



The clinical efficacy of early intervention for infected preauricular sinus



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ABSTRACT

Objective: The study was designed to evaluate the outcomes of early surgical intervention, and to suggest the accurate operation time and surgical strategies.

Methods: A total of 190 cases (144 patients) of PAS excision were classified into 2 groups according to their time of surgery; early intervention group (n = 53), and non-early intervention group (n = 137). Early intervention was defined as excision performed within 3 weeks from their first hospital visit, and after acute infection control, surgical removal was followed regardless of their infection status. The mean age of patients was 18.3 ± 15.7 years old (62 male, 82 female). During surgery, a parallel incision was added when iatrogenic fistula due to incision and drainage (I & D) or additionally opened wounds caused by infection was present.

Results: Cases of I & D history, revision cases, use of preoperative antibiotics were significantly higher in the early intervention group compared to the non-early intervention group, however, the time of surgery did not affect the complication rate (p = 0.533). Within the infected cases, only 1 patient from the non-early intervention group showed a minor complication of keloid scar. During our follow up period of minimum of 6 months, there was no recurrence in either groups.

Conclusion: The early intervention of PASs does not seem to increase postoperative complication or recurrence rates. A double parallel skin incision is a simple but adequate technique to treat infected PASs.

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1. Introduction

Preauricular sinus (PAS) is a congenital malformation of the preauricular soft tissues which was first described by Van Heusinger in 1864 [1]. The origin of PAS is closely related with the embryonal auricular development during the sixth week of gestation which is described by three different theories [2]. Among them, the most widely accepted theory is the incomplete or defective fusion of the six auditory hillocks also known as the Hillock of His [3].

The prevalence of PAS, ranging from 0.1% to 10%, varies among countries and their races with higher incidence reported in Asia (1–6%) and African regions (4–10%) than the Western populations

(0.1–0.9%) [4,5]. Classically, PAS is sited in the anterior margin of the ascending limb of the helix however, variant types of PAS exist including the superior regions to the auricle, posterior surface of cymba concha, lobule, and even in the postauricular area [6].

Although asymptomatic PASs do not require treatments, patients with signs of infection such as chronic recurrent discharges, erythematous change, swelling, and pain with or without abscess formation are recommended to perform surgical resection of the sinus tracts (Fig. 1). Surgical intervention of PAS is generally considered to be held after complete infection control. Previous studies have claimed that proceeding the surgery after the infection is subsided by antibiotics and/or incision and drainage (I & D) results in better outcomes and prognosis [7–9]. However, there is no established method to prove that the infection has been completely “subsided” or “controlled”. And the proper timing of surgery to minimize any possible postoperative complications and recurrence have not been accurately described. This may raise questions of how long one should wait for the operation after infection control. Therefore, we have attempted to manage

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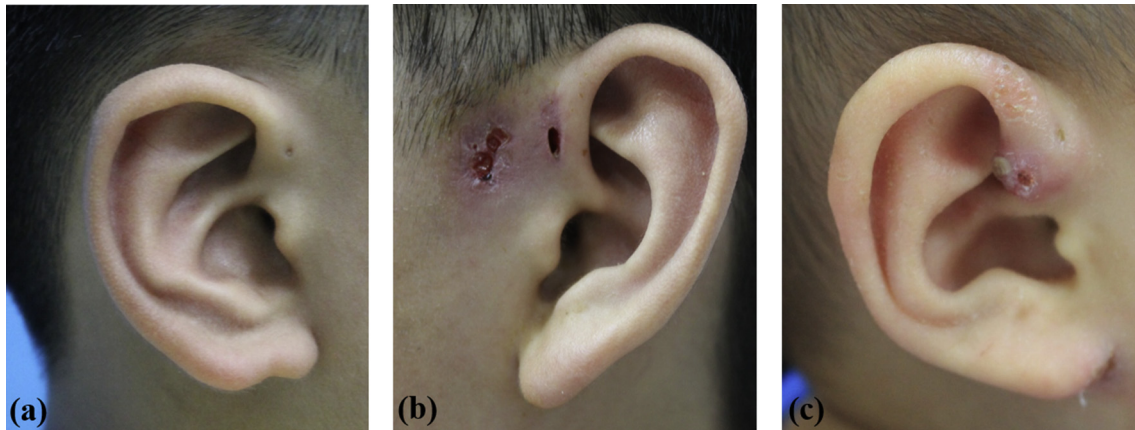


Fig. 1. Presentation of PASs according to their inflammatory status. (a) Asymptomatic case (b) Infection and recurrence after previous sinusotomy (c) infected PAS with abscess formation.

infected PASs with an early intervention protocol after immediate infection control.

The recurrence rate of PAS ranges 9–42% [2–5]. To reduce the recurrence, various techniques including inside-out technique and supra-auricular approach have been introduced [10,11]. Choung et al. also reported that there was no recurrence after operations even in cases of postauricular sinuses, which are considered as a variant of PAS [6]. However, it is not easy to operate infected PASs with a classical technique due to abundant granulation tissues that are sometimes spilled out through infected wounds or necrotic skins of the infected PASs. Thus, certain operation techniques for the management of infected PASs are required. In the present study, a double parallel incision via an anterior descending approach was developed and performed for infected PASs. The purposes of the present study were to evaluate the outcomes of early surgical intervention, and to introduce new surgical strategies for infected PASs.

2. Material and methods

2.1. Patients

From January 2010 to June 2014, a total of 190 cases (144 patients) diagnosed with PAS underwent surgical treatments by a single surgeon at the Department of Otolaryngology, Ajou University Hospital, Suwon, Republic of Korea. By approval from the Institutional Review Boards of the Ajou University School of Medicine, medical charts of these patients were reviewed retrospectively including patients' demographics, infection status during hospital visit, indication for surgery, time of surgery, surgical technique, postoperative complications, and recurrence rates. All patients included in the study were followed up for at least for 6 months.

The cases were divided into two groups based on the time of surgery, and regardless of the inflammatory condition. Patients who underwent the surgery within 3 weeks from their 1st hospital visit were classified as the early intervention group (53 cases), and the others that performed the operation after 3 weeks from their 1st hospital visit were included in the non-early intervention group (137 cases). In both groups, all cases that showed acute infection were treated with oral antibiotics, and immediate I & D was performed when abscess formation was present (Fig. 2). Before performing the surgery, the infection status of the PASs was reexamined to select the surgical techniques for

complete excision (Fig. 3a). During surgery, only patients under the age of 12 received general anesthesia.

2.2. Surgical techniques

All cases equally started the surgery with infiltration of 2% xylocaine/epinephrine 1:100,000 surrounding the sinus. Then, the direction and depth of the sinus tract were identified by a lacrimal duct probe and insertion of gentian violet solution into the sinus opening (Fig. 3b). An elliptical skin incision was designed around the sinus orifice identical to the standard technique of sinusotomy, and throughout the entire procedure the dissection of the tract was done using a no.15 blade rather than Metzenbaum scissor (Fig. 3c).

For the asymptomatic cases, the classic technique was performed with minimal incision and noninvasive techniques. In cases of infected PASs with iatrogenic fistula due to I & D or additionally opened wounds caused by infection, a second incision parallel to the first elliptical incision was designed (Fig. 3e). The main purpose of the parallel incision was to completely remove the deep sinus tracts and their branches, and to clear all inflamed granulation tissues using a wider surgical view. This additional but focal incision also considered postoperative cosmetic concerns as it was parallel to the original elliptical incision. Since the infection sites were frequently detected in the anterior of the original sinus tracts, most of the additional parallel incisions were made anterior to the initial elliptical incisions (Fig. 3d).

The elimination of inflamed tissues was completed by simply using a curette (Fig. 3f). Finally, bleeding control was accomplished by bipolar cautery and subcutaneous wound closure was done with absorbable sutures with caution to avoid dead space formation. None of the cases required drain insertion, and all patients received local compression dressing for a single day. The aim of our surgical technique was to first meticulously remove the sinus tract and branches, and extirpate all inflamed tissues from the operation site without extended procedures or aid of extra materials including inconvenient surgical tools.

2.3. Statistical analysis

All analysis to evaluate the statistical differences of each group including history of I & D, history of previous sinusotomy, pre-operative use of antibiotics, time of intervention along with complication and recurrence rates were done by Chi-squared test using SPSS software (version 18; SPSS Inc., Chicago, IL, USA). *P*

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