



Research paper

Clinico-pathological profile and comparative study of conservative versus surgical deroofing as an effective technique in management of pseudocyst of pinna

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KEYWORDS

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Abstract *Background and objectives:* An auricular pseudocyst is not uncommon in routine ENT clinical practice, it occurs when fluid accumulates between the intracartilaginous spaces of the auricle. Many treatment modalities have been proposed such as incision and drainage of the cyst, simple needle aspiration, tight bandaging with dental rolls, however recurrence and cosmetic problems are still noted in some cases. The aim of this article was to discuss our experience of surgical treatment of intractable auricular pseudocysts with marsupialisation, deroofing and anterior cartilage leaflet removal along with compression suture therapy.

Materials and methods: Twenty patients were included in the study conducted at ENT department, Sur Ministry of Health Hospital between January 2012 and January 2014 after prior consent and ethical approval. Those following trauma and other pinna conditions like relapsing polychondritis were excluded from our study. The clinical appearances were noted and all patients underwent surgical deroofing with removal of anterior cartilage leaflet and compression suture therapy using buttons for two weeks.

Results and observations: There were 8 males and 12 females out of the 20 and right sided pinna ($n = 14$) involvement in the region of the scaphoid fossa ($n = 12$) was more than the triangular fossa ($n = 3$) or conchal bowl involvement ($n = 5$). Mostly patients between 30 and 40 years of age were affected (Mean age of 37 years and standard deviation of 8). The overall success rate with deroofing and compression suture therapy was 98%.

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Conclusions: Auricular pseudocysts are not an uncommon condition affecting middle aged patients without identifiable etiology. Conservative modalities may be the first choice of treatment for auricular pseudocysts although varied recurrence and failure rates have been published in the literature. However, the deroofting surgical technique with anterior cartilage leaflet removal with compression suture therapy is a reliable and easy procedure which can achieve an acceptable appearance of the pinna without recurrence when conservative management fails or is refused by the patient.

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Introduction

Auricular pseudocyst is not an uncommon condition encountered by primary care physicians and in routine ENT practice. They are asymptomatic cystic swelling with fluid accumulation between the intracartilaginous spaces of the auricle and typically involve the triangular fossa, conchal bowl and scaphoid fossa of the auricle. It is also known as an intracartilaginous cyst,¹ endochondral pseudocyst, and idiopathic cystic chondromalacia. Most pseudocysts of the auricle involve spontaneous swelling without an obvious history of trauma, and aspiration typically produces a viscous straw-yellow colored fluid² that resembles olive oil in appearance. Most of the pseudocysts are unilateral and affects mostly the males within mean age group of 35 and 40 years.³ The differential diagnosis of this condition includes cellulitis, relapsing polychondritis, chondrodermatitis helices, and subperichondrial hematoma secondary to trauma. The objective of treatment is to preserve the anatomic architecture and prevent recurrence. However, medical treatment and simple aspiration are usually ineffective with high recurrence rates.⁴ Without treatment, permanent deformity due to fibrosis and cartilaginous deposition may cause irreparable injury to the pinna such as cauliflower ear. Various treatment modalities have been proposed including incision and drainage, aspiration followed by treatment with intralesional steroids, or sclerosants injected into the cystic cavity with a local compression dressing such as clothing button, dental rolls, compression suture therapy, higher recurrence rates and persistent deformity have still been noted with these treatment modalities. Here, we aim to study the clinico-pathological profile of 20 patients with intractable pseudocyst unresponsive to repeated needle aspirations and three injections of intralesional steroids and various treatment modalities such as deroofting surgery along with compression suture therapy using buttons as a definitive treatment to cure this condition.

Materials and methods

After prior ethical approval from the research committee, explanations given to the patient with their individual informed written consent, this prospective study which was conducted at ENT department in Sur Hospital, Sultanate of Oman between January 2012 and January 2014. We

conducted a prospective analysis on 20 patients presenting with auricular pseudocyst in our hospital. These 20 patients were referred from our extended clinics to our secondary care centre and 18 of those who failed repeated aspirations and intralesional steroids for at least 3 occasions, one each who failed 5 intralesional steroid injections and three times simple pseudocyst aspiration were included in our study and those patients with history of pinna swelling following trauma or those presenting with cyst like lesion due to other conditions like relapsing polychondritis, cellulitis and tumour were excluded from our study. Auricular pseudocysts were diagnosed based on clinical examination, aspirate characteristics and absence of inflammation or infection. All 20 patients in our study were unresponsive to aspiration followed by intralesional injections of steroids (triamcinolone, 1 ml of 10 mg/ml suspension, at least three injections) or who refused further conservative treatment due to unsuccessful aspiration in local extended clinics (Table 1).

After cleaning the site with betadine and surgical spirit (Isopropyl alcohol), the site was draped and under aseptic precautions, the pseudocyst (Fig. 1) was aspirated, fluid physically inspected and sent for culture. After infiltration with 2% xylocaine with 1 in 100 000 adrenaline, a helical incision (Fig. 2) was made over the skin of the pseudocyst and skin flaps were elevated from the underlying perichondrium and cartilage and the anterior cartilage leaflet (Fig. 3) with surrounding cartilage was carefully excised draining straw, olive colored fluid. The posterior leaflet of the cartilage was curetted to clear off any debris or soft granulation tissue and skin flap repositioned and sutured with 4-0 nylon simple sutures over the incision site and a compression suture done in a figure of 8 fashion with an intervening sterile shirt button, the sutures were retained over a period of 2 weeks and removed. When the swelling was seen to extend to posterior aspect of pinna, we removed a small window cartilage posteriorly. No dressing was applied externally. All patients received analgesics and broad spectrum antibiotics for a week. Patients were followed up in 8 weeks in the clinic after the deroofting procedure.

Results

There were 8 (40%) males and 12 (60%) females out of the 20 and right sided pinna ($n = 14$, 70%) involvement in the region of the scaphoid fossa ($n = 12$, 60%) was more than

Table 1 Clinico-epidemiological profile of pseudocyst pinna.

Patient	Age (years)	Gender	Side	Location	Size (cm)	Duration of Pseudocyst	Intralesional steroids injections (times)	Duration of follow up (months)	complication	Recurrence
1	35	Female	Left	Scaphoid fossa	1.5 × 2.0	2.5 weeks	3	26	None	None
2	62	Male	Right	Conchal bowl	2.5 × 3.0	2 weeks	3	24	None	None
3	43	Female	Left	Scaphoid fossa	2.0 × 2.0	1.5 months	4	24	None	None
4	27	Female	Right	Scaphoid fossa	2.5 × 2.0	2 weeks	3	24	None	None
5	37	Male	Right	Triangular fossa	2.0 × 1.5	3 weeks	3	24	Perichondrial thickening	None
6	33	Female	Right	Scaphoid fossa	2.0 × 3.0	2.4 weeks	3	28	None	None
7	36	Female	Left	Scaphoid fossa	2.0 × 3.0	2 weeks	3	23	None	None
8	32	Female	Right	Conchal bowl	2.5 × 2.5	3 weeks	3	22	None	None
9	31	Male	Left	Scaphoid fossa	2.0 × 4.0	2 weeks	3	20	None	None
10	38	Female	Right	Triangular fossa	3.5 × 3.0	2 months	3	24	Perichondrial thickening	None
11	53	Male	Right	Scaphoid fossa	3.0 × 3.0	2 weeks	5	24	None	None
12	38	Male	Left	Scaphoid fossa	3.0 × 2.0	2.5 weeks	3	24	None	None
13	34	Female	Right	Conchal Bowl	2.0 × 2.5	2 weeks	3	24	None	None
14	40	Male	Right	Scaphoid fossa	2.0 × 3.0	1.5 month	3	24	None	None
15	39	Female	Right	Scaphoid fossa	2.0 × 3.0	2 weeks	3	24	Soft tissue thickening	None
16	36	Female	Right	Scaphoid fossa	2.2 × 3.0	3 weeks	3	24	None	None
17	29	Male	Right	Triangular fossa	3.0 × 3.0	2.5 weeks	3	24	None	None
18	41	Female	Left	Scaphoid fossa	3.0 × 2.0	3 week	3	24	None	None
19	29	Male	Right	Conchal bowl	2.0 × 2.0	2 month	3	24	None	None
20	34	Female	Right	Conchal bowl	2.0 × 3.0	2 weeks	4	25	None	None

the triangular fossa ($n = 3$) or conchal bowl involvement ($n = 5$). Mostly patients between 30 and 40 years of age were affected (Mean age = 37 years, Standard deviation = 8), The overall success rate with deroofing and compression suture therapy was 98%. The average duration of the pseudocysts were 3.4 weeks with a lesion size ranging from 2 to 4 cm. Out of the 20 patients, 18 patients had undergone aspiration followed by intralesional steroid injections at least 3 times, but ultimately the treatment failed in all cases. One patient received 5 injections of steroids, however the pseudocystic lesions still recurred and another patient who received at least

three simple aspirations at local extended ENT clinic requested surgical intervention on his first visit to our outpatient department. All of the patients received the deroofing surgical method to remove the pseudocysts. The histopathology specimens showed cyst-like lesions with a fibrous, cartilaginous and granulation tissue lining but no epithelium. The patients were followed up for 20–25 months without any recurrence. Although three of the patients had the complication of a perichondrial reaction and subcutaneous soft tissue thickening, all of them had a cosmetically acceptable appearance of the pinna after treatment.



Fig. 1 Pseudocyst of the pinna.

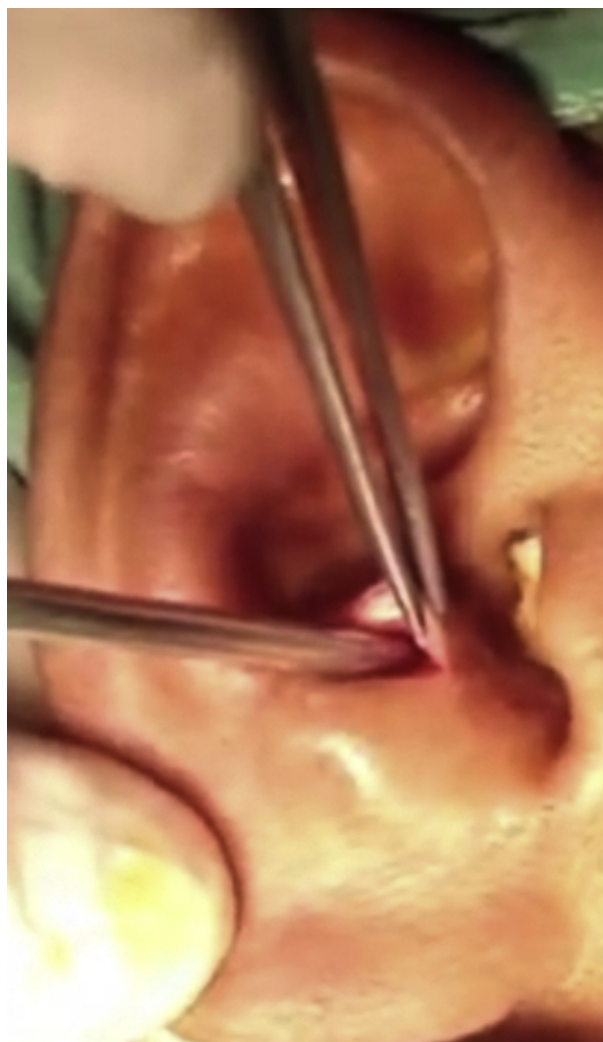


Fig. 2 Incision over the pseudocyst.

Discussion

Pseudocyst of the auricle was first reported by Hartmann in 1846⁵ and first described in the English literature in 1966 by Engel.⁶ Because the condition is not uncommon, it may be misdiagnosed or underreported by clinicians. Pseudocyst of the auricle is characterized as a benign, noninflammatory swelling to the ear, located on either the front or side surface. Tan and Hsu⁷ reported the epidemiological features, clinico pathologic characteristics, and success of surgical treatment in 40 patients of different Asian groups presenting with pseudocyst of the auricle. 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.⁸ 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 to 85 years of both sexes. The etiology of pseudocyst of the auricle is unknown, but several pathogenic mechanisms have been proposed. Originally, Engel postulated that lysosomal enzymes might be released from

chondrocytes and cause damage to the auricular cartilage. However, analysis of pseudocyst contents revealed a fluid rich in albumin and acid proteoglycans, with a rich cytokine milieu but lacking in lysosomal enzymes. Pseudocysts usually present spontaneously or following repeated minor trauma. The observation that an auricular pseudocyst often results after repeated minor trauma, such as rubbing, minor sport injuries, 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. Two of the elevated isoenzymes, LDH-4 and LDH-5,⁹ are proposed as major components of human auricular cartilage. These enzymes may be released from auricular cartilage degenerated from repeated minor trauma. Without treatment of pseudocyst of the auricle, permanent deformity of the auricle may occur. The goals of treatment of pseudocyst of the auricle are preservation of anatomical architecture and prevention of recurrence. Without treatment, permanent deformity of the auricle may occur. Treatment options include needle

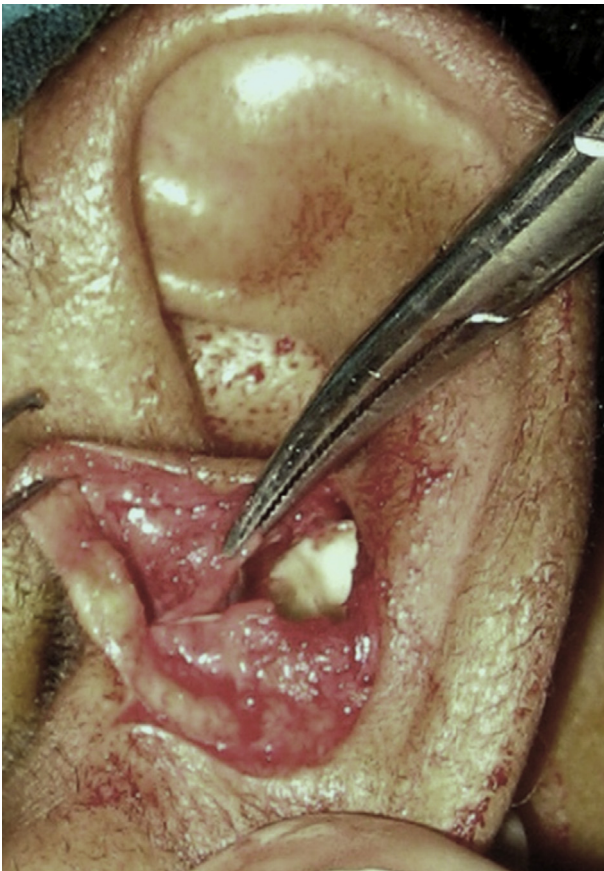


Fig. 3 Excision of anterior cartilage leaflet.

aspiration with pressure dressings, medication (either systemic or oral), and surgical care. Consensus on the best management for pseudocyst of the auricle is undetermined, and a combination of treatment modalities may be necessary to achieve optimal resolution. No medical treatment is uniformly effective for pseudocyst of the auricle. High-dose oral corticosteroids and intralesional corticosteroids therapies have been reported, with variable results. Some authors argue against the use of intralesional steroids, implicating them in permanent deformity of the ear, while others support steroid injection therapy or even oral steroid therapy. Advocates of steroid injection therapy consider it a much simpler procedure than surgery. Patigaroo et al found that simple observation as a treatment option was found to be as good as intralesional steroids.¹⁰ Some have used an auricular prosthesis formulated with the creation of a moulage fitted to the ear by the prosthetist for pressure. Several reports describe a combined procedure using surgical incision and drainage of the lesion, replacement of the anterior skin surface, and the application of a pressure dressing or bolster.¹¹ Surgical curettage and fibrin sealant has been shown to be effective in obliterating the cystic cavity. The fibrin sealant works as a template for fibroblasts to move through the wound and serves as a delivery system for growth factor. It also has hemostatic and antibacterial activity. Intralesional injections of minocycline hydrochloride (1 mg/ml) 2–3 times at 2-week intervals has shown efficacy. Minocycline¹² is

thought to work as a sclerosant through its anti-inflammatory and immunomodulatory mechanisms. Other sclerosants used include 1% trichloroacetic acid and tincture of iodine. An alternative to steroids and conventional surgical incision is a simple punch biopsy followed by the application of a bolster for approximately 2 weeks. This method should be a welcome alternative for physicians who choose to not use steroids. This simple alternative method provides a safe and effective mechanism for diagnosis and treatment of this phenomenon, while minimizing the risk of deformity. Successful treatment of an auricular pseudocyst using a surgical bolster is reported in the literature. Shan et al reported success with surgical treatment using plastic sheet compression.¹³ One study reported a patient who developed initial perichondritis following excision, requiring treatment with intravenous antibiotics. The perichondritis resolved, but with a resultant cauliflower ear 3 months after the surgery. Authors proposed that since the patient was an elderly woman with diabetes mellitus, the underlying comorbidity may have contributed to the unfavourable outcome.¹⁴ Although this procedure is the best, it is associated with minor complications as seen in our study. Perichondrial reaction and thickening of pinna were the common complications which we noticed. Perichondrial reaction subsided with antibiotics and anti-inflammatory drugs. We did not see any patient with frank perichondritis, the most dreaded complication expected due to the exposure of the perichondrium because we took all possible care to do incision and drainage under aseptic conditions. Proper surgical and postoperative care of the wound can minimize if not prevent most of the complications and hence this procedure can be recommended for treating auricular pseudocysts.

Conclusion

Auricular pseudocysts are not an uncommon condition affecting middle aged patients without identifiable etiology. Conservative modalities may be the first choice of treatment for auricular pseudocysts although varied recurrence and failure rates have been published in the literature. However, the deroofing surgical technique with anterior cartilage leaflet removal with compression suture therapy is a reliable and easy procedure which can achieve an acceptable appearance of the pinna without recurrence when conservative management fails or is refused by the patient.

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