**Huge Thornwaldt’s Cyst: A Case Report**

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Thornwaldt’s bursa, also known as nasopharyngeal bursa, is a recess in the midline of the nasopharynx that is produced by persistent notochord remnants. If its opening becomes obstructed, possibly due to infection or a complication from adenoidectomy, a Thornwaldt’s cyst might develop. Here, we present a 53-year-old man who complained of nasal obstruction that had progressed for 1 year. Nasopharyngoscopy showed a huge nasopharyngeal mass. Thornwaldt’s cyst was suspected. Magnetic resonance imaging showed a lesion measuring 3.6 x 3.4 cm, intermediate on T1-weighted and high signal intensity on T2-weighted imaging, neither bony destruction nor connection to the brain. The patient underwent endoscopic surgery for this huge mass. Afterwards, his symptoms improved significantly. We present the treatment and differential diagnosis of a nasopharyngeal cyst.

**Key Words:** magnetic resonance imaging, nasopharyngeal cyst, Thornwaldt’s cyst


Thornwaldt’s bursa, also known as nasopharyngeal bursa, is a recess in the midline of the nasopharynx, which is produced by persistent notochord remnants. If its opening becomes obstructed, possibly due to infection or a complication from adenoidectomy, a Thornwaldt’s cyst might develop. We present a case of huge Thornwaldt’s cyst and review the differential diagnosis of nasopharyngeal cyst.

**Case Presentation**

A 53-year-old man came to our hospital complaining of progressive nasal obstruction that had lasted for 1 year. He had no history of headache, postnasal drip, nasal operation or trauma. Endoscopic examination showed a mass with a diameter of almost 4 cm located in the midline of the nasopharynx (Figure 1). Computed tomography of the nasopharyngeal space showed a well-defined solid mass, and magnetic resonance imaging (MRI) showed a lobulated mass with intermediate-T1-weighted and high-T2-weighted signal intensity (Figure 2) in the nasopharyngeal cavity and with wall and septa enhancement. No intracranial communication and bony destruction were found. A diagnosis of Thornwaldt’s cyst was made.

Endoscopic surgery was performed under general anesthesia on September 17, 2004. Since it was large, we crushed and removed the cyst piece by piece. Some yellowish to brownish discharge was noted within the mass. The patient was discharged 3 days later. Histopathology showed: cylindrical ciliated epithelium with inflammatory edema, hyperemia, lymphocyte infiltration, and proliferation of mucus glands with infolding. These findings were compatible with Thornwaldt’s cyst. At the 1 year follow-up, the patient had made an uneventful recovery, and nasopharyngoscopic examination demonstrated good wound healing and no sign of recurrence.
DISCUSSION

Mayer was the first to describe a cyst-like mass in the posterior wall of the nasopharynx in 1840. In 1885, Thornwaldt presented 26 cases of nasopharyngeal cysts and described both the clinical symptoms and his methods of treatment in detail. In 1912, Huber, in a description of the embryologic formation of Thornwaldt’s bursa, reported that a potential space could develop in the nasopharynx at the point where the notochord retained its union with the pharyngeal endoderm. His report was the first to discuss this pathway for the ingrowth of respiratory epithelium and the formation of a potential space in the midline of the posterior superior angle of the nasopharynx (nasopharyngeal bursa) [1].

The diagnosis of Thornwaldt’s disease begins with a history of symptoms, followed by confirmation by nasopharyngoscopy and image study. Thornwaldt classified the symptoms into proximal and associated symptoms. Proximal symptoms were defined as the results of local inflammation in the nasopharynx. Associated symptoms included alterations in nasal mucosa (hyperemia, hyperplasia, and possibly nasal polyp), ear diseases, granular pharyngitis, chronic laryngitis (in particular the involvement of the interarytenoid portion), bronchitis, chronic gastritis, reflex cough due to irritation of the larynx, bronchial asthma, chest...

Figure 1. Nasopharyngoscopy shows a huge smooth-surfaced and well-defined mass (*) in the midline of the nasopharyngeal cavity: (A) right side; (B) left side.

Figure 2. Magnetic resonance imaging, axial view, shows a well-defined and lobular mass (*), with no soft tissue involvement: (A) T1-weighted image, intermediate intensity; (B) T2-weighted image, hyperintensity.
pain in the manubrium of the sternum and headache. The three most common symptoms are persistent and notable nasal discharge, obstinate occipital headache, and halitosis [2]. In cases of infection, the posterior nasal dripping will be purulent and have a foul odor. The occipital headache would be dull and exacerbated by movement of the head. Soreness and stiffness of cervical muscles may also be present. Ear fullness or pain may be caused by dysfunction of the Eustachian tube secondary to local inflammation or compression. Our patient did not have any of these symptoms except for nasal obstruction. Nasopharyngoscopy usually shows a smooth, submucosal, midline cystic mass superior to the adenoid pad. The size of the symptomatic lesion is usually more than 20–25 mm in diameter [1,3]. MRI in our patient showed a cyst measuring 3.6 × 3.4 × 2.5 cm, but, except for nasal obstruction, he had none of the usual symptoms.

Radiographs frequently demonstrate a soft tissue mass with sharply defined margins high on the posterior pharyngeal wall. Other characteristics include superior location, absence of surrounding soft tissue reaction, and a lack of bony involvement. The lesion usually has a characteristic high signal intensity on T2-weighted and intermediate to high signal intensity on T1-weighted MRI imaging [4,5]. The variation in signal intensity on T1-weighted images may be related to differences in protein content or hemorrhage in the cyst [6].

When diagnosing nasopharyngeal cyst-like lesions, several cysts require differentiation: Thornwaldt’s cyst, branchial cleft cyst, Rathke’s pouch cyst, adenoid retention cyst, meningoceles or meningoencephaloceles, sphenoid sinus mucoceles, and nasopharyngeal carcinoma. Their characteristics and image presentations are summarized in the Table. Branchial cleft cysts are usually found in the lateral site of the nasopharyngeal space, but Thornwaldt’s, Rathke’s pouch, and adenoid retention cysts are found in the midline site. Rathke’s pouch cyst has an internal stratified squamous-lined epithelium, compared to the cylindrical ciliated epithelium in Thornwaldt’s cyst and adenoid retention cyst. Thornwaldt’s cyst is deep in the pharyngobasilar fascia, whereas retention cyst is

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<th>Table. Characteristics of nasopharyngeal cystic lesions</th>
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<tr>
<td><strong>Image</strong></td>
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<tr>
<td>Thornwaldt’s cyst</td>
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<tr>
<td>Branchial cleft cyst</td>
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<tr>
<td>Rathke’s pouch cyst</td>
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<td>Adenoid retention cyst</td>
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<td>Meningoencephalocele or meningocele</td>
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CT = computed tomography; MRI = magnetic resonance imaging.
usually found on the surface of the pharyngobasilar fascia. On histopathology, the walls of a Thornwaldt’s cyst are found to be slightly infiltrated by lymphocytes and lack lymph follicles, while adenoid retention cysts are multiple cysts surrounded by abundant lymphoid tissue, many inflammatory cells, and germinal centers [7]. Histopathology can provide useful information, especially in differentiating benign and malignant lesions. When the nasopharyngeal mass is of a large size, protrudes from the nasopharyngeal cavity roof, has an erosion surface or is suspected to be malignant, complete imaging study should be performed before biopsy.

The treatment of choice for Thornwaldt’s cyst is surgical removal or marsupialization. In our case, we removed the cyst piece by piece with punch and through cutting forceps under the guidance of a transnasal endoscope. Generally, transnasal endoscopic marsupialization provides excellent surgical visual field and avoids damage to the orifice of the Eustachian tube. At the 1-year follow-up, the patient was found to have recovered uneventfully.

We have presented a case of huge Thornwaldt’s cyst with nasal obstruction as the only presenting symptom, and discussed the differential diagnosis of nasopharyngeal cyst-like lesions. Marsupialization under nasal endoscopic guidance provides excellent visualization during operation and is the preferred treatment of large Thornwaldt’s cysts.

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巨大 Thornwaldt’s Cyst — 病例報告

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Thornwaldt’s 腔 (又稱為鼻咽囊) 位於鼻咽部中線位置的隱窩，為胚胎時脊索發育
的遺跡。若其開口處因感染或是進行腺樣體切除術之併發症而導致阻塞，則形成
Thornwaldt’s 囊腫。我們提出 1 名 53 歲男性，主訴在一年之內漸進性鼻塞，在
鼻咽內視鏡中發現在鼻咽部一巨大腫瘤，懷疑為 Thornwaldt’s 囊腫。經磁振造影
檢查，大小 3.6 × 3.4 cm，T1 訊號中等強度，T2 訊號高強度，無骨髓破壞且和
顱內無相連接。病患接受經鼻內視鏡手術腫瘤移除，術後病人症狀明顯改善。我們提
出此一病例之治療並回顧鼻咽部囊腫的鑑別診斷方法。

關鍵詞：磁振造影，鼻咽部囊腫，Thornwaldt’s 囊

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