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What is This?
A Simple and Reproducible Surgical Technique for the Management of Preauricular Sinuses

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Abstract

Preauricular sinus is a relatively common congenital anomaly that mainly exists on the anterior aspect of the anterior limb of the ascending helix. Although many surgical techniques have been developed, extirpation of the sinus is not easy because of the ramifications of the sinus, remnants of the sinus wall, and infection with or without formation of abscesses, which can all lead to disease recurrence. In our institution, we have surgically treated a total of 141 cases of congenital preauricular sinuses. Instead of using the conventional lacrimal probe and methylene blue method, we used a gentian violet–soaked Cottonoid, which has antibacterial effects against the main pathogen responsible for causing infection of the preauricular sinus. Results have been very favorable, with a zero recurrence rate. We present here a simple and reproducible surgical technique using a gentian violet–soaked Cottonoid that even beginning surgeons can easily follow.

Keywords
preauricular sinus, surgical technique, gentian violet, Cottonoid

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Preauricular sinus is a relatively common congenital anomaly located mainly on the anterior aspect of the anterior limb of the ascending helix. It is usually composed of a single tract with its end attached to the ear cartilage, possibly with many epithelium-lined tracts branching at its end point.

More than half of all cases of preauricular sinuses present as unilateral and asymptomatic, but those with signs of infection, wound discharge, or abscess formation necessitate appropriate treatment. Many surgical methods for treating these complications have been reported to date.

We present here an operative technique using a gentian violet (G-V) solution–soaked Cottonoid (Johnson & Johnson, New Brunswick, New Jersey) that was used to treat more than 100 patients with good postoperative results and no recurrences.

Methods

Patients

The authors have performed surgical treatment for a total of 141 cases of congenital preauricular sinuses in 113 patients from January 1, 2007, through December 31, 2012, at St Vincent’s Hospital. Patients who had received preoperative antibiotics because of an infected sinus or who had underwent an incision-and-drainage procedure were excluded from the study. All medical records were retrospectively reviewed through electronic medical records, and the study was approved by the Institutional Review Board of St Vincent’s Hospital.

Technique

Patients were preoperatively examined to determine whether they had a simple sinus opening or an accompanying abscess cavity with thinning of the adjacent skin.

In the case of a simple and uncomplicated sinus opening, the direction, depth, and base of the tract, along with its attachment to the ear cartilage, were examined using a lacrimal probe and methylene blue method, we used a gentian violet–soaked Cottonoid, which has antibacterial effects against the main pathogen responsible for causing infection of the preauricular sinus. Results have been very favorable, with a zero recurrence rate. We present here a simple and reproducible surgical technique using a gentian violet–soaked Cottonoid that even beginning surgeons can easily follow.

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from adjacent normal tissue, facilitating the operative process. Dissection was performed to the end point of the tract, and its attachment to the ear cartilage was visualized. After examining for possible branching of the sinus tract, the tract was excised en bloc along with part of the ear cartilage. After meticulous bleeding control, the subcutaneous layer was repaired layer by layer using absorbable sutures, and the skin was closed with minimal undermining of the skin flap.

In the case of a combined abscess formation, an additional 2 to 4 cm of extended elliptical line was designed to include the thinned (or ruptured) skin overlying the abscess. A small amount of G-V solution was then primarily injected through the thinned skin to stain the abscess wall before the dissection. Care was taken not to injure the stained abscess wall during the en bloc excision of the sinus tract and the communicating abscess cavity, as well as the adjacent unhealthy granulation and infected tissue. The skin and subcutaneous layer was repaired in a similar fashion as mentioned above.

Results
Postoperative complications included 2 cases of wound infection, 1 case of wound disruption, and 3 cases of skin defects due to necrosis of the skin margin. All of these complications occurred within 5 postoperative days, and all completely healed within 2 weeks after the surgery. No other acute complications such as hematoma or seroma were observed, and no signs of recurrence such as recurrent infections or chronic wound problems were evident over 1 to 3 years of follow-up.

Discussion
Many surgical methods of treating preauricular sinus have been reported to date. The traditional method of using a lacrimal probe has been widely accepted, but the relatively high postoperative recurrence rate has prompted the development of other approaches such as the inside-out technique and the supra-auricular approach. All of these surgical options aim for a zero recurrence rate, and although these procedures do not require great expertise in the field to perform, a simpler and effective technique still would be useful for beginning surgeons in treating preauricular sinus.

We have therefore used a relatively simple and reproducible technique as described above. Packing a G-V solution-soaked Cottonoid into the sinus tract offers many advantages, including the expansion of the sinus tract up to 3 to 4 mm in diameter, allowing its easy visualization. In addition, by staining the tract’s narrow end point, any possible branches, and the abscess wall, a total excision of the lesion is feasible, lowering the recurrence rate to zero. The G-V solution itself has an antibacterial effect against *Staphylococcus* species, which is the main bacteria involved in sinus infections; thus, using the agent intraoperatively may aid in controlling infections. In addition, the radiopaque label of the strip enables the surgeon to confirm its complete removal through postoperative radiographs should such concern arise.

As long as the tract is not ruptured from packing in too much strip and the surrounding unhealthy granulation and infected tissue is sufficiently removed, using a G-V-soaked Cottonoid to extirpate preauricular sinuses may be an effective and easy method with a zero postoperative recurrence rate that can be performed even by beginning surgeons.
Author Contributions

Hyung-Sup Shim, acquisition of data, drafting the article, final approval; Young-Il Ko, acquisition of data, drafting the article; Min-Cheol Kim, interpretation of data, revising the article; Ki-Taik Han, interpretation of data, revising the article; Jin-Soo Lim, conception, design, revising the article, final approval.

Disclosures

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Figure 3. Visualization of the sinus wall, enabled by the dilatation and staining of the structure.

Figure 4. En bloc excision of the sinus tract and accompanying abscess. Note the communication between the sinus tract and the abscess.