

# Recurrence Bilateral Auricular Keloids: Successful Combined Treatment after Two Years Follow-up. Case Report

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**Abstract: Background:** Keloids represent an aberrant, poorly understood response during wound healing. Management is still controversial. Especially when located on exposed parts of the body, keloids can seriously affect a person's appearance and self-esteem. Many different treatment modalities may be used for keloids. However, no single method alone has been found to be completely successful. Therefore, the authors decided to combine three different techniques to improve and/or resolve a recurrent case of bilateral auricular keloids. **Methods:** A 49-year-old male with recurrent and symptomatic bilateral great auricular keloids was treated. Bilateral keloid excision coupled with auricular anatomy reconstruction using local flaps and grafts was performed. Two hours after surgery, superficial radiation therapy started consisting of ten sessions performed daily using a 150-centigray (cGy) dose per session on each ear for a total dose of 1500 cGy on both sides at the surgical sites. After the first month post radiation therapy, 10 monthly sessions involving infiltration over the auricular scars with corticosteroids and 5-fluorouracil were performed. **Result:** After 2 years of follow-up, the treatment proved to be a complete aesthetic solution with no further symptoms or recurrence of the keloids. No side effects or other complications were observed. **Conclusion:** The authors propose that the combination of reconstructive surgery following radiation therapy and infiltration with corticosteroids and 5-fluorouracil is a solution for recurrent auricular keloids.

**Keywords:** Keloid, Earlobe, Auricular, Combined treatment, Superficial Radiotherapy and 5 Fluorouracil.

## INTRODUCTION

Keloids, a Greek word meaning claw-like tumors, only affect humans. This kind of tumor evolves over time without a quiescent or regressive phase and infiltrates the surrounding tissue [1]. They arise from excessive collagen deposition that extends beyond the margin of an original injury. Keloids appear as firm, mildly tender tumors with a shiny surface and occasional telangiectasia. They preferentially develop on the earlobes, shoulders, and presternal skin [2].

These benign tumors are primarily composed of abnormally thick, irregularly branched, septally disorganized type I and III collagen bundles without nodules and with excess myofibroblasts [3]. As well know, surgical excision of keloids alone is an ineffective treatment due to a recurrence rate of 45-100% [4].

One of the adjuvant therapies involves local postoperative radiation. This treatment potentially provides better result based on current scientific evidence. A review published in 2006 reported that postoperative radiation followed by surgical excision results in a control rate of 67-98% [5].

Postoperative radiation is one of first recommended treatment for the prevention of keloid recurrence, it was introduced in the 1940s and 1950s followed later by a, dose-dependent radiation approach. Irradiation doses of up to 1500 centigray (cGy) administered to patients after surgical excision of keloids successfully prevented recurrence [6].

The exact mechanism preventing regrowth after radiation therapy is unknown. However, it has been hypothesized that fibroblasts are destroyed by ionizing radiation, and are not replaced by blood-borne cells from distant tissues. By destroying enough cells, a balance may be created between collagen synthesis and degradation [1].

Intralesion corticosteroid injections have been used for the treatment of pathological scars since the mid-1960s.

Steroid injections have been shown to cause keloid regression in vivo, mainly by decreasing collagen and glycosaminoglycan synthesis, reducing inflammatory processes in the wound, decreasing fibroblast proliferation, and increasing hypoxia [7].

5-fluorouracil (5-FU) is a pyrimidine analog with antimetabolite activity, which is why it is used as an inhibitor of wound healing. This drug has been shown to inhibit fibroblast proliferation in tissue culture and reduce postoperative scarring by decreasing fibroblast proliferation [8].

The aim of this publication is to describe a successful combination therapy for keloid treatment, which resulted in non-recurrence after 2 years of follow-up. This article presents both the pre- and post-surgical results.

## METHODS

A 49-year-old male underwent surgical otoplasty at the age of 16 for aesthetic reasons. After the surgery and during the first postoperative year, bilateral keloids began appearing at the surgical site, which increased year after year in size and symptoms. At the age of 45, surgical excision of both auricular keloids was performed. During the first year post-surgery, new and more aggressive bilateral keloids began appearing.

At evaluation, the patient presented with keloids and a complete adherence of the lower and middle part of the left ear to the mastoid area with an absent earlobe. On the right ear, a large keloid tumor was observed over the conchal area. The patient requested a solution that would solve his symptoms (itching) and his aesthetic appearance.

After informed consent was obtained, photographs of the affected area were obtained before treatment and after two years of follow up from the last infiltration treatment. Based on the history of recurrence, a combination treatment was elected consisting of surgical excision with bilateral auricular anatomy reconstruction followed by superficial radiation therapy and injections of the surgical area with corticosteroids and 5-FU.

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The surgical procedure consisted of bilateral keloid excision with local flaps. The left earlobe was fixed with a combination of a local neck flap and a complete-thickness graft. The donor graft area was from the abdominal area near to a previous surgical scar that patient had.

Two hours after surgery finished, the patient started 10 sessions of superficial radiotherapy (100 kVa Phillips RT 100 device) performed on consecutive days. The daily protocol consisted of a 150-cGy dose per session on both each ears for a total dose of 1500 cGy on each side at the surgical site.

After one month post radiation therapy, 10 monthly infiltration sessions of corticosteroids (triamcinoloneacetone 30 mg/5 ml) and 5-FU (500 mg/ml) were performed. The composition of the infiltration formula was consistent across sessions and consisted of 20-30% triamcinolone and 70-80% 5-FU for a total of 1 cc on each surgical incision in each earlobes.

Two years follow up was completed.

## RESULTS

Surgery achieved complete resection of the keloids with satisfactory aesthetic results as rated by both the patient and the treating surgeon. There were no complications during the procedure or the post-operative recovery time.

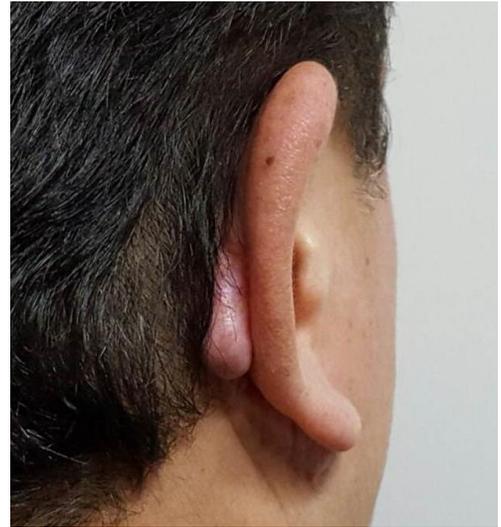
Radiotherapy and infiltrations were well tolerated and the treating protocol completed as per plan.

After 2 years of follow-up, the treatment proved to be a complete aesthetic and symptomatic solution with no further symptoms or recurrence of the keloids.

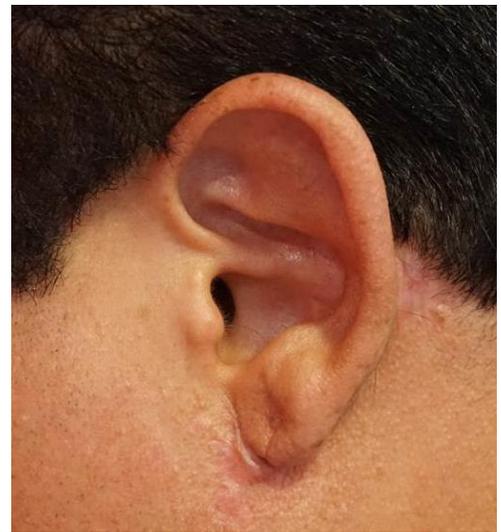
No side effects or other complications were observed.



**Figure 1(a):** A 49 years male with recurrence and symptomatic bilateral great auricular bilateral keloids. The patient presented an important keloid formation with a complete adherence of lower and middle part of the left ear to the mastoid area with a complete absence of the earlobe.



**Figure 1(b):** On the right ear appeared a big keloid tumor only over the back of the conchal area.



**Figure 1(c):** Left ear result after earlobe reconstruction with local flaps and graft, superficial radiotherapy and injection on scars of corticosteroid and 5 fluoroacil.



**Figure 1(d):** Right ear result after same combined treatment.



**Figure 1(e):** Bilateral auricular back view post treatment show correct separation between conchal area and mastoid area.

## DISCUSSION

Keloids represent an aberrant wound-healing response that is poorly understood. Management is still controversial. Especially if located on exposed parts of the body, keloids can seriously affect a person's appearance and self-esteem, encouraging them to look for a solution. Many publications have reported various types of therapies to treat keloids cosmetically and reduce recurrence. However, no single method has been found to be completely successful.

While there are many possible treatments for keloids, the literature suggests that the efficacy of most surgical and non-surgical treatments remains controversial, making it challenging for physicians to recommend treatments to patients [2,3,9,10,11]. After critical evaluation of the literature, the principal author selected a combination treatment for the patient in order to avoid recurrence.

A paper published in 2002 by Aköz et al. showed good results without recurrence in the majority of patients who were administered a triamcinolone acetonide injection combined with the slight application of pressure using a silicone gel-coated earring (9). This combination treatment was used by the principal author without success in the past.

Based on a publication from 2003 by Blugerman et al. [12], a good response related to scars fibrosis was observed following treatment with 5-FU. Therefore, the principal author elected to use this drug in the infiltration formula combined with a corticosteroid.

Based on his own experience, the dose chosen was a combination of 20-30% corticosteroid and 70-80% 5-FU in a single 1 cc syringe. A total of 1 cc of this combination therapy was applied at each surgical area.

Chaudhry et al. reported in 1994 that a lower rate of recurrence of 2.8% was observed in 36 patients over 10 years following a 1800 cGy radiation therapy. Based on the experience of the second author, a lower dose of 1500 cGy was selected for the treatment in this case (1).

In a literature review by Norris in 1995, only one case was reported of a carcinoma occurring after treatment of a keloid using surgical removal followed by radiotherapy, and a causal relationship was questionable [13]. Regardless, this possibility was discussed with the patient prior to beginning treatment.

## CONCLUSIONS

The auricular area is one of the most frequently affected by keloid formation. These seriously affect a person's appearance and self-esteem, and deserve a medical solution. Many different treatment modalities may be used for keloids. However, no one method alone has been found completely successful.

An aesthetic and symptomatic solution for recurring bilateral auricular keloids was obtained using a combination therapy, and no recurrence was observed after 2 years of follow-up. It is therefore proposed that the combination of reconstructive surgery followed by superficial radiation therapy and injections with corticosteroids and 5-FU is an effective treatment for auricular keloids.

A greater number of cases with a similar treatment protocol will be required to establish the success of this combination of treatments.

## ETHICAL STATEMENTS

**Conflict of Interest:** The author declares that he has no conflict of interest. **Ethical approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. For this kind of retrospective observational study no ethical approval is required. **Informed consent:** Informed consent was obtained from the patient included in the study. **Patient consent:** Patient signed informed consent regarding publishing their data and photographs. **Funding:** none. **Level of Evidence:** Level IV, therapeutic study.

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