



Research Paper

## Pseudocysts of the Pinna: It's Diagnosis and Treatment using Intralesional Steroids

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### ABSTRACT:

**Background:** Pseudocyst of the pinna is a benign and rare cystic swelling found on the lateral surface of the auricle. Its etiology is unknown, but its presence is attributed to mild trauma over long periods of time. In our study, we aimed to study the efficacy of intralesional steroid injections for this condition. We also tried to identify LDH as a marker for the diagnosis of pseudocysts.

**Methods:** Our prospective study was conducted in GMC Srinagar and included a total of 40 patients. Complete aspiration of the pseudocysts was performed followed by intralesional steroid injection. Patients were followed up for an average of 4 weeks, and the procedure was repeated in patients with recurrence. Some patients were checked for serum and aspirated LDH to check its relevancy for diagnosis.

**Results:** Most of our patients responded with a single therapy dose. Two and three therapy doses were required in 8 and 1 case(s) respectively. Even in cases with repeated therapy requirements, no deformities were seen. Serum LDH was normal in all patients, while as LDH 4 and 5 was high in the aspirated fluid of the participants.

**Conclusions:** Fluid aspiration along with intralesional steroid injection is an effective way to manage auricular pseudocysts. However, more studies are required to substantiate these results. LDH 4 and 5 have a potential of being diagnostic markers for auricular pseudocysts.

**KEYWORDS:** pseudocyst, pinna, intralesional, steroids, auricle, LDH

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### I. INTRODUCTION

Pseudocyst of pinna is a relatively asymptomatic, benign, cystic swelling seen on the anterior or lateral surface of pinna, usually in the scaphoid fossa, triangular fossa of antihelix and cymba concha [1, 2]. It is an uncommon condition hardly encountered in routine ENT practice [2]. It presents as a painless, cystic swelling and typically lacks a true epithelial lining. Local examination reveals a localized, oval shaped swelling measuring 1-4 cm containing sterile fluid which is serous or serosanguinous in nature [2, 3]. Although it was originally reported by Engel in the Chinese, it can occur in any race [4]. The terms endochondral pseudocyst, intracartilagenous auricular seroma cyst, cystic chondromalacia and benign idiopathic cystic chondromalacia are used interchangeably for this condition. Middle aged males (35-40 years) show a higher predisposition to pseudocysts [2]. The cysts are characteristically seen unilaterally [3].

The cysts are usually asymptomatic, but rarely show mild discomfort or signs of inflammation. The etiology of the condition stands unknown; however, some studies suggest underlying chronic trivial trauma to the pinna, and congenital embryonic dysplasia with residual tissue planes as the precipitants [5, 6]. The detection of isoenzymes in the pseudocyst fluid due to degeneration of cartilage by repeated minor trauma explains the same. Various treatments have been suggested in literature, the prime modalities being aspiration, incision and drainage, intralesional or systemic steroid, sclerosing agents and surgical methods [7]. However, the modalities used have shown varying rates of success as the condition has a high propensity for recurrence. Adequate management will treat the pseudocyst with minimal damages to the pinna while preventing any complications and recurrences [8, 9]. The various treatment modalities include steroid therapy – systemic as well as intralesional, incision and drainage with or without compression (prosthesis, suture etc.), intralesional sclerosing agent injection (minocycline, fibrin glue, iodine etc.), and various surgical interventions [10-12]. Despite the

availability of multiple treatment options, there is a lack of gold standard in the management of pseudocysts of the auricle. This can be attributed to higher recurrence rates of the less invasive options and higher risk for complications for the invasive methods [6, 13].

## II. METHODOLOGY

This prospective study was conducted in the Department of ENT and Head and Neck Surgery, Government Medical College, Srinagar. Our study included forty (40) patients of all age groups diagnosed with pseudocysts of the pinna. We excluded patients with previous history of pseudocysts and any history of otological surgery. All the patients included in our study were males with ages ranging from 18 to 56 years. The swellings were assessed for site. We performed complete aspiration - using 23 gauge needle and 3 mL syringe - of the pseudocysts in all patients, followed by intralesional steroid injection (triamcinolone acetonide) and contour dressing. No local anaesthetics were used in the process. We referenced sizes according to the volume of fluids aspirated. We prescribed antibiotics as these interventions were carried out in the OPD. We followed up each patient weekly for a month. In case of recurrence, fluid aspiration followed by intralesional steroid injection was done again. Absence of auricular swelling was seen as treatment success. Any complications observed were noted. The aspirated fluid of more than half of the patients was biochemically analysed on a voluntary basis. The serum LDH levels for these patients were also analysed.

## III. RESULTS

All the patients included in our study were males (100%). The ages ranged from 18 – 56 years, with 31-40 years as the most affected age group. The age distribution of the patients has been tabulated in

Table 1.

**Table 1:** Age distribution of patients.

Age Groups	Number of patients	Percentage
≤20	3	7.5
21-30	5	12.5
31-40	23	57.5
41-50	7	17.5
>50	2	5

The most common site of occurrence of the pseudocysts in our study was the Scaphoid fossa (52.5%), followed by the triangular fossa and the concha as has been elucidated in Table 2. We also encountered pseudocysts diffusely involving scaphoid and triangular fossae (10%).

**Table 2:** Sites of Involvement of the Pinna pseudocyst.

Site	Number of patients	Percentage
Scaphoid fossa	21	52.5
Triangular Fossa	10	25
Concha	5	12.5
Scaphoid and triangular fossae (diffused involvement)	4	10

All the patients had unilateral cysts, with higher incidence in the right ear (29 cases). 27.5% (11 cases) patients had their left ears involved. The pseudocysts encountered in our study were small. The volume of fluid aspirated from the pseudocysts ranged from 0.4 to 3.2 mL. The colours of the fluid observed were straw coloured (in 31 cases) and dark yellowish (in 8 cases).

Out of 40 patients, only 25 patients opted for LDH examination of the aspirated fluid and serum owing to the financial costs associated with tests. All the patients showed normal levels of serum LDH. All the 25 tested patients showed elevated LDH levels of aspirated fluid (14 cases near borderline). We did not determine the statistical significance of these results as a large group of our patients did not opt for these tests.

Of all the patients, we observed a complete disappearance of the pseudocysts in 31 (77.5%) cases with a single cycle of treatment (aspiration and steroid injection). On follow-ups, 8 (20%) cases required a second cycle of therapy and only one case had to undergo a third cycle of therapy (Table 3).

**Table 3:** Response rate of Therapy (Fluid aspiration and Intralesional steroid injection).

Number of treatment cycles (Aspiration + Steroid Injection)	Number of resolved cases (Patients with no pseudocysts)	Percentage
Single dose	31	77.5
Two doses	8	20
Three doses	1	2.5

We didn't observe any serious complications such as perichondritis or cauliflower-like deformity in our patients. All the patients with resolved swelling issues had a satisfactory cosmetic appearance.

#### IV. DISCUSSION

An auricular pseudocyst is a benign, cystic and asymptomatic swelling of the lateral surface of the auricle which involves an accumulation of intercartilagenous fluid with no surrounding epithelium. However, in some patients it may present with signs of mild inflammation or itching. The pseudocysts usually range from 1-5 cm in diameter and contain straw-yellow fluid with a consistency similar to olive oil. Some studies have however also suggested presence of serous and serosanguinous fluid [2, 3]. Pseudocyst of the pinna were first described by Hartmann in 1846 [14]. However, Engel first reported their presence in English literature in 1966 [4].

Auricular pseudocysts are predominantly seen in men [3, 11]. The age of onset varies between 30 and 40 years [3, 11]. However, they have rarely been reported in childhood or old age as well [15, 16]. There is no ethnic predilection for this disease. Most patients, including our own, present with lesions that involve the crura of the antihelix, and scaphoid and triangular fossae. Supiyaphun et al', however, in a 2001 review of 17 patients concluded that the lesions also develop in the concha [17]. Our study also showed the presence of lesions in the concha.

The etiology of pseudocysts is still debatable, however two theories have been put forward for its etiology and pathogenesis [6]. First theory attributes the pseudocyst development to low intensity trauma over a long period of time. This releases lysosomal enzymes that induce cartilage degeneration which results into cyst formation within the auricular cartilage. When enquired about daily habits that could result into such trauma, we found that most of our patients used motorbike helmets, and some used overhead headphones. Any habits of ear pulling, or rubbing were not seen. This mild stress induces the pseudocyst formation which also degenerates the surrounding cartilage. Auricular cartilages are rich in two isoenzymes – lactate dehydrogenase (LDH) 4 and 5. Degeneration of these cartilages increases the levels of these isoenzymes [18]. Some authors however dismiss the elevated LDH theory as they didn't find the relevant results in their studies [19]. We found elevated LDH in most of our patients (who got tested), but the levels were close to the borderline normal in some of these patients.

The second theory relates the etiology of these pseudocysts to a minor defect in auricular embryogenesis. This theory hypothesizes that residual planes of tissue are created during the folding of the branchial outgrowths that fuse to form the auricle. This defect could predispose the affected individuals to pseudocyst formation, when subjected to mechanical stress [20]. These mechanisms are consistent to atopic dermatitis which, if accompanied by facial and ear involvement, could prove to be a predisposing factor for pseudocyst formation [21, 22]. We did not observe atopic dermatitis in any of our patients.

Preliminary diagnosis of this condition is done while physical examination. This can be confirmed by the presence of characteristic straw-yellow fluid on aspiration. Differential diagnoses of auricular pseudocysts include cellulitis, hematoma, chondrodermatitis chronica helices, chondroma, fibroma, dermal cyst and angiosarcoma. Medical history, examination and needle aspiration often rejects the differentials, as was seen in our case [2-4, 11].

Various treatment methods – both medical and surgical – are available for auricular pseudocysts viz. needle aspiration with pressure dressings, medication (either systemic or oral), and surgical care. The goals of these treatment methods are preservation of anatomical architecture and prevention of recurrence [8, 9]. High-dose oral corticosteroids and intralesional corticosteroids therapies have been reported, with variable results [23, 24]. Juan reported satisfactory results in treating pseudocysts with intralesional steroids, while as Glamb et al. reported permanent deformity of the ear despite the use of local (or systemic) steroids [23, 25]. Our study showed high success rates in terms of maintaining the anatomic architecture and over all cosmetic appearance. Our study saw 77% patients recovering after the first dose of intralesional steroid injections, and 20% and 2% recovering after second and third doses respectively. Similar rates have been seen in a study done by Miyamoto et al. [23]. We limited the number of intralesional steroid injections to three to prevent complications like deformity, auricular cartilage atrophy, and skin pigmentation as has been reported Patigaroo et al. [7].

We maintained patient follow-up for a maximum of 5 weeks only. We terminated follow-ups after observing positive results. Long term follow-up could not be done in view of the Covid-19 pandemic emergencies.

## V. CONCLUSION

Based on our observations, we conclude that intralesional steroid therapy for auricular pseudocysts is an effective treatment with minimum side effects. More randomized control trials with large sample sizes and longer follow-up duration are required to substantiate these results. More research needs to be done to check the relevancy of elevated LDH (4 and 5) with auricular damage and to use it as a marker for proper diagnosis of these cysts.

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