

Surgical Site Infection due to a Preauricular Sinus: A Rare Complication after Craniotomy

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Summary: Wound infection due to a preauricular sinus after craniotomy has not been previously reported. A 71-year-old woman visited our institute with subarachnoid hemorrhage. The aneurysm was surgically clipped with external decompression. Sixteen days after surgery, a focal erythema and discharging were observed at the inferior end of the skin incision. Careful inspection revealed a small pit there, which was diagnosed as a preauricular sinus. After the infection subsided, the sinus was completely excised. Neurosurgeons must be aware of this rare condition and must opt for complete excision to prevent infectious sequelae even if the preauricular sinus is asymptomatic. (*Plast Reconstr Surg Glob Open* 2014;2:e223; doi: 10.1097/GOX.0000000000000192; Published online 3 October 2014.)

Preauricular sinus is not an uncommon finding for plastic surgeons or otolaryngologists but seldom known to neurosurgeons.^{1,2} It occurs due to incomplete or defective fusion of the 6 hillocks during the sixth week of gestation.^{2,3} Its incidence is estimated to be higher in some areas of Africa (4–10%) and Asia (1.5–4%) than in western countries (<0.9%).^{1–6} To date, there is no case report regarding surgical site infections due to a preauricular sinus after craniotomy. Furthermore, only one study has reported preauricular sinus as a cause of wound infection after surgical intervention.⁵ Seventy-five percent of the cases of preauricular sinus are asymptomatic, but in cases of repetitive infection, treatment can be achieved only by surgical excision.^{1–4,6–8} We report herein our experience with

surgical site infection due to an asymptomatic preauricular sinus after craniotomy.

CASE REPORT

A 71-year-old woman suddenly experienced severe headache and visited our hospital. Computed tomography revealed subarachnoid hemorrhage and confirmed ruptured intracranial aneurysm. Emergency neck clipping and external decompression were successfully performed. On postoperative day 16, erythema, pain, and discharge appeared at the inferior end of the skin incision. Immediate incision, drainage, and saline washing were performed. The consulted plastic surgeon noticed a small orifice at the anterior margin of the ascending limb of the right helix. Debris appeared by orifice compression, and lacrimal probe insertion helped us to identify this structure as a preauricular sinus (Fig. 1). Reviewed initial computed tomography obtained on admission contained a small mass in front of the right tragus (Fig. 2). Subsequently, the wound was washed with saline and was then dressed with a wet gauze every day. Erythema, pain, and discharge immediately diminished. *Staphylococcus epidermidis* and *Enterococcus faecalis* were detected on culturing. Appropriate antibiotics were administered for only 3 days because of lack of septic symptoms and serological data. The remaining sinus still yielded desquamating epithelial

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Fig. 1. Photograph of the sinus orifice and the incised and drained wound. Lacrimal probe was inserted and appeared in the open wound. The temporalis fascia was visible, and the probe ended above this layer.

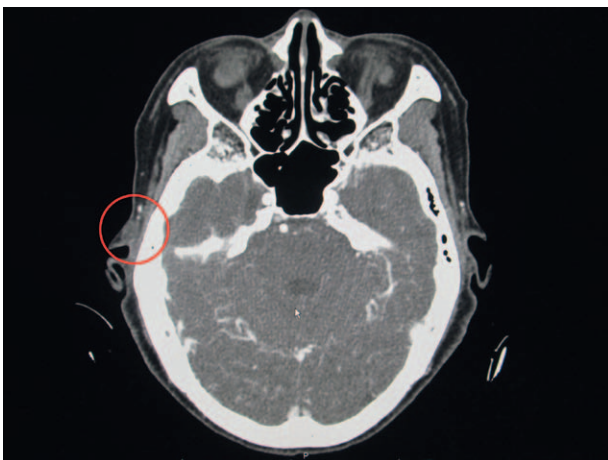


Fig. 2. Reviewed computed tomography revealing a round mass (circle) between the right superficial temporal artery (white dot) and tragus. These findings are obvious when compared to the left side.

debris. Ten days after infection, we confirmed primary healing; sinus excision was then performed by a plastic surgeon under general anesthesia, followed by ventriculoperitoneal shunting and cranioplasty. An elliptical incision was made around the sinus and

extended anterosuperiorly to the already opened wound (Fig. 3). Methylene blue was injected into the orifice to mark the sinus tract. The dissection was continued to the perichondrium of the anterior helical cartilage. The dye stained the sinus tissue, and finally, the sinus was completely dissected out along with a small portion of the cartilage. The inferior end of the original skin incision was left open with a Penrose drain under the compressive dressing. Antibiotics were administered only once before surgery. There was no recurrence of infection. The drain was removed 2 days later, and the open wound healed spontaneously after 2 weeks (Fig. 4).

DISCUSSION

Preauricular sinus is a congenital anomaly that is also termed preauricular pit, fistula, tract, or cyst.² Fifty percent of its cases are unilateral and sporadic, out of which 60% are right-sided, influenced by right-handedness; this anomaly appears predominantly in females due to use of cosmetics.¹ Preauricular sinus may be associated with deafness and renal anomaly, and median age of symptom appearance is 12–24 years and it ranges from 0 to 80 years.^{1–4,6–8} Twenty-five percent are estimated as symptomatic.⁴ However, clinically, infected preauricular sinus is

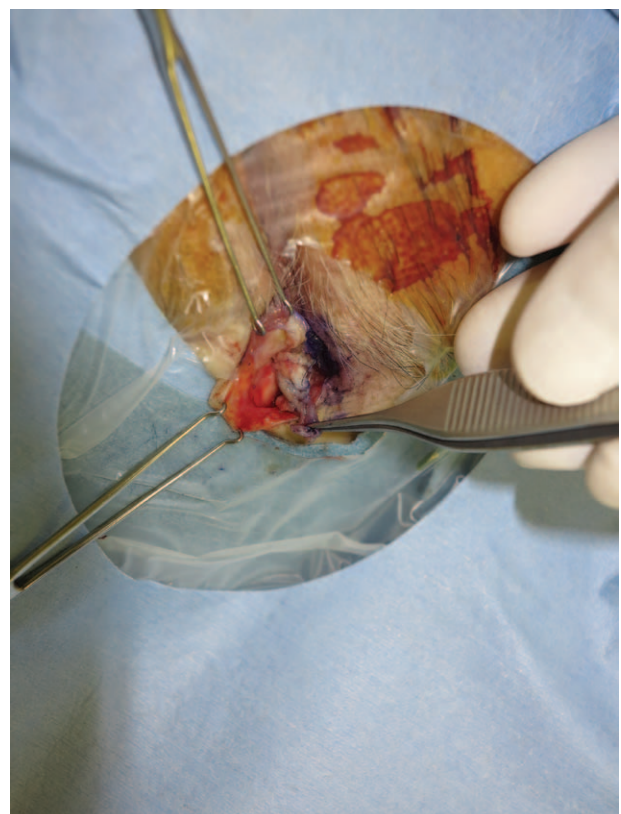


Fig. 3. Intraoperative photograph showing the lifted sinus was dissected after methylene blue injection.



Fig. 4. Aesthetic result.

usually misdiagnosed as pimples, furunculosis, dermoids, sebaceous cyst, or hemangioma.^{1,9} Because preauricular sinus is rarely mentioned in the medical literature, we did not think of this pathology until the plastic surgeon finally confirmed the sinus.¹

If infectious symptoms, such as purulent discharge, erythema, swelling, and pain, are recurrent and uncontrollable, sinus excision becomes the treatment of choice after the infection subsides.^{3,7} Incision and drainage of abscess can cause an iatrogenic fistula and should be kept under wet dressing, as in the present case.³ Once wound healing is observed in the iatrogenic fistula and surrounding area, surgery can be performed.³ In the present case, the infection resolved immediately after initial incision and drainage.

The aim of surgery is the complete removal of the squamous epithelium because residual bacteria in the cells or debris can lead to recurrence.^{1-5,7,8} Recurrence rate has been reported to be between 0% and 42%.^{3,4,6,7} Limited knowledge, inexperienced surgeons, fewer references, and former surgery can increase the recurrence rate in addition to the existence of residual epithelial remnants.^{1-3,7} Superior extension of skin incision and radical excision, including some perichondrium or cartilage, under general anesthesia and guided by microscopic ob-

servation can decrease recurrence rates.^{2-4,6-8} On the other hand, local anesthesia, probe for sinus delineation, and postoperative sepsis can also lead to recurrence.²

In the present case, it was relatively easy to remove the surrounding tissues because extension of skin incision had already been created, and the layer of temporalis fascia, which is the medial limit of the tract, had already been separated and was easy to identify.^{4,6}

To trace the sinus tract, methylene blue has been preferred over a lacrimal probe because the latter can lead to high recurrence rate.^{2-4,6,7} During skin closure, it is important to seal the dead space as tightly as possible by layer-by-layer suturing with or without drainage under compression dressing.^{2,4,5,7} Here, we followed this procedure as usual. *Staphylococcus* species and *Escherichia coli* are the main pathogens in an abscess.^{1,6-8} Usually, perioperative administration of pathogen-sensitive antibiotics is advisable.⁷ Sinus destruction by a sclerosant solution or electrodiathermy may be alternative therapies, but there is still controversy with regard to their effectiveness.²

Finally, in the present case, we suspected that the initial skin incision injured the sinus tract, resulting in debris dissemination. Subcutaneous residual hematoma might have accelerated the infection. We might have cut just toward the distal end of the sinus tract and the remnants might have discharged during washing and/or dressing. To date, no reports have described this complication after craniotomy. The orifice around the preauricular area should have been carefully inspected before craniotomy. Because neurosurgeons seldom encounter a preauricular sinus, they should consult a plastic surgeon or otolaryngologist if they suspect this anomaly. Complete sinus dissection before the initial surgery is recommended to prevent surgical site infection.

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