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Original Article

The Effectiveness of Meticulous Surgery and Postoperative Steroid Injection for Treatment of Auricular Keloids

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Abstract

Background: **The treatment of auricular keloids is known to be difficult because of high recurrence rate after surgery. Many adjuvant therapies had been used including intralesional steroid injection.**

Objective: **To evaluate the effectiveness of meticulous surgery and postoperative steroid injection for the treatment of auricular keloids.**

Methods: **From October 2011 to September 2014, 38 patients with ear keloids (total 62 ear keloids) were treated with intralesional excision and closure of the defect using keloid fillet flap. Postoperative intralesional steroid injection was administered for the first time at 2-week and then every 4 weeks for 2 times (total 3 times). Recurrence rate, aesthetic results, symptomatic improvement and the adverse effects were evaluated.**

Results: **The follow-up period ranged from 6-32 months (mean 18.09 months). Four from 38 patients recurred (recurrent rate 10.52%). All patients were satisfied with the aesthetic results and had symptomatic improvement without any complications.**

Conclusion: **Meticulous surgery (excision and keloid fillet flap) and 3-time postoperative intralesional steroid injection can be effective for treatment of the auricular keloids.**

Keywords: **Auricular keloid, excision and keloid fillet flap, intralesional steroid injection**

Introduction

Keloids are benign, hard and persistent fibrous proliferations that developed in predisposed persons at site of the cutaneous injury[1]. They are characterized by extension beyond the borders of the original wound and growth in a pseudotumor fashion with tissue distortion and high recurrence rates after excision. They could be asymptomatic, elicit burning, pain or itching. The common affected areas are anterior chest, shoulders and ears. Auricular keloids usually appear as shiny, smooth and globular growths on one or both sides of the ear. They are usually preceded by ear piercing, trauma or burn.

Surgery is the gold standard to treat any size of keloids, as it corrects the obvious distortion of the ear and reduces the mass. Various surgical methods such as excision followed by primary suture[2], healing by secondary intention, skin graft[3] or local flap[4,5] have been used. But the reported recurrence rates after surgery alone were 50-100%[6].

Several methods to prevent post-surgical recurrence of keloids include intralesional steroid injections[7-10], radiation therapy[11-14], mechanical compression[15-17], silicone occlusive dressing[18],

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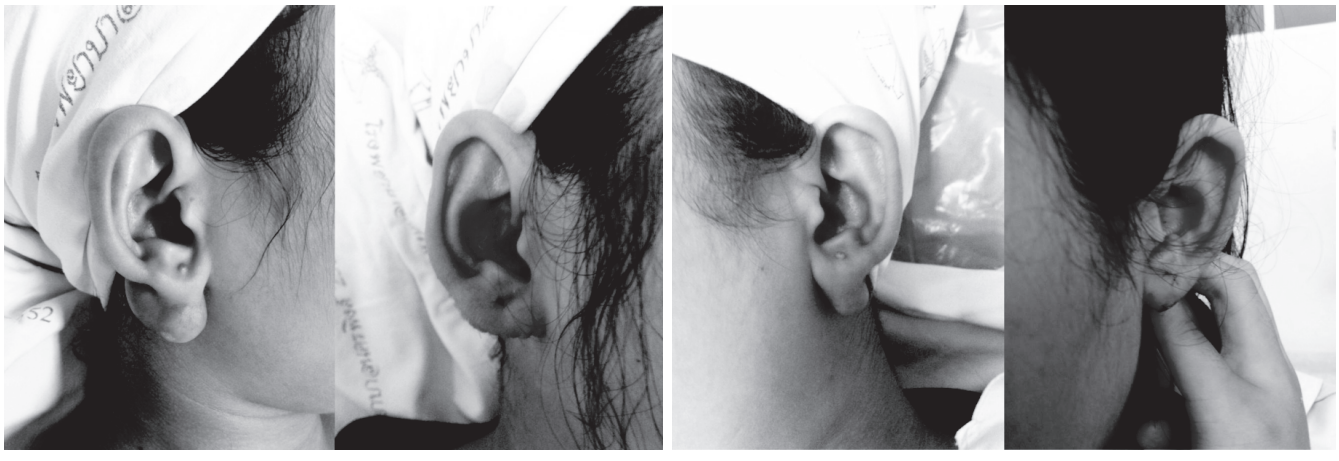

Figure 1 Patient with bilateral ear lobule keloids, before (left panel) and after surgery (right panel).

cryosurgery[19], 5-Fluorouracil, imiquimod, mitomycin-C 20 and interferon-alpha, -beta and -gamma.

The objective of this study was to determine the effectiveness of meticulous surgery by local flap technique combined with postoperative intralesional steroid injection for treatment of the auricular keloids. The primary goals were low recurrence rate, significant aesthetic results, symptomatic improvement and minimal adverse effects.

Materials and Methods

This study was carried out in outpatients attending the Plastic Surgery Unit of Nakornping Hospital, Chiangmai, Thailand from October 2011 to September 2014. Sixty-two ear keloids in 38 patients, were treated with intralesional excision of the keloids and closure of the defect using keloid fillet flap. The surgery was performed under local anesthesia using 1% lidocaine and 1:100,000 epinephrine and closed with one layer of 6-0 Nylon. Terramycin eye ointment and pressure dressing with gauze were applied after surgery for 24 hours. Two weeks after surgery, sutures were removed and intralesional Triamcinolone acetonide (TA) injection (40 mg/ml) 0.1-0.5 ml (depending on the size of the lesion) was administered for the first time and then every 4 weeks for 2 times (total 3 times). The patients came back for checking every 2-6 months or when clinically recurrence occurred.

The final results were recurrence rate. Recurrence was defined as postoperative emergence of growing or persistently symptomatic scar tissue. Symptoms were defined as pain, itching or pigmentation whereas growing scar was defined as thickening of scar, distortion of surrounding tissue or stiff raised scar.

Figure 2 Patient with left ear keloid (helical rim), before (left panel) and after surgery (right panel).

Results

From October 2011 to September 2014, 62 ear keloids in 38 patients (28 female and 10 male) were treated with this protocol. The patient age ranged from 10 to 73 years (mean age 21.26 years). All keloids occurred after ear piercing. At the time of treatment, the keloids have been presented from 6 months to 3 years (mean 1.74 years). Twenty two patients had keloids on the left ear, 8 patients on the right ear and 8 patients had bilateral lesions. Twenty two patients had keloids at ear lobules, 15 patients at the helical rim and only one patient at both areas.

Twenty three patients had only one ear keloid, 8 patients had 2 keloids, 5 patients had 3 keloids and 2

patients had 4 keloids. The size of keloids ranged from 0.8-2.5 cm in diameter (mean 1.55 cm). Among the 38 patients, 7 patients had received prior surgery but no patient had received intralesional steroid injection or other treatment.

All 62 ear keloids had no surgical site infection or flap necrosis. All 38 patients were satisfied with the aesthetic results and had symptomatic improvement. Telangiectasia and skin hypopigmentation were noted in five patients, but resolved later.

The follow-up period ranged from 6-32 months (mean 18.09 months). Four from 38 patients recurred (recurrence rate 10.52%). Two patients recurred six months after treatment and the other two patients recurred four months after treatment. All recurrent cases were treated with intralesional steroid injection until the keloids were resolved.

Discussion

Keloids are benign fibroproliferative lesions that the etiopathogenesis is not clear. Several mechanisms have been implicated in formation of keloids, including growth factor abnormalities, defective collagen turnover, changes in the orientation of collagen fiber due to tension, immune system dysfunction or hypersensitivity to sebum.

Multiple therapeutic options are available for the treatment of auricular keloids, but in the present day, combination therapy (with surgery) appears to be the most effective.

1. Surgery and intralesional steroid injection

The most literatures reported the use of steroid injection as an adjunctive procedure after keloid excision but with various doses, schedules and concentrations.

Brown and Ortega[3] reported no recurrence after 11-month follow-up in 10 patients with auricular keloids treated with total excision in combination with coverage of the defect with a full-thickness skin graft and intradermal injection of steroid. Limitations of this research were small number of patients and more donor site scars.

In my opinion, keloid excision and closure of the defect using keloid fillet flap is the better surgical technique because of no donor site scar as reported in many literatures.

Many authors[5,8,9] reported recurrence rates of 23%, 16.6% and 9.5% in patients treated with excision and keloid fillet flap combined with intraoperative and postoperative steroid injections. In my experience, three patients treated with intraoperative steroid injection had wound dehiscence at two weeks after stitch removal. Then, I only administered postoperative steroid injection and the results were better (recurrent rate 10.52%)

2. Surgery and radiation therapy

Ragoowansi et al.[12] reported 8.8% recurrence after 12-month follow-up in 34 patients who were treated with excision and immediate postoperative adjuvant radiotherapy of 10 Gy. Ogawa et al.[14] reported overall recurrence rate only 4% after 18-month follow-up in the patients who were treated by post-surgical radiotherapy with 10 Gy in two fractions over 2 years. Postoperative radiation therapy tends to have better result but it is limited only in the university hospital or cancer center hospital, not in the most general hospital in Thailand. Postoperative steroid injection is easier than radiation therapy to treat the auricular keloids.

3. Surgery and pressure therapy

Many pressure devices were used for treatment of keloids after surgery such as Zimmer splintage[15], custom-made methylmethacrylate stent, and new pressure device by Gregor et al.[17]. These studies reported that this treatment was safe and effective. The author suggests that the triple therapy (surgery + postoperative steroid injection + pressure therapy) can be the most appropriate treatment for general hospitals.

4. Surgery and other methods

Several methods to prevent post-surgical recurrence, for examples cryosurgery[19], colchicine, 5-fluorouracil injection, application of 5% imiquimod cream, mitomycin-C[20], or interferon-alpha 2b, had been studied but the results were still not satisfactory.

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