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# Thornwaldt cyst: an incidental MR diagnosis.

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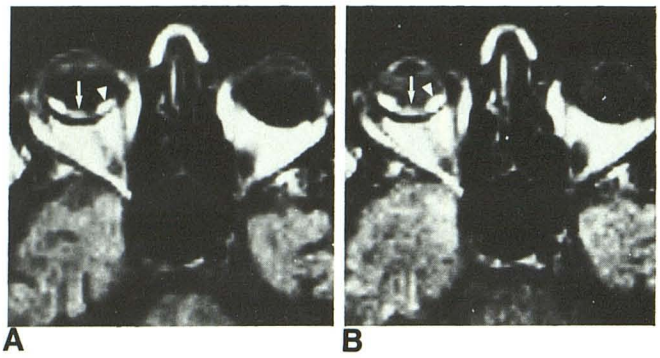

**Fig. 1.—*A* and *B*, MR images, SE 1000/28 (*A*) and SE 1000/56 (*B*), show tumor mass (*arrows*) at posterior pole of right eye, with serous subretinal fluid (*arrowheads*) on either side of tumor.**

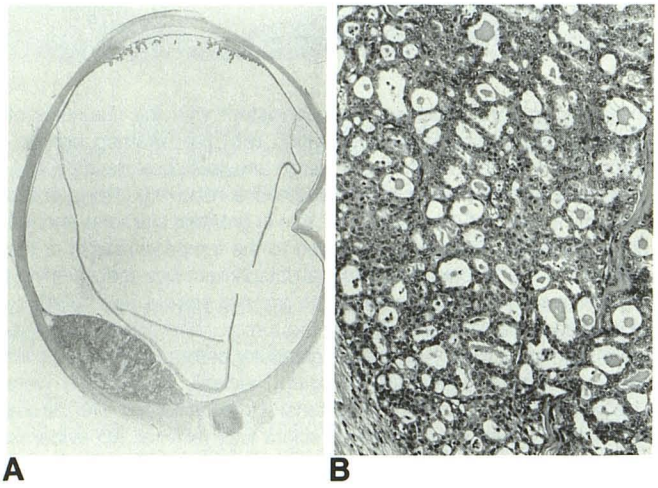

**Fig. 2.—*A* and *B*, photomicrographs show lenticular-shaped choroidal mass in the posterior fundus (*A*, H and E, ×24) and glandular pattern and mucin-filled lumina (*B*, H and E, ×250).**

correspond with the location and size defined by fundus examination, fluorescein angiography, and gross pathologic appearance. Subretinal fluid (short T1) appears as regions of high intensity on the nasal and temporal sides of the tumor. Similar imaging characteristics for subretinal fluid have been reported in cases of retinal detachment associated with choroidal melanoma [4, 5].

The unexpectedly short T1 time exhibited by this mucin-secreting adenocarcinoma probably was caused by the large quantities of mucinous fluid contained within the tumor. Mucinous fluid was expressed freely from the tumor during sectioning, and large quantities of mucin were noted during microscopic examination. Mucinous fluid can cause a shortening of T1 times in a manner similar to subretinal fluid [4] and proteinaceous cystic fluid. Macromolecules within these fluids contain hydrophilic binding sites that shorten T1 relaxation times by reducing the motional frequencies of bound protons and thereby increasing the efficiency of T1 relaxation.

Signal averaging between the tumor and adjacent subretinal fluid could have contributed to the unexpectedly short T1 time exhibited by this mucin-secreting adenocarcinoma. Subretinal fluid adjacent to the tumor appeared as regions of high signal intensity on both T1- and T2-weighted examinations. This potential source of error can be minimized on current scanners with thinner sections.

In addition to the present case, several other ocular disorders can display MR signal characteristics that are compatible with choroidal melanoma. One case of retinal gliosis [6] could not be distinguished from melanoma by MR, and two cases of retinoblastoma [4] exhibited the same signal characteristics as melanoma of T1-, T2-, and proton-density-weighted MR examinations. Also of note is the possibility that ocular neoplasms causing subacute hemorrhage can simulate the MR appearance of hemorrhagic choroidal melanomas; subacute blood contains free methemoglobin, which can cause a powerful T1 shortening effect [6] by a mechanism of paramagnetic proton relaxation enhancement similar to that seen with melanin. Therefore, choroidal melanomas do not exhibit truly unique MR signal characteristics; short T1 and T2 times are usually indicative of choroidal melanoma, but important exceptions must be considered when a clinical diagnosis is made.

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## Thornwaldt Cyst: An Incidental MR Diagnosis

Four Thornwaldt cysts were identified as an incidental finding in conjunction with the evaluation of approximately 2000 MR studies over a 16-month interval.

The Thornwaldt cyst is a posterior nasopharyngeal notochordal remnant lined by respiratory epithelium that has a potential communication with the nasopharynx. Nasopharyngeal inflammatory disease may result in a midline fluid-filled mass [1]. Although usually asymptomatic, persistent nasopharyngeal drainage, foul breath and taste, and occipital headache can occur [2].

Previous radiologic characterization of these lesions before MR imaging included plain film radiographic and complex motion tomographic findings of a well-defined round or oval mass of soft-density tissue projecting into the radiolucent air shadow of the posterior superior angle of the nasopharynx [3]. CT shows a nonspecific, low-

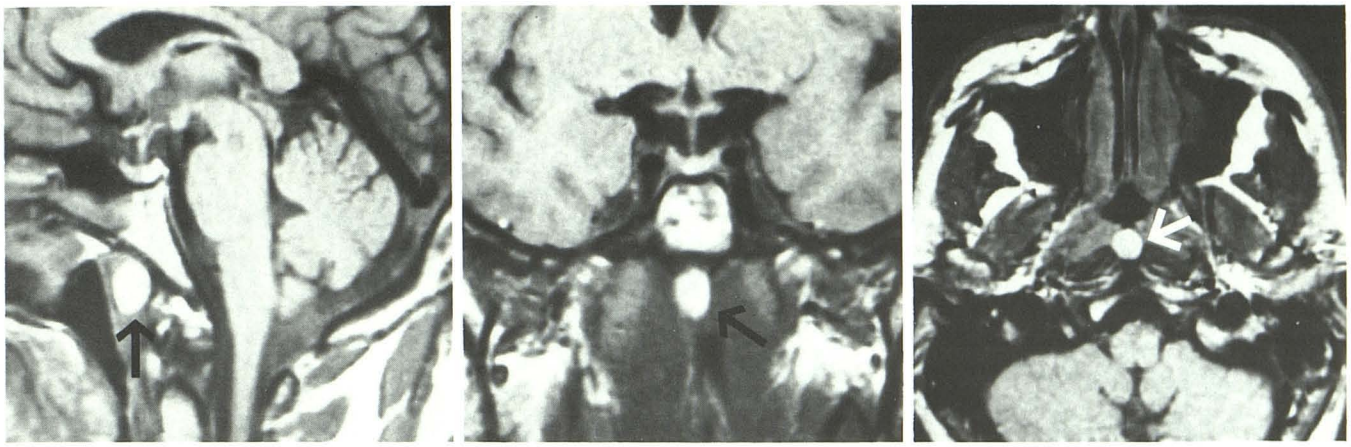
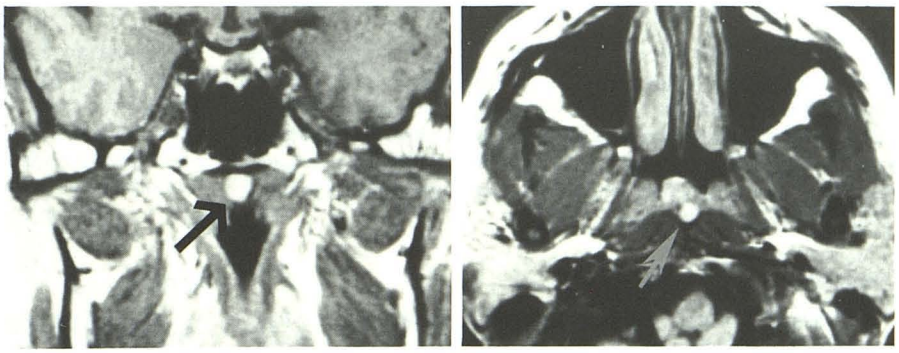



**Fig. 1.—*A–C*, Sagittal (*A*), coronal (*B*), and transaxial (*C*) MR images show Thornwaldt cyst (*arrows*) as a round, high-signal midline lesion in nasopharyngeal vault on T1-weighted sequences. TR = 800 msec, TE = 20 msec at 1.5 T.**

**Fig. 2.—*A* and *B*, Coronal (*A*) and transaxial (*B*) views of Thornwaldt cysts (*arrows*) in two patients. Small cyst in *B* posterior to nasopharyngeal mucosa lies in midline between the right and left longus capitis. TR = 800 msec, TE = 20 msec at 1.5 T.**




attenuation, nonenhancing mass within the posterior nasopharynx in the midline [1]. T1-weighted MR images (Figs. 1 and 2) reveal a round, high-signal lesion in the same location. The high signal is caused by the loculated concentrated mucus and inflammatory debris; MR has a greater sensitivity and specificity for these changes than has been previously available from other diagnostic imaging examinations.

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## Balloon Embolization of a Traumatic Carotid-Ophthalmic Pseudoaneurysm with Control of the Epistaxis and Preservation of the Internal Carotid Artery

Epistaxis resulting from rupture of a traumatic cavernous carotid aneurysm has been treated with surgery or balloon trapping of the pseudoaneurysm and subsequent sacrifice of the internal carotid artery [1–3]. We report a case in which a traumatic carotid-ophthalmic aneurysm was occluded while the internal carotid artery was preserved.

### Case Report

A 10-year-old boy was evaluated for repeated epistaxis. He had a previous history of severe closed head injury, with basilar skull fracture resulting in blindness in his left eye. Cerebral arteriogram showed a 10 × 12 × 18 mm lobulated aneurysm of the left carotid-ophthalmic artery (Fig. 1A). Intravascular balloon embolization was performed 24 days after the last episode of epistaxis. A 2-mm silicone balloon was detached within the pseudoaneurysm, and carotid blood flow was preserved (Fig. 1B). The procedure was performed by using