

# Ear Syringing Causing Petrous (Carotido-Tympanic) Internal Carotid Artery Pseudo-Aneurysm Rupture Epistaxis And Bloody Otorrhea

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## Citation

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## Abstract

This report highlights an unusual presentation of a rare carotidotympanic internal carotid artery aneurysm rupture presenting as a middle ear mass, profuse bloody otorrhea, anterior and posterior epistaxis from a minor trauma of ear syringing for impacted wax. Early diagnosis and radiological intervention by a radiologist is important to stop the bleeding and prevent a fatal outcome. A coronary covered stent was used to control the bleeding successfully. Life long follow-up and management to prevent future bleeding and stent complications is required.

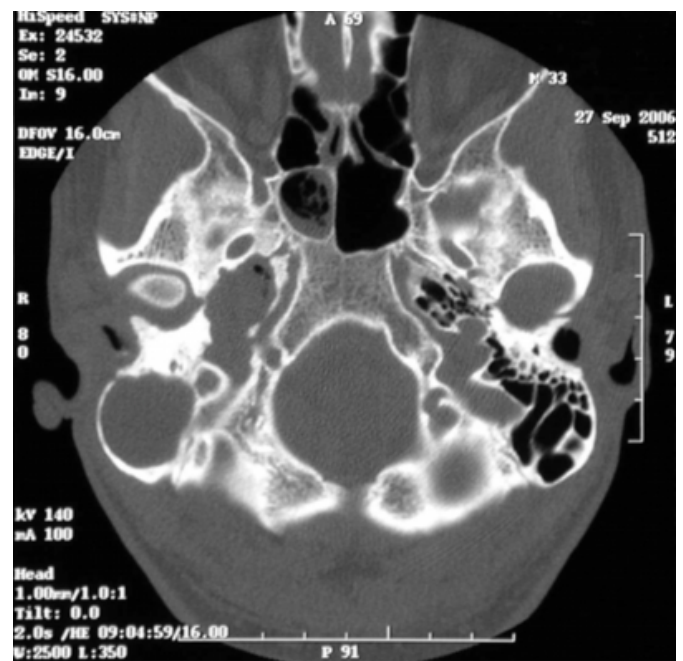
This is the first case reported in this community with rupture of congenital carotidotympanic (petrous) internal carotid artery aneurysm and the use of coronary covered stent.

## CASE REPORT

32 year old, male patient presented to a general practitioner with a history of earache and hearing loss for one week without any past history of trauma or previous surgery. A diagnosis of possible wax impaction was made. Few hours after ear syringing he presented as an emergency with sudden onset of profuse (bloody otorrhea) bleeding from right ear and massive unilateral epistaxis (anterior and posterior) bleed which was very difficult to control. He continued to have recurrent intermittent severe bleeding Hb dropped to  $<6\text{g}/\%$  which necessitated repeated multiple blood transfusions over two week period. Radiological investigations with vascular and contrast studies revealed erosion of the right petrosmastoid bone; carotid canal, middle ear cavity and the mastoid air cells (Figure 1). Conventional angiography revealed a pseudoaneurysm just anterior to the proximal (carotidotympanic) petrous internal carotid artery (figure 2). Under general anesthesia a guiding catheter was placed in the right common carotid artery. Through this a cardiology stent (cordis) was placed over laceration in the carotid artery (figure 3). This proved very difficult due to the tortuosity of the internal carotid artery. The patient recovered without any significant morbidity.

## Figure 1

Figure 1: Right petrosmastoid bone erosion by a homogenous lesion with air bubbles.



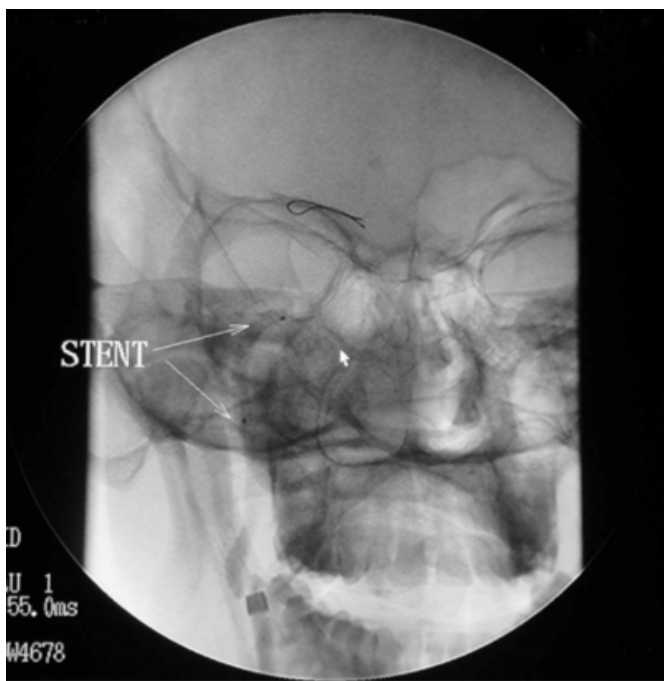
**Figure 2**

Figure 2: Carotidotympanic aneurysm arising from the petrous segment into the middle ear.



**Figure 3**

Figure 3: A coronary covered stent in the petrous internal carotid area control of the aneurysm.(arrows)



## DISCUSSION

Aneurysms of the petrous part of the internal carotid artery (ICA) are rare <sup>1</sup>.

They are thought to arise because of developmental weaknesses of the arterial wall of the sites of origin of regressed embryonic arteries including the carotidotympanic, pterygoid, vidian, stapelial or the hyoid vessel. Histological examination demonstrates degeneration of the internal elastic lamina and medial aplasia as seen in intracranial berry aneurysms <sup>1,2</sup>. The carotidotympanic artery, a vestige of embryonic hyoid artery, is a small branch that arises near the genu of the petrous ICA and passes superiorly through the stapes to supply the middle ear cavity <sup>1</sup>. The true incidence is not known but may account to 25% of extracranial ICA aneurysms <sup>2</sup>. Most are congenital but trauma and infections have been implicated <sup>3</sup>. Iatrogenic injury to the petrous ICA during myringotomy and temporal bone surgery has been reported <sup>1,2</sup>. In the majority of cases, there is often no obvious cause and such lesions may be congenital in origin <sup>3,4</sup>. Many are discovered incidentally and are usually asymptomatic but may present with a wide range of signs and symptoms depending on the aneurysm size, direction of growth and the location within the carotid canal <sup>4</sup>. Typically, patients present with symptoms in the third decade of life, these commonly include headaches, diplopia, Horner syndrome, facial numbness, facial palsy, pulsatile tinnitus, dizziness, or hearing loss <sup>1,2,3</sup>. Various combinations of single or multiple cranial nerve deficits associated with epistaxis, bloody otorrhea, vertigo, and dizziness has been reported <sup>2,3</sup>. Patients who present with aural symptoms frequently present to otorhinolaryngologist with pulsatile tinnitus, progressive hearing loss and vertigo, a retrotympanic mass can be seen. These can be mistaken for a glomus tympanicum tumor, and biopsy can produce a massive haemorrhage <sup>1,2</sup>. When these aneurysms spontaneously rupture, dramatic bleeding into Eustachian tube or middle ear can present as a massive epistaxis and bloody, otorrhea. This presentation is thought to occur in 25% of patients with petrous aneurysms, but the true incidence is not known. Such bleeding episodes can be self limited or dramatic, blood transfusions <sup>1,2,3,4</sup>. There have been cases of death from exsanguinations <sup>25</sup>. When an aneurysm of petrous portion of the internal carotid artery is suspected, magnetic resonance angiography or traditional angiography should be performed to confirm the diagnosis <sup>6,7</sup>.

The treatment of petrous ICA aneurysms remains a challenge, it should be tailored to the individual and patient selection is critical <sup>2,3</sup>. Novel endovascular stent technology, including stent-assisted coil placement and covered

stents, may eliminate the aneurysm while preserving flow in the patent artery, however close follow-up will be necessary to assess long-term patency rate and to detect delayed complications from thromboembolic events, stent induced stenosis or thrombus<sup>1,2</sup>. Overall, the use of stents is a work in progress, and with new technology its application in the treatment of petrous ICA aneurysm has increased<sup>2,3,7</sup>. Minor trauma such as ear syringing or ear suction ear toileting may cause a massive internal carotid artery bleed.

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