

Management fistulectomy in recurrent preauricular fistula infection

Ni Kadek Cicilia Anjelika * and I Wayan Sulistiawan

Department Otorhinolaryngology Head and Neck Surgery of Sanjiwani General Hospital, Gianyar, Bali, Indonesia.

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Abstract

Background: Preauricular sinus or preauricular fistula is a congenital abnormality in the preauricular soft tissue that occurs due to failure fusion of the protrusions in each of the first and second branchial arches that form the auricle during embryonic growth. The most common location of the hole is in the anterior ascending helix. This condition tends to be asymptomatic if in a non-infected condition. However, if in an infected condition, the fistula requires special treatment. Surgery is needed if the discharge is prolonged or if there is recurrent infection.

Case Description: A 17-year-old female patient complained of a lump in her right ear, pain and accompanied by the discharge of thick yellow pus. Since birth, the patient has had an abnormal hole (fistula) precisely in the anterior helix there is a fistula hole and an abscess measuring 1 cm x 0.5 cm, with hyperemia. The patient's younger sibling also has a hole in front of the ear but has no complaints. The incident occurred twice and greatly disrupted the patient's activities. Fistulectomy was performed after the acute infection had subsided under general anesthesia. The patient underwent a simple fistulectomy operation. The entire tract and sinus were removed; the defect was destroyed and sutured.

Conclusion: Inadequate management of preauricular fistula can cause recurrence. Proper surgical technique can minimize complications and recurrence in cases of preauricular fistula. Simple fistulectomy is a good choice as a standard procedure for excision of preauricular fistula.

Keywords: Preauricular fistula; Simple fistulectomy; Abscess; Infection

1. Introduction

Preauricular sinus or preauricular fistula is a congenital abnormality in the preauricular soft tissue that was first introduced by Van Heusinger in 1864.¹ The incidence of preauricular sinus in Asia ranges from 4-10% with data on infection in the preauricular sinus not listed.² This fistula is also called a preauricular hole, preauricular sinus, preauricular tract and preauricular cyst.³ The most common location of the hole is in the anterior ascending helix (93.2%) and the second most common is around the posterior surface of the helix axis or concha cymba. Other locations are the superior part of the ascending helix, postauricular and lobule.^{4,5} The germs that cause preauricular sinus infection are *Staphylococcus epidermidis*, *Staphylococcus aureus*, *Streptococcus viridans*, *Peptococcus sp* and *Proteus sp*.⁶

Preauricular sinus is generally unilateral, if bilateral occurs it is usually inherited by incomplete autosomal dominant genetics. From several studies it was reported that bilateral lesions were found in 25%-50% of cases and unilateral lesions > 50%.^{4,5,7} Preauricular fistula occurs due to failure of the fusion of the protrusions in each of the first and second branchial arches that form the auricle during embryonic growth.⁸

This condition tends to be asymptomatic if in a non-infected condition. Asymptomatic preauricular fistula does not require action except for special precautions against infection. Prevention of infection can be done by avoiding regular

* Corresponding author: Ni Kadek Cicilia Anjelika

manipulation and cleaning the sinus from blockages with alcohol or other antiseptic fluids.⁹ However, if infected, symptoms will appear in the form of swelling, pain and discharge of odorous fluid. This infection often recurs and sometimes an abscess can occur. However, the recurrence rate will be high if surgery is performed during an active infection.¹² Simple fistulectomy is a good choice as a standard procedure for excision of preauricular fistula. Simple fistulectomy is very useful as an alternative in cases where other approaches are difficult.⁹

It is important to be careful when performing fistulectomy on patients, so that the entire fistula, including its branches, cannot be prevented from recurrence. Precision is needed in performing fistulectomy and also from an aesthetic point of view because the operation is in the area around the face. In this study, patients need to be followed up to see if there is any recurrence that may occur up to several years after surgery.⁹ In this report we would like to present our case of an infected preauricular fistula in a 17-year-old girl.

2. Case Report

A 17-year-old woman came to the ENT polyclinic with complaints of a lump in front of her right ear, pain and accompanied by the discharge of thick yellow pus. Since birth, the patient has had an abnormal hole (fistula) in front of her right ear, round, the size of a pencil tip and was said to have no complaints. However, 2 years ago around the hole there was pain, fever, swelling to the entire face and discharged a thick yellow fluid. The patient said that previously an incision had been made to drain the pus so that the patient's complaints decreased. However, a few months ago the complaint of the lump reappeared which started from a lump like a pimple that was painful. This lump enlarged and discharged pus. This complaint greatly disrupted the patient's activities at school. The patient's younger sibling also had a hole in front of her ear but had no complaints.

The patient was conscious, when a physical examination was performed on the patient, the patient's vital signs were found to be within normal limits. The results of the ENT status examination on the left ear were within normal limits, the right ear local status of the right auricle area, precisely the anterior helix, had a fistula hole and an abscess measuring 1 cm x 0.5 cm, with hyperemia, no tenderness, the ear canal was spacious, the tympanic membrane was intact, positive light reflex, no tumor, the mastoid bone was in normal condition and hearing tests for both ears were within normal limits (Figure 1). Examination of the nose and throat was within normal limits.



Figure 1 Preauricular fistula on the anterior helix

The patient was diagnosed with preauricular fistula with a history of abscess in the right ear. Previously, the patient had been given oral antibiotics to treat the abscess so that the condition was calm or not infected. The patient was planned to undergo a simple fistulectomy with general anesthesia. Fistulectomy was performed after the acute infection had subsided. Intraoperatively from the preauricular fistula hole, methylene blue was injected to determine the direction of the branches of the fistula tract (Figure 2). An elliptical incision was made around the fistula hole and surgery was performed to find the sac using the "inside out" technique.



Figure 2 Methylene blue injection

The right preauricular fistula path was traced until it found the end of the sinus. After that, blunt dissection and layer-by-layer skin removal were performed along with tracing the branches of the fistula tract and the soft tissue underneath until the fistula could be completely excised with sharp bone removal (Figure 3). After the excision was complete, internal and external suturing was performed. After surgery, the patient was given 1 gram of cefazolin and 3x500 mg of paracetamol. The day after surgery, the patient was discharged while still being given the antibiotic cefadroxil 2x500 mg and the analgesic paracetamol 3x500 mg.



Figure 3 Fistula tract

On the second day after surgery, the stitches looked good and therapy was continued. On the fifth day, the stitches looked dry, antibiotic therapy was still ongoing and analgesics were given if necessary and re-checked if there were complaints or recurrent infections (Figure 4).



Figure 4 Condition 5 days after surgery after surgery

3. Discussion

Preauricular sinus is a congenital abnormality due to the failure of the fusion of the protrusions in each of the first and second branchial arches that form the auricle during embryonic growth.⁸ Preauricular sinus is formed during embryogenesis. The auricle is formed at 6 weeks of gestation from the first and second branchial arches. The tissue from these two branchial arches develops into 6 hiloxes, which will join to form the outer ear. The first hill forms the tragus, the second hill forms the crus helix, the third hill forms the helix, the fourth hill forms the anti-helix, the fifth hill forms the anti-tragus and the sixth hill forms the lobule and the lower helix.^{4,5}

Preauricular sinus generally occurs unilaterally, if it occurs bilaterally it is usually inherited by incomplete autosomal dominant genetics.^{4,7} This is similar to the patient's condition where the patient reported having a hole in his ear since birth and only found it in the right ear.

Preauricular sinus is usually asymptomatic, isolated and does not require therapy except for precautions against infection. Prevention of infection can be done by avoiding manipulation and cleaning the opening from obstruction with alcohol or other antiseptic fluids routinely. However, when infected, the sinus becomes swollen with foul-smelling secretions and acute recurrent exacerbations often occur. Clinically, the severity of infected preauricular sinus varies in each case. The severity can be divided into three groups, namely patients without or only with a little inflammatory condition (swelling, erythematous secretions above the sinus), a group of patients with more severe inflammation and a group of patients with previous incision and drainage or those requiring revision.⁵

Inadequate management causes recurrence with an incidence rate ranging from 0 - 42%. Therefore, proper management is needed where most cases will be completed with surgery.^{10,13} Proper surgical techniques can minimize complications and recurrence in cases of preauricular fistula.^{1,11} However, the recurrence rate will be high if surgery is performed during active infection.¹² The goal of surgery is to completely remove the sac and epithelial lining of the tract. Incomplete removal of the sinus tract can cause recurrence.¹⁴ Surgical procedures can be performed with local anesthesia or general anesthesia. Surgery with local anesthesia has a higher recurrence rate than general anesthesia. This may be due to patient compliance, especially during deep dissection, so general anesthesia is more recommended.⁵

There are several agreements regarding the indications for surgery in preauricular fistula. Although there is an opinion that asymptomatic conditions can be indicated for surgery, in general experts agree that the indication for surgery is after two consecutive infections or persistent infection. This action is performed when the acute infection has resolved.⁵ In this case, the patient has experienced 2 recurrences, so that he has met the indications for fistulectomy surgery.

Simple fistulectomy is a good choice as a standard procedure for excision of preauricular fistula. It is especially useful as an alternative in cases where other approaches are difficult. Surgeons tend to prefer a standard simple elliptical incision and use methylene blue to trace the tract.⁹ Methylene blue is often used to visualize the fistula and its branches because it is readily available and inexpensive. However, the dye may not penetrate all small branches, so careful dissection is required to find small, unstained tracts.⁴

The technique used in this operation is the inside out technique. The inside out technique was demonstrated by Baatenburg de Jong in 2005. The surgical procedure is performed by making a vertical elliptical incision covering the sinus opening, attempting to resect the skin as little as possible (Figure 5A). The ends of the superior and posterior incisions are sutured with thread for fixation (Figure 5B). The sinus is then opened with sharp scissors (Figure 5C). The sinus is exposed and traced from the outside (as in the classical technique) and from the inside (Figure 5D). The next channel is opened and followed as above until the end of the channel. A fine lacrimal duct probe can be used to determine the direction of the small duct. Usually the channel is attached to the perichondrium of the upper side of the helix or tragus, resection is also performed in that section. The medial (deepest) limit of the dissection is the temporal fascia. The base of the wound is evaluated for any remaining sinus. The surgical wound is sutured with one layer of sutures without draining.¹⁵

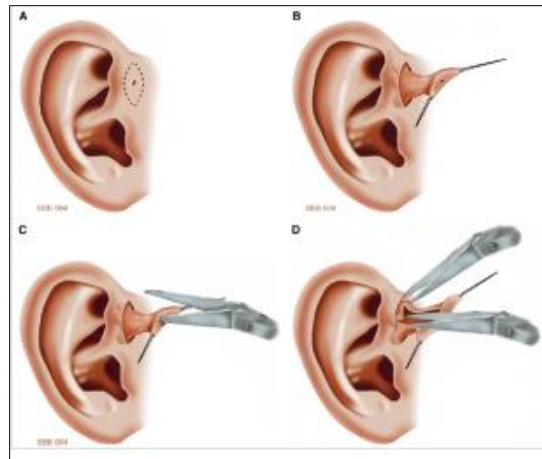


Figure 5 Inside Out Technique

A single-surgeon study by Khardali *et al.* involving 247 ears showed that preauricular sinus can be effectively treated using a standard simple elliptical incision with subcutaneous suture technique without drainage. Overall recurrence and postoperative wound infection rates were low (4.5% and 7.3%, respectively). However, postoperative infection rates were higher in patients who had undergone previous incision and drainage (9.8%) or previous fistulectomy (10%).¹⁶

Surgical difficulty is caused by the fistula branches making it difficult to determine the total extent of the duct during surgical excision, it should be remembered that the duct can be twisted with subcutaneous branches. Usually surgery is required up to the periosteum of the temporal bone and all branches of the duct must be removed to prevent recurrent infection. 17 In this study, patients required follow-up to see if there was a recurrence that might occur up to several years after surgery.

4. Conclusion

Inadequate management of preauricular fistula can cause recurrence. Therefore, proper management is needed where most cases will be completed with surgery if the indications for surgery are met. Proper surgical techniques can minimize complications and recurrence in cases of preauricular fistula. Simple fistulectomy is a good choice as a standard procedure for excision of preauricular fistula. Simple fistulectomy is very useful as an alternative in cases where other approaches are difficult to perform

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from individuals who agreed to be subjects in the case report.

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