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RESEARCH PAPER

PREAURICULAR SINUS: MY SURGICAL EXPERIENCE AT KOMFO ANOKYE TEACHING HOSPITAL, KUMASI, GHANA

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ABSTRACT:
The objective of this paper is to describe the shortcomings of the standard technique for treatment of preauricular sinus (PAS) and to emphasize on an alternative modification of the standard surgical technique. PAS is a common congenital abnormality. Usually these lesions are asymptomatic. However, some patients complain of discharge and/or recurrent infections, requiring excision of the PAS. Surgical treatment of PAS is characterized by high recurrence rates. This paper describes our surgical experience in the treatment of PAS.

Keywords: *Standard technique, Methylene blue dye, Preauricular sinus tract*

INTRODUCTION

Preauricular sinuses are common congenital malformations which were first described by Heusinger in 1864 (Scheinfeld, 2004). These are frequently noted during physical examination as a small opening in front of the tragus of the external ear. There are various terminologies used for this condition. They include preauricular pit, preauricular tract and helical fistulae.

The incidence of preauricular sinus range from 0.1 to 0.9% in Europe and the United States, 2.5% in Taiwan and reaches 10% in some African countries (Scheinfeld *et al.,* 2004, Tan *et al.,* 2005). It is more often unilateral, only occasionally are bilateral forms inherited. The right side appears to be more involved and females are more affected than males (Paulozzi and Lary, 1999). Formation of preauricular fistula is associated with the development of the pina during the 6th week of gestation. The auricle develops from six mesenchymal hillocks –three (3) hillocks from the 1st arch and the other three (3) from the 2nd arch. These six hillocks fuse eventually to form the full fledged pina. Development of preacuricular sinus is due to incomplete fusion of the hillocks. From the clinical point of view, preauricular sinus is an occasional finding and often appears like a small pit close to the anterior margin of the first ascending portion of the helix.

The sinus forms a tract with ramifications to the subcutaneous tissues. The tract can often get infected and is treated with antibiotics but there

is a general agreement for surgical excision to be performed after, at least, two previous infections (Lam *et al.,* 2001, Baatenburg de Jong, 2005; Currie *et al.,*1996). In the literature, apart from a few technical variants, a standard technique has been described that involves an incision around the sinus opening after a methylene blue dye has been injected into the tract to outline the ramificafications of the tract in the subcutaneous tissues. There is then subsequent dissection of the tract towards the helix. This operation is done under general anaesthesia or the application of local anaesthetics around the sinus opening before dissection (Lam *et al*., 2001). Even though numerous papers appear on the management techniques used in preauricular sinus, at present, no study has been conducted in Ghana on the approaches used in the treatment of this congenital disorder. The rationale for this study is to contribute our experience to increase the knowledge of the standard technique without a methylene blue dye approach, checking the real efficacy in recurrence risk reduction and to encourage the use of this method in black Africa.

PATIENTS AND METHODS

Data on PAS procedures were collected from a retrospective review of patients' folders at the Ear Nose and Throat Department of The Komfo Anokye Teaching Hospital, Kumasi. All patients with preauricular sinuses that were excised between February 2000 and December 2010 were included in this study. The patients were categorized into one of two groups based on the type of surgical principle performed: the Standard technique with the Methylene blue dye and Standard technique without Methylene blue dye.The medical records were reviewed for demographic data on the recurrence of PAS in our group of patients.

RESULTS

Twenty-nine patients (20 males, 9 females) with PAS who underwent two separate types of surgical procedures were included in the study. A cursory look at Table 1 revealed that the peak incidence of PAS was in children aged 5-10 years. It can also be seen that preauricular sinus is more common in children between the ages of 5 – 10 years than young adults at the Ear, Nose and Throat clinic at the Komfo Anokye Teaching Hospital. The procedures adopted included the standard technique (simple sinectomy) that uses the methylene blue dye in 13 patients and the same standard technique without the use of methylene blue dye in 16 patients (Table 2).

There were 8 (61.5%) recurrences in the standard method with the use of the dye, who later underwent a successful re-operation. Recurrence rate was 3 (18.5%) for the second method without the use of the dye. All the recurrences occurred within a mean time of four months from the time of surgery. The patients were advised to come back to the clinic if any complications developed even if they were discharged from the clinic early.

DISCUSSION

The external ear is formed embryologically from six hillocks, which arise from the first brachial arch. Failure of complete fusion of the hillocks results in the formation of preauricular sinuses. The preauricular sinus is thus closely related to the grooze between the tragus and the anterior end of helix. They are usually multibranded and ramifying within the preauricular soft tissue. Hence the actual identification of the sinus and all its ramifications for a complete excision over the cartilage of the helix and tragus can be potentially difficult (Lam *et al.,* 2001). Most patients with preauricular sinus are asymptomatic. However, some patients may present with discharge from the sinus. The diagnosis is made clinically and asymptomatic patients require no treatment. But if repeated infections occur, excision of the sinus may be necessary. The tract is prone to recurrence if it is not completely excised (Chami and Apesos, 1989). The results of the present study have shown that 29 preauricular sinus patients were seen at our clinic in Kumasi during the period under survey over a 10-year period, an average of 3 cases a year.

Table 1: **Age and sex distribution of patients who participated in study**

Age	Males	Females	No. of Cases	Percentages
5-10	9	3	12	42%
10-15	5	2	7	24%
15-20	3	2	5	17%
20-25	2	1	3	10%
25-30	1	1	2	7%

Table 2: **The number of recurrences with standard technique with and without methylene blue dye in the patients seen**

Technique	Number Performed	Number of Recurrence	% Recurrence
Standard technique with methylene blue dye	13	8	62%
Standard technique without methylene blue dye	16	3	19%

Thus, it may appear that this disorder is not very common in this part of our country. A high incidence of preauricular sinus was however noted in some African countries (Scheinfeld *et al.* 2004, Paulozzi and Larry, 1999). The same authors reported a low rate of reported cases of the disorder in Europe and the United States of America. In our study, we found the disorder to be more rampant in males than females. This again, is at variance with other studies in which preauricular sinus was reported to be more common in females than in males (Leopardi *et al.,* 2008). Several techniques have been used to identify the sinus tract before its excision. Injection with methylene blue and probing the tract with lacrimal duct probe or sinus probe are the basic modalities used to identify the sinus tract.

In this retrospective study, 29 patients with preauricular sinuses were evaluated using the standard procedure for extirpation of the sinus tract (simple sinectomy) with and without methylene blue dye. The sinus tracts which were recognized by probing with lacrimal probe followed by injection of methylene blue dye showed 61.5% recurrencies (8 out of 13 recurrencies) compared with 18% (3 out of 16 recurrencies) recurrencies without the use of methylene blue dye. This confirms the limited surgical success of the standard technique with the blue dye. The same finding has been reported by other investigators (Currie *et al.,* 1996; Gur and *et al.,* 1998). More importantly, the use of the blue dye is not appropriate in blacks since the epithelium lining the tract is very visible and therefore with careful dissection one can dissect a lot of sinus ramifications. Evidence of recurrence is low. In addition the surgery does not need a very experienced surgeon to perform;

even residents can do it since the procedure is easy. Other investigators (Prasad *et al.*, 1990) recommend the use of supra-auricular approach in that it is easier to perform and presents a lower recurrence risk. This procedure should also be tried in Ghana.

CONCLUSION

A preauricular sinus is a relatively uncommon problem worldwide. Our study showed that there is low rate of reported cases of the disorder in our data. We have also shown that the standard technique without methylene blue gives better results especially in blacks, where the epithelium lining the tract is visible. In addition, the procedure gives better exposure and makes subsequent surgery, if the need arises to perform. As reported above, the recurrence rate with this technique is lower as to the use of the standard technique with methylene. For all these advantages, we advocate the use of the standard procedure without the dye in our environment, and also for excision of recurrent lesions.

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