



(CASE REPORT)



Diagnosis and management of Auricular Lobe Keloid: A case report

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Abstract

Background: Keloid is an abnormal wound-healing process characterized by the formation of benign fibroproliferative tissue following trauma or injury. The auricular area is the most common area affected by keloid. Despite various treatments available, auricular keloid remains recalcitrant.

Objective: To report a successful multimodal treatment of ear lobe keloid.

Case Report: A 21-year-old male patient presented with bilateral keloids in the right and left earlobe areas sized 2 x 3 cm each. The keloid mass has been slowly growing for the last five months. He had a history of ear piercing in both ear lobes two years ago. The patient underwent bilateral keloid excision, followed by serial intralesional triamcinolone injections on days 3, 7, and 14 after surgery. The histopathological examination of resected tissue was also consistent with keloid tissue.

Clinical question: What is the optimal management of auricular lobe keloid?

Methods: We performed evidence-based literature reviews regarding optimal management of auricular lobe keloid.

Result: Combination therapy is the most widely chosen treatment approach for auricular lobe keloids. This approach provides more aesthetic outcomes and lower recurrence rates than monotherapy.

Conclusion: Surgical excision followed by serial intralesional triamcinolone injection is effective for managing auricular lobe keloid. Nevertheless, patients should be advised to avoid body piercing and elective cosmetic procedures to prevent the formation of keloids in the future.

Keywords: Auricular lobe; Earlobe; Keloid; Management; Triamcinolone

1. Introduction

Trauma, inflammation, surgical scars, and burns can cause wounds. However, a pathological wound-healing process will lead to the formation of keloids. Keloids are an abnormal fibroproliferative process of cutaneous tissue characterized by an imbalance between fibroblastic proliferation and apoptosis. Keloid scar tissue grows beyond the boundaries of the original wound area and rarely regresses spontaneously. Keloids can cause significant cosmetic problems and discomfort, resulting in decreased quality of life. Therefore, proper keloid management is very vital.^{1,2}

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Keloid treatment is challenging because keloids have a high recurrence rate, and some keloids are notoriously recalcitrant to treatment. Various factors influence the severity and recurrence of keloids, including genetic factors. It is reported that the keloids are more prevalent in African, Asian, and Hispanic races. The incidence of keloids in Asian populations varies from 4.5% to 16%.^{1,3}

The auricular area is one of the most common locations for keloids, which are usually caused by ear piercing. In addition to systemic and genetic factors, earring materials and types of ear piercing procedures can contribute to the formation of keloids in the auricle. There are various treatment options for auricular keloids, such as surgery, steroid injections, pressure therapy, silicone sheeting, cryotherapy, laser therapy, imiquimoid cream, and radiotherapy. However, to date, there is no consensus regarding the therapeutic approach for auricular keloids. Keloid resection may be able to remove the keloid completely. However, surgery alone has a fairly high recurrence rate (50-100%). Thus, various literatures propose a combination therapy approach for effective auricular keloid management. Several studies have shown that the combination of surgical resection with radiation or postoperative steroid injection showed an excellent outcome with a low recurrence rate.^{3,4} This case report presents a 21-year-old male patient with auricular lobe keloid, which was successfully treated using a combination of surgical resection with postoperative intralesional triamcinolone injection.

2. Case report

A 21-year-old male patient came with a chief complaint of bilateral keloids in the right and left earlobe areas. These keloid scars have been slowly growing for the past five months. He had a history of ear piercings on both earlobes two years ago, but the piercings were infected, and he decided to remove them afterward. He has no hearing problems, pain, or itching in both ears. The patient denied any history of chronic disease.



Figure 1 Bilateral keloids in the left and right ear lobe before surgery



Figure 2 Keloid excision surgery on both ear lobe

Vital signs were normal. On physical examination, four firm, immobile, non-tender, round-shaped masses were found in front and behind both earlobes. Each mass had a diameter of approximately 2 cm (Figure 1). Other ear, nose, and throat examinations were unremarkable. The patient was clinically diagnosed with bilateral auricular lobe keloids and underwent excision surgery. The excised masses were then sent for histopathological examination to confirm the

diagnosis of keloid (Figure 2). Histopathological examination showed stratified squamous epithelial tissue and fibroproliferative collagen which is consistent with keloid.

After surgery, the patient was given antibiotics, analgetic, and serial triamcinolone injections. Serial intralesional triamcinolone injections were done at the wound edge on days 3, 7, and 14 with each dose being 20 mg/ml. The sutures were removed 7 days postoperatively. After completing the serial triamcinolone injections, the patient was asked to apply daily topical wound healing gel, which was Mederma gel. For the first month, regular follow-ups were conducted through outpatient visits every week. Then, the follow-up was done monthly afterward. Excellent wound healing outcome is shown in Figure 3. No recurrence of keloid was found during follow-ups.



Figure 3 Postoperative outcomes on days 1, 3, 7, and 14

2.1. Clinical question

What is the optimal management of auricular lobe keloid?

3. Review method

We performed literature reviews regarding the optimal management of auricular lobe keloid. We performed a literature search using Medical Subject Headings (MeSH), which includes a combination of (("Auricular Lobe Keloid" OR "Earlobe keloid") AND ("Management" OR "Treatment" OR "Case Report")). The search was conducted on the electronic databases PubMed and Google Scholar to obtain relevant articles in English or Indonesian published from 2014 to 2024. The inclusion criteria were any studies evaluating or reporting optimal treatment for keloid in the earlobe or auricular area. Exclusion criteria are expert opinions, editorials, and narrative review studies. When full manuscripts could not be obtained, the study was also excluded.

4. Result

Through a literature search, we found several studies specifically discussing the diagnosis and management of auricular keloids. First, Zorlu et al. reported three cases of auricular keloid after ear-piercing where none of these patients had a prior familial history of keloid or hypertrophic scar. All patients were treated with a combination of intralesional triamcinolone injections every 3-4 weeks for 16 weeks and a cryosurgery.⁵

Coutinho et al. reported a case of giant keloid at the auricular lobe area in a 35-year-old male patient. They showed that the combination of surgery and local radiotherapy resulted in an excellent outcome.³

Choi et al. performed a double-blinded clinical trial to evaluate the clinical outcomes of intralesional excision followed by postoperative intralesional triamcinolone injections for auricular keloid treatment. They involved 18 Korean patients with a mean age of 26.5 years. They proved that this combination of therapy is effective as auricular keloid treatment with a significant reduction (>50%) achieved in more than 95% of patients and a very low recurrence rate (5%) within 24 months after surgery.^{3,4}

The last case report we found was Pratiwi et al. They reported a 28-year-old female patient with keloid in her right auricle. Pratiwi et al. also used a combination of surgical excision followed by intralesional steroid injections. The triamcinolone injections were performed twice on day 3 and day 7 after surgery. They showed a good outcome, but no long-term follow-up was done.⁶

5. Discussion

Our patient is a young adult male with a history of piercing in the auricular lobe area 2 years ago. Previous literature also shows that the incidence of keloids is mainly in the adolescent and young adult population (aged 10-29 years). There is a higher incidence of keloids in younger populations because they are more likely to experience trauma, including ear piercing, which is a major risk factor for auricular lobe keloids. In addition, hormonal surges are more common in adolescence and young adulthood. Sexual hormones could stimulate keloid growth, especially increased androgen hormones in men. However, the influence of gender on the incidence of keloids is still controversial.^{7,8} Liu et al. showed that the prevalence of keloid was similar between men and women.⁹ Meanwhile, Manoharan et al. found a higher keloid incidence in men than women because men tend to have more incidents or trauma.⁸ On the other hand, Shaheen et al. found that the incidence of auricular keloids was specifically higher in women because women are more likely to have ear piercings than men.⁷

Keloids can be diagnosed visually. Through history taking and physical examination (inspection and palpation), clinicians can establish an initial diagnosis of keloids. Additional examinations are rarely needed, except in cases where the keloid mass is atypical or resembles tumor tissue on the skin. If the results of the physical examination are doubtful, ultrasonography, computed tomography (CT), or even magnetic resonance imaging (MRI) may be useful. However, a definitive diagnosis of keloid is made through histological examination, which showed keloidal collagen.^{7,10}

The clinical diagnosis of auricular keloid in our patient was established only through a simple physical examination, where we found solid, immobile, non-tender masses on the anterior and posterior auricular lobes of both ears. The diagnosis of keloid was then confirmed by histopathological examination of surgically excised tissue, which was consistent with keloids. Similar diagnostic approach algorithms were also applied in previous case reports. Zorlu et al. reported three cases of auricular keloids in ear-piercing scars. The diagnosis of keloids in these three cases was also confirmed by histopathological examination after surgery.⁵ Coutinho et al. also reported a case of giant keloid in the auricular lobule in a 19-year-old dark-skinned African patient whose keloid continued to grow in size 2 years after ear piercing.³ These studies demonstrate that detailed history taking and simple physical examination are sufficient to make a clinical diagnosis of keloid. However, a definitive diagnosis must still be made by histopathological examination.

Until now, there has been no standard protocol or therapy regimen for keloid therapy, especially auricular lobe keloids. Daterma et al. used a triple therapy protocol consisting of intramarginal resection under magnification, tensionless wound closure with a limited number of thin monofilament sutures, followed by serial steroid injections and application of local pressure therapy with a custom-made acrylate device. The rationale behind leaving a small rim of the wound was to avoid damage to the adjacent 'keloid-prone' skin and reduce skin tension during wound closure because skin tension is a stimulus for collagen synthesis. The intralesional steroid injections used in their study were triamcinolone acetonide 20 or 40 mg/mL, which could inhibit collagen synthesis and reduce collagenase activity. Local pressure therapy creates a local hypoxic zone that causes fibroblast degeneration and subsequent collagen degradation. This triple protocol therapy resulted in a high complete response rate (93.8%) and a low recurrence rate (6.2%).¹ Carvalhaes et al. also applied a triple protocol therapy in 46 patients and 81 auricle keloid lesions. They also showed an excellent outcome where keloid recurrence was only found in 10.5% of patients. Carvalhaes et al. also compared three different doses of intralesional triamcinolone injections (10, 20, and 40 mg/ml) for auricular keloids. They found that triamcinolone doses of 20 mg/ml and 40 mg/ml had similar efficacy, but triamcinolone doses of 10 mg/ml had poor keloid involution outcomes. Combinations of keloid management greatly vary between studies. There is no single combination that has the best effectiveness. Therefore, the combination of multimodal therapy for keloids is highly

dependent on the location, size, and depth of the lesion, patient characteristics, operator skills, and availability of facilities.¹⁰

Management of auricular lobe keloid in our patient also involves a combination of surgical treatment, intralesional triamcinolone injections, and the application of Mederma gel. There are several options for keloid excision in the auricular area, such as full-thickness wedge excision, shave excision, total excision, and intralesional excision. In addition to excision, wound closure should be done carefully to prevent tension on the wound edges.⁴ Intralesional triamcinolone or triamcinolone injection after excision is recommended to prevent scar formation and prevent keloid recurrence. Until now, there is no universal rule regarding the triamcinolone injection regimen after keloid excision. A recent systematic review showed that the frequency and interval of triamcinolone injection after excision varied in 108 different studies, ranging from daily, weekly, to monthly injections. One study stated that triamcinolone injection given every 2 weeks had the best outcome. In contrast, another study stated that weekly triamcinolone injections for 4 weeks after surgical excision also produced good outcomes without recurrence in 6 months of follow-up.¹¹ However, Pratiwi et al. stated that triamcinolone injection after excision should be done within 3 weeks after surgery to prevent keloid recurrence.⁶ The serial triamcinolone injections were also performed before 3 weeks in our patient. The way triamcinolone works is by reducing collagen synthesis, the production of pro-inflammatory cytokines such as TGF- β 1 and TGF- β 2, and fibroblast proliferation during wound healing. Our patient also had mederma gel after a triamcinolone injection. Mederma gel is a gel containing a combination of polyethylene glycol (PEG)-4, Allium cepa extract, xanthan gum, and allantoin. PEG is a silicone polymer that acts as an occlusive dressing that can modulate mechanoreceptors that play a role in the apoptosis process and reduce extracellular matrix production. Allium cepa extract contains flavonoids, which can reduce inflammation and increase matrix metalloproteinase (MMP) expression, leading to reduced collagen synthesis and increased collagen degradation.^{10,12} Based on this rationale, triamcinolone injection and application of Mederma gel in our case were intended as adjuvant therapy to prevent keloid recurrence. Unfortunately, the follow-up duration in our case was too brief to determine the long-term outcome of treatment because most keloid recurrence occurs within 3 months to 2 years after excision.¹⁰

6. Conclusion

Keloids are benign fibroproliferative disorders of the epidermis that are very common worldwide. Keloids can cause significant emotional distress due to cosmetic problems and discomfort. Keloids are also often recurrent, making it challenging to treat. Until now, there is no single therapeutic modality that has been proven effective as a treatment for keloids. Studies suggest that a combination of surgical excision and other adjuvant therapies is the most optimal approach that could prevent the recurrence of keloids. Keloid patients should also receive careful education to prevent the occurrence of keloids in the future by avoiding trauma or unnecessary cosmetic procedures.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from the patient in the study.

References

- [1] Datema FR, Saridin J, Timmer FCA, Rothuizen LT, Van Zijl FVWJ. Triple Therapy Protocol for Primary and Secondary Auricular Keloids: A Prospective Outcome Evaluation. *Dermatologic Surg.* 2023;49(9):838–43.
- [2] Carvalhaes SM, Petroianu A, Ferreira MAT, de Barros VM, Lopes RV. Assesment of the treatment of earlobe keloids with triamcinolone injections, surgical resection, and local pressure. *Rev Col Bras Cir.* 2015;42(1):9–13.
- [3] Coutinho RLO, Barros BC de, Pedroni EG, Bissoli GP, Kalil M. Giant Keloid of the Ear Lobule: Case Report and Brief Review of Literature. *J Dermatology Res Rev Reports.* 2022;3:1–13.
- [4] Choi YJ, Lee YH, Lee HJ, Lee GY, Kim WS. Auricular keloid management in Asian skin: Clinical outcome of intralesional excision and postoperative triamcinolone acetone intralesional injection. *J Cosmet Dermatol.* 2020;19(11):3041–7.

- [5] Zorlu O, Yazici S, Balaban Adım Ş. Keloid formation following ear piercing through the transitional zone. *An Bras Dermatol.* 2023;98(4):548–50.
- [6] Pratiwi IAI, Wardhana M. Right Auricular Keloid Treated With a Combination of Intralesional Excision and Corticosteroid Injection Under Tumescence Anesthesia : A Case Report. *Medical Science Digest.* 2020;11(2):497–503.
- [7] Shaheen A. Risk Factors of Keloids: A Mini Review. *Austin J Dermatology.* 2017;4(2):2–6.
- [8] Manoharan A, Rao SM. Analysis of risk factors behind keloid. *Int J Res Dermatology.* 2020;6(2):138.
- [9] Liu AH, Sun XL, Liu DZ, Xu F, Feng SJ, Zhang SY, et al. Epidemiological and clinical features of hypertrophic scar and keloid in Chinese college students: A university-based cross-sectional survey. *Heliyon.* 2023;9(4):e15345.
- [10] Elazhary E, Abd Al-Salam F, Abd El-Hafiz H, Maghraby H. Updates on keloid scar pathogenesis, assessment and treatment modalities. *J Recent Adv Med.* 2022;3(1):75–86.
- [11] Walsh LA, Wu E, Pontes D, Kwan KR, Poondru S, Miller CH, et al. Keloid treatments: an evidence-based systematic review of recent advances. *Syst Rev.* 2023;12(1).
- [12] Betarbet U, Blalock TW. Keloids: A review of etiology, prevention, and treatment. *J Clin Aesthet Dermatol.* 2020;13(2):33–43.