

Original Article

Coblation assisted transnasal endoscopic resection of nasopharyngeal cyst: 10 years experience and outcomes

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Abstract: Objectives: To determine the outcomes of coblation assisted transnasal endoscopic resection of nasopharyngeal cyst. Method: Retrospective chart review outcomes in 12 patients who underwent endoscopic resect cysts of the nasopharynx at our department between 2001 and 2010. Twelve patient, aged 28 to 71 years, with cysts of the nasopharynx. The outcome variables of complications and the rate of recurrence were analyzed, respectively. Results: In 12 cases, retention cysts in 2 cases, branchial cyst in 1 case, adenoid middle fossa cyst infection in 6 cases, Tornwaldt's cyst in 3 cases. The use of the coblation device was associated with a significant decrease in blood loss. There were no postoperative complications, and the overall follow-up period was 2-7 years and shows no signs of recurrence. Conclusions: We describe transnasal endoscopic procedures to resect cysts of the nasopharynx. We found that radiofrequency coblation is a useful and safe tool associated with minimal blood loss in the resection of these cysts. In our experience, it has been a highly successful, safe, and effective procedure.

Keywords: Endoscope, nasopharynx, surgery

Introduction

Congenital cysts of the nasopharynx are rare. When they do occur, there is no specific microscopic feature that conclusively identifies them. However, the nasopharyngeal cysts can be difficult to excise. Many approaches have been used in the treatment of cyst of nasopharynx, including aspiration, trans-oral, and trans-palatal approaches [1-5]. The transoral surgical approach provides better access to cysts at the lower level, whereas the transpalatal approach is better for cysts at the upper level, but the invasion of the approach is large.

Technical advances and experience in endoscopic nasal surgery have provided the opportunity to use a trans-nasal endoscopic approach. The trans-nasal endoscopic approach has been successfully used over the past decade in the treatment of neoplasm of nasopharynx [6-8]. The technique permits a direct approach to the atretic area, with the advantages of an angled view, good illumination, and magnification of the nasopharynx.

However, surgical access to the entire is more challenging with a transoral approach. Also, bleeding and poor visualization secondary to bleeding can be encountered with these techniques. These problems were not encountered with transnasal coblation. The absence of eschar and decreased collateral thermal damage make coblation preferable to cauterization or laser excision. This paper revisits the clinical experience between 2001 and 2010 and evaluates the outcomes of patients treated by way of transnasal endoscopic remove the cysts of nasopharynx with the aid of coblation.

Material and methods

Subjects

Twelve patients with cyst of nasopharynx were treated with trans-nasal endoscopic procedures, between January 2001 and October 2010. There were 7 men and 5 women, aged 28-71 years (mean age, 51.5 years). They had rhinologic (nasal obstruction, epistaxis, and rhinorrhea, etc.) or otologic symptoms (hearing dif-

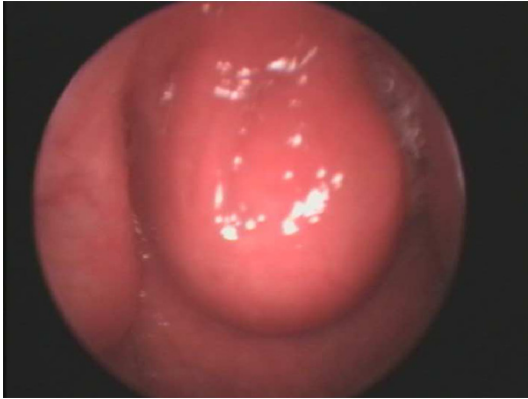


Figure 1. Nasal endoscope showed a large well encapsulated lesion arising from the posterior wall of the nasopharynx.

difficulty, otorrhea, ear fullness, and vertigo, etc) or headache. No history of prior adenoidectomy was reported. On physical examinations, otoscopic examination and anterior rhinoscopy were normal. Nasopharyngoscopy by a rigid endoscope using a 0° or 70° endoscope (**Figure 1**) showed a large well encapsulated lesion arising from the posterior wall of the nasopharynx which was covered by smooth mucosa and/or dilated blood vessels. The lesion was oval shaped, nontender and not movable. On audiologic investigation, 4 patients had different degrees of conductive hearing loss (from dB 15 to 20 dB) and a flat tympanogram. A contrast paranasal sinus computed tomographic scan confirmed the presence of a soft tissue mass, with no evidence of bony erosion or intracranial extension. Computerized tomography (CT) scan (**Figure 2**) demonstrated unobstructed pharyngeal bursa on nasopharynx. These cysts are hyperintense on T2-weighted magnetic resonance imaging (MRI) scan and when the fluid content is especially protein-rich, they are hyperintense on T1-weighted images, as well (**Figure 3**).

Surgical technique

We conducted the trans-nasal endoscopic procedure using a System 2000, Atlas Coblator II (Arthro Care Corporation., Austin, Texas); an endoscopic and video system (Stryker Corporation, Kalamazoo, MI), which included a 4-mm 0°, 30° and 70° telescope; and a power soft-tissue shaver (Linvatec Corporation, Largo, Florida). General anesthesia was used. Additional nasal decongestion was achieved by

applying a solution of 1% lidocaine hydrochloride and 0.25% phenylephrine hydrochloride to neurosurgical cotton pledgets that were carefully placed in the nasal cavity. A solution of 1% lidocaine hydrochloride with 1:100000 epinephrine was administered with a spinal needle to the surface and around of cyst, under direct visualization.

Under endoscopic visualization, a radiofrequency knife was used to coagulate dilated blood vessels of cyst. Cyst was excised with the power soft-tissue shaver, and surgical specimens were sent for histological examination. Antibiotic and local glucocorticoid (0.05% mometasone furoate aqueous nasal spray; Schering Plough Labo N-V, Brussels, Belgium) were administered postoperatively.

Postoperative care

Oral amoxicillin with clavulanic acid was prescribed for 1 week to prevent infection. Endoscopic follow-up was performed weekly, and blood clots and crusts were removed or suctioned. All patients were trained and advised to perform nasal douches with normal saline (isotonic sodium chloride) solution at least 2 times a day. Mometasone furoate, 0.05% aqueous nasal spray was also administered twice per day. The patients were seen weekly for the first 2 postoperative weeks to change the nasal packing (**Figure 4**). They were then observed every 2 weeks for 1 month, monthly for 2 months, and then once per 3 months. The follow-up period was between 2 and 7 years (median, 4.5 years).

Results

Histological analysis of the resected tissue revealed in 2 cases, the mucous membrane was lined with either stratified/pseudostratified ciliated columnar epithelium or ciliated columnar epithelium, in 3 patients, the lining mucous membrane was either columnar or stratified columnar epithelium, 6 patients had a stratified squamous epithelium, in 1 patient, the cyst was lined with squamous and transitional epithelia and contained lymphoid follicles in the subepithelial plane. In 12 cases, retention cysts in 2 cases, branchial cyst in 1 case, adenoid middle fossa cyst infection in 6 cases, Tornwaldt's cyst in 3 cases. The intraoperative blood loss was less 5 ml, the length of hospital

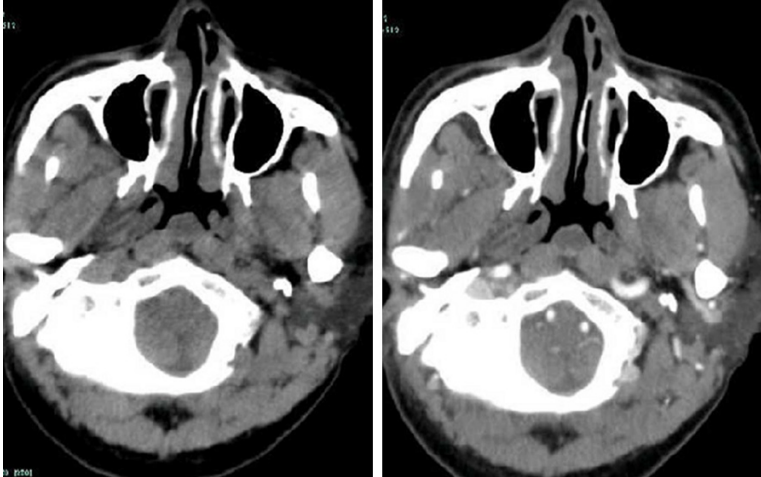


Figure 2. CT and Enhanced CT scan demonstrates the nasopharyngeal cyst.



Figure 3. The cyst is seen on a midsagittal T1-weighted MRI (A), T2-weighted MRI (B).

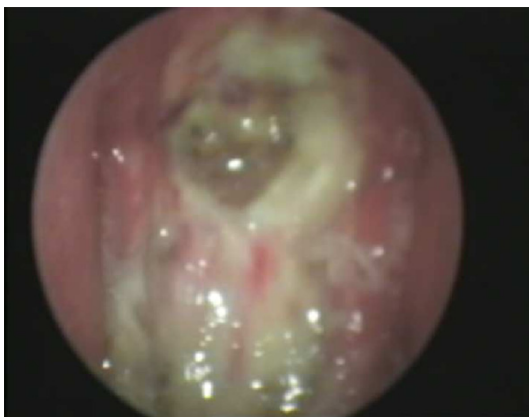


Figure 4. Nasal endoscope showed mucous edema of the nasopharynx in one week postoperative.

stay was shorter (average 1 ± 0.5 days), and there were no further postoperative complica-

tions. All the data are summarized in **Table 1** according to surgery and outcome.

Otolaryngologic and rigid endoscopy examinations of the nose were performed at each visit. The overall follow-up period was 2-7 years and magnetic resonance imaging (MRI) scan shows no signs of recurrence in all twelve patients (**Figure 5**).

Discussion

Nasopharyngeal cyst, also called "Tornwaldt's cyst," is a relatively rare and benign lesion attached to the posterior wall of the nasopharynx above the adenoids [9]. It is superficial to the superior constrictor muscle and covered by the nasopharyngeal mucous membrane. It results from a mechanical obstruction, inflammation, or abscess of the pharyngeal bursa. Adenoidectomy has been implicated as the etiologic factor in more than 75% of cases [10]. Most cysts are small, measuring less than 1 cm in diameter and are discovered

incidentally. Some are larger, causing nasal obstruction, snoring, halitosis, clearing of the throat, Eustachian tube dysfunction, and a feeling of ear fullness. When the cysts become inflamed or infected, fluid may accumulate within the cyst leading to symptoms of occipital headache, pharyngeal pain, and purulent post-nasal drip with a foul taste, and changes in olfaction [11]. In the study, all patients had rhinologic (nasal obstruction, epistaxis, and rhinorrhea, etc.) or otologic symptoms (hearing difficulty, otorrhea, ear fullness, and vertigo, etc) or headache. No history of prior adenoidectomy was reported.

The diagnosis is established by nasal endoscopy and imaging. Nasal endoscopy by either a fiberscope or a telescope (0° to 30°) is a simple and rapid procedure easily performed. Examination of the nasopharynx reveals a well-

Nasopharyngeal cyst

Table 1. Transnasal endoscopic resect cysts of the nasopharynx in 12 patients

Case	Age (year)	Sex	Main complain	Hearing loss (db)	Tympanogram	Histopathology	Recurrence
1	45	F	Mouth breathing, a persistent right nasal discharge and hearing loss in right ear	15	Flat (right)	Adenoid middle fossa cyst	No
2	30	M	Headache	0	Normal	Retention cysts	No
3	28	M	Snoring, halitosis	0	Normal	Retention cysts	No
4	51	M	Hearing decrease in left ear	15	Flat (left)	Adenoid middle fossa cyst	No
5	62	M	No	0	Normal	Branchial cyst	No
6	49	F	Headache	0	Normal	Tornwaldt's cyst	No
7	41	F	Nasal obstruction, hearing decrease and ear fullness	20 (l) 15 (r)	Flat (bilateral)	Adenoid middle fossa cyst	No
8	55	M	Olfaction decrease	0	Normal	Tornwaldt's cyst	No
9	50	F	Mouth breathing	0	Normal	Adenoid middle fossa cyst	No
10	63	F	Epistaxis and rhinorrhea	0	Normal	Tornwaldt's cyst	No
11	71	M	Hearing difficulty, otorrhea, vertigo	0	Normal	Adenoid middle fossa cyst	No
12	52	M	Hearing decrease and pain in left ear	15	Flat (left)	Adenoid middle fossa cyst	No



Figure 5. Magnetic resonance imaging (MRI) scan shown no lesion in nasopharynx in 3.5 years after operation.

encapsulated lesion covered by smooth mucosa, usually located in the posterior midline in the superior recess of the nasopharynx [12]. In the study, endoscope using a 0° or 70° endoscope showed a large well encapsulated lesion arising from the posterior wall of the nasopharynx which was covered by smooth mucosa and/or dilated blood vessels.

Axial, coronal, and sagittal CT images make it possible to identify and locate the Tornwaldt's cyst as a fluid attenuation lesion between the longus capitis muscles, high on the posterior nasopharyngeal wall. Postcontrast examinations reveal no peripheral enhancement. MRI is now considered the best radiographic imaging study to diagnose the Tornwaldt's cyst as the findings are highly characteristic. These cysts are hyperintense on T2-weighted MRIs and when the fluid content is especially protein-rich, they are hyperintense on T1-weighted images, as well [13]. On MRI, it may have high signal on both T1- and T2-weighted sequences, presumably because the cyst contains a high concentration of protein or blood products from prior hemorrhage, or both [14, 15]. In the paper, computerized tomography (CT) scan demonstrated unobstructed pharyngeal bursa on nasopharynx. These cysts are hyperintense on

T2-weighted magnetic resonance imaging (MRI) scan and when the fluid content is especially protein-rich, they are hyperintense on T1-weighted images, as well. Postcontrast studies usually demonstrate peripheral enhancement of the nasopharyngeal mucosa. Asymptomatic cysts, which may be an incidental finding on a CT or MRI, require no treatment. When the lesion is large, symptomatic, or close to the Eustachian tube torus, surgery by marsupialization is the treatment option. Many approaches have been used in the treatment of cyst of nasopharynx, including aspiration, trans-oral, and trans-palatal approaches [1-5]. The trans-oral surgical approach provides better access to cysts at the lower level, whereas the transpalatal approach is better for cysts at the upper level, but the invasion of the approach is large. In the paper, the transnasal endoscopic approach using a 0°, 30° and 70° nasal endoscope is the method of choice. The technique permits a direct approach to the atretic area, with the advantages of an angled view, good illumination, and magnification of the nasopharynx. And the powered instrumentation with a specific blade for cyst resection permits large marsupialization with minimal trauma and bleeding and excellent postoperative results.

In general, we describe transnasal endoscopic procedures to resect cysts of the nasopharynx. And found that radiofrequency coblation is a useful and safe tool associated with minimal blood loss in the resection of these cysts. In our experience, it has been a highly successful, safe, and effective procedure.

Disclosure of conflict of interest

None.

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Nasopharyngeal cyst

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