

Management of Auricular Pseudocyst: A Comparative Study

Singh D¹, Goswami R², Dudeja V³

¹Dr. Deepti Singh, Senior Resident, Department of ENT, BMC Sagar, Madhya Pradesh, India. ²Dr. Reema Goswami, Associate Professor, Department of ENT, BMC Sagar, Madhya Pradesh, India. ³Dr. Vivek Dudeja, Senior Resident, MAMC Agroha, Haryana, India.

Address of corresponding author: Dr Deepti Singh, E mail: drdeepti0810@gmail.com

Abstract

Introduction: Auricular pseudocyst also known as auricular seroma is an asymptomatic condition of unknown etiology affecting the pinna, commonly encountered in middle aged men. The aim of the study was to compare various modalities of treatment involved i.e. wide-bore needle aspiration and splint suturing Vs incision drainage and glove drain insertion. **Materials and method:** 30 patients with clinical diagnosis as auricular seroma were selected and were compared with different treatment modalities as stated and were followed for 3 months. No recurrence for at least 3 months was taken as the main outcome of treatment. **Result:** Ten patients out of thirty underwent wide-bore needle aspiration and splint suturing (group A) and twenty patients underwent incision drainage and glove drain insertion (group B) were followed for 3 months. None of the patients had recurrence of the disease in group B but four patients presented with recurrence in group A. Out of the two, incision and glove drain insertion was found to be successful in all cases with no recurrence. **Conclusion:** Incision drainage and glove drain insertion though requiring frequent visits to the hospital, was found to be more promising treatment modality in terms of recurrence.

Key words: Auricular Pseudocyst, Auricular Seroma, Glove Drain Insertion, Splint Suturing

Introduction

Pseudocyst of the auricle also known as auricular seroma is a rare benign condition of ear that is caused by intracartilaginous collection of serous fluid in the anterior aspect of the auricle. Pseudocyst of the auricle was first reported by Hartmann in 1846 and first described in the English literature in 1966 by Engel. The cavity is not lined by epithelium hence termed pseudocyst by Engel [1]. Historically, pseudocyst of the auricle has been addressed by many terms, including endochondral pseudocyst, intracartilaginous cyst, cystic chondromalacia, and benign idiopathic cystic chondromalacia.

This rare disorder results from spontaneous accumulation of a sterile, oily, yellowish fluid and presents clinically as a painless, solitary, fluctuant, non-inflammatory, dome shaped cystic swelling on the anterior surface of pinna. Majority of cysts are located in the scaphoid and the triangular fossae. It ranges usually from 1-5 cm in diameter.

Etiology is still unclear. Hansen [2] has suggested that planes are created within the cartilage as a result of the complex embryonic development of the auricle, and these may be the sites for further pseudocyst formation. Choi et al. [3] have stated that it is a degenerative process of unknown cause occurring in the auricular cartilage, leading to the formation of a cavity containing an oily yellow fluid which is sterile. The cavity may be lined by granulation tissue, but not by epithelium, hence the title pseudocyst. It may result due to blunt trauma. Analysis of the cytokine profile of the fluid indicates markedly elevated levels of interleukin (IL)-6, which is believed to stimulate chondrocyte proliferation. IL-1, an important mediator of inflammation and cartilage destruction, induces IL-6. IL-1 also stimulates chondrocytes to synthesize proteases and prostaglandin E2 while inhibiting the formation of extracellular matrix components. The observation that an auricular pseudocyst often results after repeated minor trauma, such as rubbing, ear pulling, sleeping on hard pillows, or wearing a motorcycle helmet or earphones, has led to the suggestion that these minor traumas may be the mechanism. In support of this traumatic etiology, elevated serum lactic dehydrogenase (LDH) values have

Manuscript received: 24th April 2014
Reviewed: 07th May 2014
Author Corrected: 14th May 2014
Accepted for Publication: 10th June 2014

Research Article

been reported within the pseudocyst fluid [4]. Two of the elevated isoenzymes, LDH-4 and LDH-5, are proposed as major components of human auricular cartilage. These enzymes may be released from auricular cartilage degenerated from repeated minor trauma. One article reports that pseudocysts can be regarded as simply a variation of othematoma or otoseroma. [5]

Tan and Hsu reported the epidemiological features, clinicopathologic characteristics, and success of surgical treatment in 40 patients of different Asian groups presenting with pseudocyst of the auricle [6]. Results showed a Chinese predominance (90%), followed by Malays (5%), and Eurasians (5%).

All except one patient had unilateral presentations. Most (55%) presented within 2 weeks of auricular swelling. Few (10%) had a history of trauma. Most reports of pseudocyst of the auricle have involved Chinese or white patients; however, persons of all racial groups have been affected. Males show a higher prevalence of pseudocyst of the auricle than females [7].

Most pseudocysts of the auricle are unilateral and occur in men aged 30-40 years, but lesions are documented in patients ranging in age from 15-85 years. The success rate of different treatment modalities vary markedly as it is known for recurrence.

Materials and Method

This case control study was conducted at Bundelkhand Medical College, Sagar during the period of one year



Fig 1: Case of seroma right pinna



Fig 2: Incision and drainage of seroma

(March 2013 to February 2014). Thirty (30) patients were diagnosed with pseudocyst of pinna & presented with asymptomatic painless cystic swelling over anterior aspect of auricle and were managed at our tertiary care centre.

All patients were included in our study. Of this, 10 patients underwent wide-bore needle aspiration [Fig 1&2] under aseptic precautions followed by splint suturing (group A). 20 patients underwent incision drainage and insertion of a glove drain [Fig 3 & 4] under local anaesthesia followed by pressure dressing (group B).

All patients were informed about the procedure beforehand and consent was obtained. Group A patients were instructed to maintain strict hygiene and asepsis at the operated area and to visit the hospital on 7th day for suture removal.

Group B patients were instructed to visit the hospital daily for 7 days for cleaning and pressure dressing. Drain was kept in place for 7 days. After this patients were called on alternate days for pressure dressing. The total duration of treatment was of 15 days in group B.

All patients were instructed to report immediately if the swelling recurred. Follow up of patients was done for 3 months. All patients of both groups were prescribed 7 days of amoxyclav along with analgesics. Recurrence of the swelling was recorded and compared for both the groups by calculating p-value.

Results

All together 30 patients with clinical diagnosis of auricular seroma were included in the study. All were male patients of age group 21 to 40 yrs. all had spontaneous development of swelling and denied any history of trauma or insect bite.



Fig 3: glove drain inserted



Fig 4: Aspiration with splint suturing

Table 1: Number of patients according to age group.

Age range	Number of patients
Less than 20 yrs	0
21 to 30 yrs	12
31 to 40 yrs	18
41 to 50 yrs	0

Recurrence of seroma was noted in 4 patients of group A within 8 weeks and none had a recurrence in group B after 3 months of follow up. (p value=0.0011). Disease was more common found on right side. Minor complications like discoloration of skin, pain, thickening of pinna were temporary in both groups.

Table 2: Recurrence rate after

Treatment modality	No. of patients	Recurrence	Percentage
Wide-bore needle aspiration and splint suturing (group A)	10	4	40%
Incision drainage and glove drain insertion (group B)	20	0	0%

P value= 0.0011

Stastical analysis of recurrence showed that there was a statically significant difference between two groups. Hence we found that incision drainage and glove drain insertion though requires frequent hospital visits is better than wide-bore needle aspiration and splint suturing as recurrence rate is very low.

Discussion

Pseudocyst of the auricle also known as auricular seroma is a rare benign condition of ear that is caused by intracartilaginous collection of serous fluid in the anterior aspect of the auricle. Pseudocyst of the auricle was first reported by Hartmann in 1846 and first described in the English literature in 1966 by Engel. The cavity is not lined by epithelium hence termed pseudocyst by Engel [1]. Historically, pseudocyst of the auricle has been addressed by many terms, including endochondral pseudocyst, intracartilaginous cyst, cystic chondromalacia, and benign idiopathic cystic chondromalacia.

Auricular seroma are asymptomatic, cystic swelling of pinna resulting from accumulation of sterile fluid within unlined intracartilaginous spaces [8]. It is spontaneous accumulation of a sterile, oily yellowish fluid, resembling olive oil with no signs of inflammation [9] and no bacterial or fungal growth [10]. It is more prevalent in Chinese population. Disease usually involves scaphoid fossa. Men are more affected than women. Mostly affected patients belong to young and healthy population.

Cohen [11] reported that 93% of the cases occur in males. Other studies have reported a similar male preponderance

Research Article

(Tan [12], 87.5%; Lim [13], 87.8%). In our study all (100%) patients were males. This striking male prevalence can be explained on the differential action of estrogen and testosterone in inducing cytokines. Interleukin 1 is a cytokine that plays a major role in inflammatory response in the context of infections and immune mediated diseases. Monocytes/macrophages are the primary source of IL-1. Interleukin 1 stimulates the production of mediators such as prostaglandin E2, nitric oxide, cytokines, chemokines, and adhesion molecules that are involved in articular inflammation. Furthermore, IL-1 stimulates the synthesis and activity of matrix metalloproteinases (MMP) and other enzymes involved in cartilage destruction [14]. Morishita et al studied the effect of sex hormones on the production of IL-1 by the human peripheral monocytes and concluded that the estradiol and progesterone inhibited the production of IL-1 from human peripheral monocytes. Similar results were obtained by Richette[15] et al and Posma et al.

The exact pathogenesis is unclear but various theories have been proposed. One theory suggests that defective embryogenesis plays a role. A potential space develops during the complex formation of the auricular cartilage. Prominences on the first and second branchial arches fold and fuse around the first branchial groove [9]. Later in life, abnormal chondrocyte lysosomal enzyme release dissolves the endochondrium, creating an intracartilaginous true space, or pseudocyst. Another theory is that repeated minor trauma of the locus minoris resistentiae causes cartilage fragmentation and subsequent cystic cavity formation [16]. Third theory proposes that avascular hyaline cartilage of the auricle necrose following repeated contact of the auricle (which lacs subcutaneous tissue) with unpadded skull. Other theory is related to abnormal lysozymal enzyme release that causes cartilage degradation and cyst formation [17]. Analysis of the cytokine profile of the fluid indicates markedly elevated levels of interleukin (IL)-6, which is believed to stimulate chondrocyte proliferation. IL-1, an important mediator of inflammation and cartilage destruction, induces IL-6. IL-1 also stimulates chondrocytes to synthesize proteases and prostaglandin E2 while inhibiting the formation of extracellular matrix components. The observation that an auricular pseudocyst often results after repeated minor trauma, such as rubbing, ear pulling, sleeping on hard pillows, or wearing a motorcycle helmet or earphones, has led to the suggestion that these minor traumas may be the mechanism. In support of this traumatic etiology, elevated serum lactic dehydrogenase (LDH) values have been reported within the pseudocyst fluid [4]. Two of the elevated isoenzymes, LDH-4 and LDH-5, are proposed

as major components of human auricular cartilage. These enzymes may be released from auricular cartilage degenerated from repeated minor trauma. One article reports that pseudocysts can be regarded as simply a variation of othematoma or otoseroma [5].

Several treatment modalities have been described in literature with variable success. The ultimate goal of the treatment modality is to drain the pseudocyst without any damage to healthy cartilage and prevent recurrence [18]. Various treatment modalities include simple aspiration, aspiration and pressure dressing, aspiration with intralesional steroid, aspiration with oral steroid, aspiration and pressure dressing with POP caste, incision and drainage with removal of anterior cartilage leaflet with buttoning etc [13,19-22].

The role of corticosteroids either systemic or intralesional is controversial with varying success rates. Minocycline is thought to work as a sclerosant through its anti-inflammatory and immunomodulatory mechanisms. Recently, the use of fibrin glue as a sealer between the 2 leaves of the cartilage has been described by Tuncer [23] with positive results in one patient of recurrent pseudocyst. However, it is difficult to interpret the significance of these observations as both involved few patients. Various surgical techniques have been proposed for treating this condition. Incision and drainage was the earliest to be described but has shown to have a high recurrence rate [1]. Zhu and Wang [24] have reported a method of inserting a small drainage tube in to the cavity of the pseudocyst with a guidewire. Paul et al [25] described in a single patient the successful use of a 3-mm punch biopsy of the inferior border of the pseudocyst followed by application of a bolster.

Bhandary S et al. in 2000 compared different modalities of treatment i:e wide-bore needle aspiration, intracavitary steroid and window derroofing. Deroofing was successful in most of the cases with minimal sequele [26]. In 2004, sangeetha R Vijayendra H studied 27 cases. They exposed the cartilage by making a linear incision and rectangular piece of cartilage was removed. Wound was closed with drain in situ. Cases were followed for 2 months and no recurrence or deformity was noted [27].

Almost all the reported studies [1,3,12,13,19] on this mysterious condition have been described in the Chinese population. This study is among non-Chinese (Indian) population. Most of the studies report a high male preponderance [11,1,12]. The mean age of presentation was 31.9 years, similar to those reported by Tan [12] (38.2 years) and Choi [3] (42.8 years) showing it to be a

Research Article

disease primarily of young adults. In our study, scaphoid fossa was the most common site of involvement. Choi [3] described scaphoid fossa (80.6%) as being the most common site of pseudocyst.

In this study we have compared wide-bore needle aspiration with splint suturing vs incision drainage with insertion of glove drain in terms of recurrence. On comparing the two modalities, we found that needle aspiration with splint suturing is a simple procedure but is associated with frequent recurrences.

On the other hand, incision drainage and glove drain insertion is a minimally invasive procedure with no recurrences. The only drawback associated with this procedure is good patient compliance as requires frequent hospital visits.

Conclusion

Pseudocyst of the auricle is a benign condition of the anterior or lateral wall of the pinna with unknown etiology. It can occur in all races. The epidemiological profile of this condition is similar in Chinese and non-Chinese (Indian) population.

A hormonal influence modulating the inflammatory process explains the marked male preponderance of this condition. Due to its high propensity of recurrence, treatment of seromas remains a challenge. In our study we concluded that incision drainage and glove drain insertion, though require frequent hospital visits is more promising as recurrence rate was found to be nil with normal appearing pinna.

Funding: Nil

Conflict of interest: Nil

Permission from IRB: Yes

References

1. Engel D. Pseudocyst of the auricle in Chinese. Arch Otolaryngol. 1966 Mar;83(3):197-202.
2. Hansen J E. Pseudocyst of the auricle in Caucasians. Arch Otolaryngol. 1967 Jan;85(1):13-4.
3. Choi S, Lam K H and Chan K W et al., Endochondral pseudocyst of the auricle in Chinese. Arch Otolaryngol. 1984 Dec;110(12):792-6.
4. Miyamoto H, Okajima M, Takahashi I. Lactate dehydrogenase isozymes in and intralesional steroid injection therapy for pseudocyst of the auricle. Int J Dermatol. 2001 Jun;40(6):380-4.

5. Kopera D, Soyer HP, Smolle J, Kerl H. "Pseudocyst of the auricle", othematoma and otoseroma: three faces of the same coin?. Eur J Dermatol. 2000 Aug;10(6):451-4.

6. Tan BY, Hsu PP. Auricular pseudocyst in the tropics: a multi-racial Singapore experience. J Laryngol Otol. 2004 Mar;118(3):185-8.

7. Kanotra SP, Lateef M. Pseudocyst of pinna: a recurrence-free approach. Am J Otolaryngol. 2009 Mar-Apr;30(2):73-9. doi: 10.1016/j.amjoto.2008.02.008.

8. Harder M, Zachary C. Pseudocyst of the ear: surgical treatment. J Dermatol Surg Oncol. 1993 Jun;19(6):585-8.

9. Ichioka S, Yamada A, Ueda K, Harii K. Pseudocyst of the auricle: case reports and its biochemical characteristics. Ann Plast Surg. 1993 Nov;31(5):471-4.

10. Job A, Raman R. Medical management of pseudocyst of the auricle. J Laryngol Otol. 1992 Feb;106(2):159-61.

11. Cohen PR, Grossman ME. Pseudocyst of the auricle. Case report and world literature review. Arch Otolaryngol Head Neck Surg. 1990 Oct;116(10):1202-4

12. Tan BY, Hsu PP. Auricular pseudocyst in the tropics. A multi-racial Singapore experience. J Laryngol Otol. 2004 Mar;118(3):185-8.

13. Lim CM, Goh YH, Chao SS, Lynne L. Pseudocyst of the auricle. Laryngoscope. 2002 Nov;112(11):2033-6..

14. Jacques C, Gosset M, Berenbaum F, et al. The role of IL-1 and IL-1 Ra in joint inflammation and cartilage degradation. Vitam Horm. 2006;74:371-403.

15. Richette P, Dumontier MF, Francois M et al. Dual effects of 17 beta oestradiol on interleukin 1 beta-induced proteoglycan degradation in chondrocytes. Ann Rheum Dis. 2004 Feb;63(2):191-9.

16. Hoffman T, Richardson T, Jacobs R, Torres A. Pseudocyst Of the auricle. J Dermatol Surg Oncol. 1993 Mar;19(3):259-62.

17. Labbé D, Dompormartin A, Grimaux B, Mandard JC, Compère JF. Cystic chondromalacia of the auricle. A case report. Review of the literature. Ann Chir Plast Esthet. 1991;36(1):71-4

Research Article

18. Schulte KW, Neumann NJ, Ruzicka T. Surgical pearl: The close fitting ear cover cast- a noninvasive treatment for pseudocyst of the ear. *J Am Acad Dermatol*. 2001 Feb;44(2):285-6.
19. Chang CH, Kuo WR, Lin CH, Wang LF, Ho KY, Tsai KB. Deroofing surgical treatment for pseudocyst of the auricle. *J Otolaryngol*. 2004 Jun;33(3):177-80.
20. Salgado CJ, Hardy JE, Mardini S, Dockery JM, Mathews MS. Treatment of auricular pseudocyst with aspiration and local pressure. *J Plast Reconstr Aesthet Surg*. 2006;59(12):1450-2..
21. Hedge R, Bhargava S, Bhargava KB. Pseudocyst of the auricle: a new method of treatment. *J Laryngol Otol*. 1996 Aug;110(8):767-9.
22. Kanotra SP, Lateef M. Pseudocyst of pinna: a recurrence free approach. *Am J Otolaryngol*. 2009 Mar-Apr;30(2):73-9. doi: 10.1016/j.amjoto.2008.02.008.
23. Tuncer S, Basterzi Y, Yavuzer R. Recurrent auricular pseudocyst: a new treatment recommendation with curettage and fibrin glue. *Dermatol Surg*. 2003 Oct;29(10):1080-3
24. Zhu LX, Wang XY. New technique for treating pseudocyst of the auricle. *J Laryngol Otol*. 1990 Jan;104(1):31-2.
25. Paul AY, Park HS, Welch ML et al. Pseudocyst of the auricle: diagnosis and management with a punch biopsy. *J Am Acad Dermatol* 2000, 45(suppl 6): S230-2
26. Bhandary S, Varghese T, Mannil. A comparative study in the management of auricular pseudocyst. *Indian journal of Otolaryngology and Head and Neck Surgery*. 2000;52(3):246-50.
27. Sangeetha R, Vijayendra H. A safe and reliable technique in the management of pseudocyst. *Indian J Otolaryngology and Head and Neck Surgery*.2004;56(1):29-30.

.....

How to cite this article?

Singh D, Goswami R, Dudeja V. Management of Auricular Pseudocyst: A Comparative Study. *Int J Med Res Rev* 2014;2(5):457- 462. doi:10.17511/ijmrr.2014.i05.09

.....