULTS

Our study consisted of 10 male and 8 female subjects with an age range of 29-72 years. There were no intra-or post-operative adverse effects in the present series. Patients complaints were as follows: in 12 (66%) of them headache, 11(60%) of nasal obstruction, rhinorrhea in 8 (44%) patients, 6 (33%) with diplopia, and 4 (22%) of orbital displacements and visual deficiencies (Figure 1). Cheek pressure or pain was seen 4 (22%), frontal swelling and eyelid edema in 6 (33%) cases, and 2 (11%) had polyposis (Figure 2). Mucocele localization in our series is in the fronto-ethmoid complex 6 (33%) (Figure 4-7), 2 (11%) in maxillary sinus, 4 (22%) founded in ethmoid sinus (Figure 6), 2(11%) in sphenoid sinus, and 4 (22%) in middle turbinate (Figure 3,5). Overall success rate with initial Endoscopic approach was 94%

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(17/18) with mean follow-up of 13 months. The recurrence of mucocele was noted in one patient (5.5%), and required second Endoscopic procedure. In two of the patient's Visual deficiencies went back to normal, but in the other two had no light perception pre-operatively, and surgery failed to improve the visual disturbance.

DISCUSSION

Paranasal sinus mucocele occurs most frequently in frontal sinus followed by the ethmoid, maxillary, and sphenoid sinuses[6]. Rombaux found that paranasal sinus mucoceles predominantly occur in the fronto-ethmoidal region (64%), followed by maxillary sinus (18.6%), sphenoid sinus (8.4%), and posterior ethmoid (6.7%)[7]. The sinus distribution of mucocele in our series is as follows; fronto-ethmoid complex 6 (33%), maxillary sinus[2] (11%), ethmoid sinus 4 (22%), 2(11%) in sphenoid sinus, and 4 (22%) in middle turbinate. In this study 4 (22%) patients had the middle turbinate mucocele that was expanded and made symptoms. In 50% case, the mucocele can turn into mucopyocele[2]. Mucopyocele prevailed in 6 (33%) of our patients. A CT Scan is an excellent diagnostic tool for revealing paranasal sinus mucocele with orbital and intracranial involvement, which is a prominent step towards the mucoceles management. On the CT Scan, mucocele appears as a hypo dense, non-enhancing mass that fills and expands sinus cavity. Mucocele may occur in abnormally aerated structures, such as middle turbinate (concha bullosa), the clinoid processes, and the petrygoid processes, as well as in abnormally displaced mucosa, usually in a post traumatic patients[8]. There are numerous theories about the origin and development of paranasal sinus mucoceles, including congenital, traumatic, iatrogenic, infectious, and inflammatory etiologies[4,9]. Seven of our patients had previous traditional sinus surgeries, and one of them had a surgery twenty years ago.

The management of paranasal sinus mucocele is surgical. Historically, the recommended treatment is the complete excision and removal of the mucocele lining, through an open approach that entails caldewell-luc sinusectomy, inferior nasoantral window for maxillary sinus, external ethmoidectomy for ethmoid sinus, and osteoplastic flap to expose the frontal sinus. Since the advent of Endoscopic technique, Endoscopic marsupialization of the mucocele has gained popularity[10] several studies have been conducted regarding the Endoscopic management of mucocele. Gady in his series (108 patients) treated all mucoceles by endoscope; the success rate was 100%[11]. Other studies show successful results with recurrence rate at or close to 0%. However, it should be emphasized that long follow up time is required. In our patients, the success rate by Endoscopic marsupialization of the sinusal mucocele at first operation and with mean follow-up (13 months) was 94%, which compared with traditional technique, in our studies seven patients had gone through previous external surgeries, whereas in Endoscopic marsupialization recurrence, was happened only in one case (5.5%), which is similar to the other studies. The results our present study also revealed a good surgical success rate towards the resolution of ophthalmic symptoms, headache, and rhinorrhea. Therefore, a good understanding of paranasal sinus mucocele by Otolaryngologist is particularly important for early diagnosis and rapid Endoscopic sinus surgery.

CONCLUSION

Mucoceles are the most commonly benign lesion, which can lead to the expansion of the paranasal sinus. There is increasing evidence that Endoscopic marsupialization of sinus mucocele results in long-term control with very low recurrence rate at or close to 0%. And this technique is safe and less invasive than external and traditional approaches.

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