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Comprehensive Management of Recurrent Bilateral Auricular Keloids: A Case Report

Dr. Shashi Bala[1], Dr. Neha Sikka[2], Dr. Kannupriya[3], Dr. Shrutikirti Tripathi[4]
[1]Sr. Prof. & Head, Dept. of Dental Materials, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India
[2]Demonstrator, Dept. of Prosthodontics, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India
[3]Demonstrator, Dept. of Oral Surgery, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India
[4]Consultant Oral Surgeon, Faridabad, India

***Corresponding author**
Dr. Neha Sikka
Email: neha.nehasikka@gmail.com

Abstract: Keloids are aberrations in the wound healing process characterized by formation of a nodular hypertophic lesion which is formed as a result of imbalance in anabolic and catabolic processes. Pressure therapy in combination with intralesional steroid therapy and/or surgery has shown promising results in the treatment of auricular keloids. Pressure therapy has been successfully used individually or in combination for the prevention of recurrence of the lesion post excisionally. In light of this knowledge, a comprehensive treatment plan was formulated in an attempt to reduce the size of lesion before surgery and to prevent recurrence. This article describes the fabrication of an economical and easy to use, custom made methyl methacrylate pressure appliances which are used as an adjuvant in treatment of bilateral auricular keloids.
Keywords: Keloids, nodular hypertophic lesion, steroid therapy.

INTRODUCTION

Keloid formation is a recognized development in wound healing process formed as a result of imbalance in proliferative and resorptive phases. It is a kind of scar formed at the site of healed wound mainly composed of collagen fibers (Type I and Type III). Keloids are fibrous nodules, rubbery to firm in consistency [1-3]. These overgrown skin scars develop in places either after abrasions, piercings, insect bites, burns, scratching, surgery or other similar insults involving the skin. The most commonly affected sites include the chest, back, shoulders, arms, pelvis, collar bone and the ear lobes. It is usually asymptomatic but may sometimes present with symptoms like itchiness and pain. Keloids usually tend to grow in size. So, appropriate treatment should be incited at the earliest.

CASE REPORT

A 28 year old female on referral from Department of Plastic Surgery, reported to the OPD of Department of Prosthodontics, PGIDS, Rohtak with a chief complaint of swelling on both the ear lobes for last 2 years. The patient gave a history of ear piercing at the age of three for the first time which was uneventful. The patient at the age of 27- years got her ear pierced 2 cm above the prior site by a local jeweler. After two months, the patient noticed swellings on the posterior aspect of the auricle. These swellings kept on gradually increasing in size. The patient consulted a physician at her native place and got them surgically removed. After two months of the excision, the swellings recurred at the same sites with the same pattern of growth. There was no significant medical or family history.

On examination, an oval, non-pedunculated, non-lobulated swelling with well defined margins, with glossy surface and erythematous hue on both the pinnae (Figure 1) with similar dimensions were seen (19 mm superoinferiorly and 12 mm anteroposteriorly). The swellings were firm and nontender. A diagnosis of keloid was made. The patient was explained about the etiopathogenesis of keloid, the approximate duration of treatment and the informed consent was taken. A compehensive treatment plan was formulated with a main objective to prevent recurrence. In the stage I, the treatment was aimed at the reduction of size of the lesion using intralesional steroid injections and pressure therapy (ear pressure clips). Surgical excision of the swellings will be undertaken in stage II of the therapy. The stage III was the maintenance phase in which another pressure appliance was provided post excisionally to prevent recurrence.

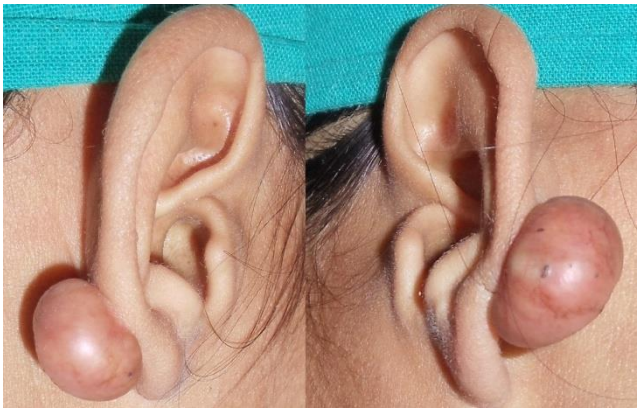

Fig-1: Keloid present w.r.t. ear lobe on right and left sides

Fabrication of ear pressure clip

Before making the impression of the auricle the area upto the hair line was lubricated with petroleum jelly. A boundary was fabricated using impression compound for the confinement of impression material. The impression of the right side was made using light body polyvinylsiloxane (3M ESPE Express, VPS Impression Material, USA) which was reinforced with putty consistency of polyvinylsiloxane to prevent distortion(Figure 2a). Slight difficulty was experienced while removal of the impression attributing to the shape and dimensions of the swelling. So, it was decided to make a sectional impression for the other side. A sectional impression was made using alginate (Algitex, DPI, India) reinforced with plaster backing (Figure 2b). The casts were fabricated in dental stone (Kalstone, Kalabhai Mumbai, India).

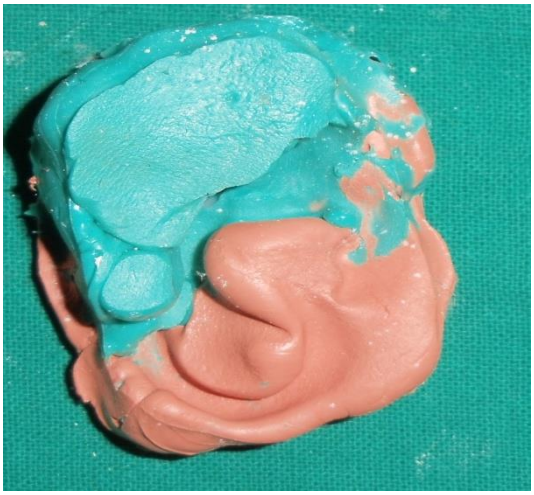

Fig-2a: Impression of the right sided auricle

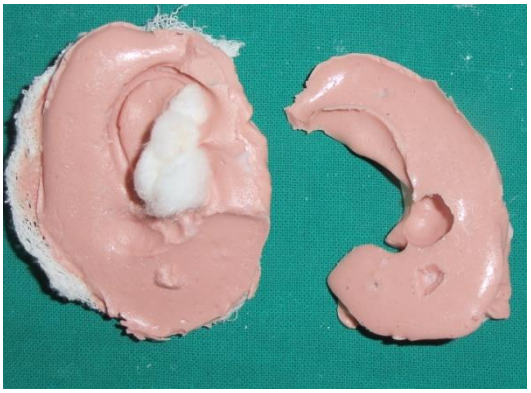

Fig-2b: Sectional Impression of the left sided auricle (Disjunct segments)

Design of the ear pressure clip

The springs (19 G stainless steel wire) were designed to produce compression anteroposteriorly. A coil is placed in the centre facing upwards behind the pinna (to make the wire assembly inconspicuous and esthetically acceptable) and two loops at the ends to aid retention of acrylic resin tags (Figure 3). Provision of adequate space was made between the loops of the wire and the surface of the keloid to provide necessary thickness for acrylic resin pads and to prevent irritation. Two approximately equal sized clear methyl methacrylate acrylic pads (RR cold cure, DPI, India) were designed to cover the surface of the keloid anteroposteriorly and mesiodistally. The anterior resin pad was tinted to simulate the color of the skin of the patient. After finishing and polishing, the activation of the coil was done and placed on the keloid (Figure 4). The patient was advised to wear the appliances in the day time and also at the night if possible. Instructions were given to the patient regarding the usage and hygiene of the appliance. The follow-up of the patient was planned after 2 weeks. This was followed by a monthly visit for 5 months. On the follow-up visits the appliances were adjusted to maintain the pressure.

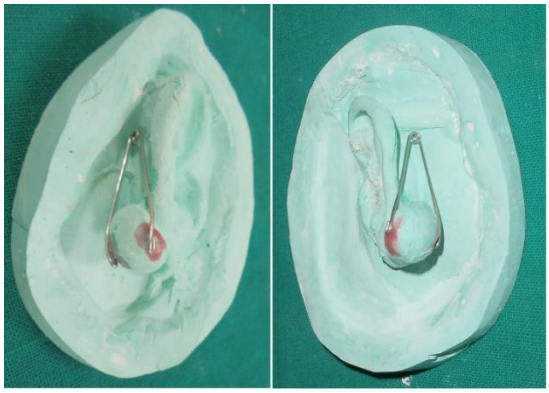

Fig-3: 19G stainless steel wire springs fabricated on the models

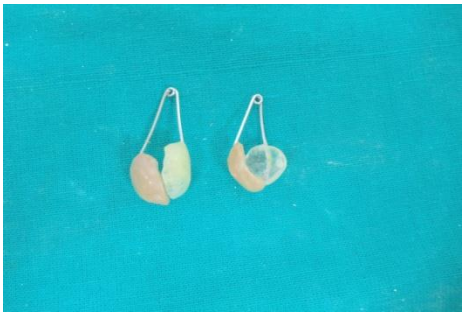

Fig-4: Ear pressure clips of right and left sides

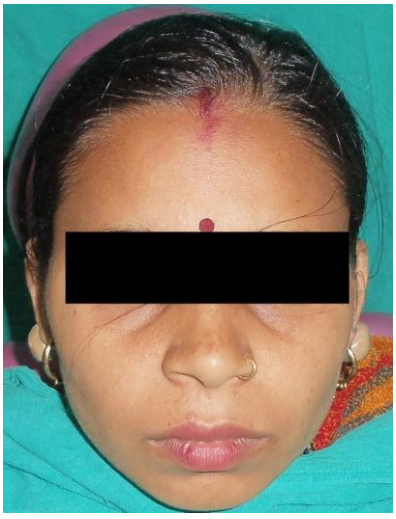

Fig-5: Pressure clips in use on ear on right and left sides

Along with the pressure therapy, the intralesional steroid (Triamcinolone 40 mg/ml) [7] was given three times at monthly intervals. This was followed by surgical removal of the swellings and the post operative pressure therapy which was further maintained for another two months.

DISCUSSION

Although various techniques like surgical excision, mechanical compression, intralesional steroid injections, radiotherapy, LASERs and cryotherapy are available for the treatment of keloid but none of these can be considered as a gold standard [3-7]. A combination of techniques is more commonly used to provide more comprehensive treatment and prevent recurrence [3].

The keloids have a high recurrence rate after surgical excision ranging between 45% and 100% [2, 6]. Attributing to high rate of recurrence and the fact that the recurrent scar is larger and robust than previous one [6], surgical intervention should be elaborately planned. Core excision with low-tension wound closure, or debulking excision should be preferred rather than total excision as it stimulates rapid collagen synthesis, thus, promoting quick recurrence [7, 8]. To prevent the recurrence once again, a staged treatment has been planned this time which included the use of intralesional steroid and pressure therapy, pre-excisionally as well as post-excisionally. The preexcisional therapy will help in reducing the size of lesion prior to surgery whereas postexcisional therapy will prevent recurrence of the ear keloid.

The use of various pressure devices (ear pressure clips, buttons, earrings or silicon pressure packing) is an undoubtedly an essential component of keloid treatment. Although, the mechanism by which the pressure therapy modulates the collagen metabolism is unclear but most probable explanation involves the fibroblastic degradation due creation of a hypoxic environment by application of pressure exceeding the capillary pressure [8]. The pressure appliance should be designed carefully to provide sufficient, continuous and controlled pressure. (ranging from 24 -30 mm Hg). The pressure below the lower limit does not produce any results and the pressure exceeding the upper limit causes necrosis due to hypoxia [3,8]. The complex anatomy of the auricle interferes with the optimal alignment of the appliance and the provision for adequate sustained pressure mandating the fabrication of a custom made pressure appliance [9,10].

The appliances in this case were designed in such a way as to exert thorough and continuous pressure on the overgrowth. They are easy to use, light weight, inexpensive, esthetic and permit the adjustment in the amount and direction of pressure. The major disadvantage of such appliances is that it is dependent on the patient compliance. Therefore, for a successful outcome, the patient must be motivated to wear the appliance for the required amount of time.

CONCLUSION

A comprehensive treatment protocol which includes the use of intralesional steroid and pressure therapy, pre-excisionally as well as post-excisionally should be planned to prevent recurrence. The pressure therapy as an adjuvant to the surgery and steroid therapy has been proven helpful in achieving the reduction of size of the lesion and prevent its recurrence. A therapy extending upto a period of 6-12 months is generally required, but in most of the cases the compliance vanishes after several months. Hence, the patients should be educated about the risk of recurrence and the importance of close monitoring.

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