

Custom-made Pressure Earring for Sustained Compression on Auricular Keloid: A Case Report

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Abstract

Keloids occur from overgrowth of scar tissue and may arise following an insult to the deep dermis. Keloids of ear lobe are common complications of ear piercing, although its exact etiology remains unknown. They are often itchy, painful, and uncomfortable to the patient. Pressure therapy is widely used in the management of hypertrophic and keloid scars. An 11-year-old female patient having a keloid on the right ear lobe was referred from the Department of Plastic Surgery for the fabrication of a pressure clip. The following is a case report of a custom designed pressure clip for the management of an auricular keloid.

Key words: Earlobe keloid, Keloid, Pressure clip

INTRODUCTION

Keloid of the ear is a difficult condition to treat. Although there are many theories about keloid formation, their etiology is still unknown. It is difficult to surgically excise keloid completely and cause primary skin closure on external ear compared to other body sites. Pressure therapy is widely used in the management of auricular keloid, usually in combination with corticosteroid injection or surgery.¹ Various pressure devices for the treatment of auricular keloids are U-loop pressure clip,² spring loaded pressure devices, Snyder's compression suture,³ Bent spring pressure earring, etc.

To be effective, a compression device must provide uniform sustained compression. Furthermore, the appliance should be cosmetically acceptable, inexpensive, and easy to fabricate.⁴

In this case report, the fabrication of a pressure earring using a binder clip for sustained compression on the auricular keloid is discussed.

CASE REPORT

An 11-year-old female patient having a keloid on the right ear lobe was referred from the Department of Plastic Surgery for the fabrication of a pressure clip. The patient complained of swelling on the back of right earlobe since 1 year. The swelling was causing emotional stress to the young patient due to esthetic impairment. There was a history of ear piercing at the age of 10 years. A small swelling appeared on the back of right earlobe after 2 months of piercing, which gradually increased in size and continued to grow until it reached the present size. On examination, a small, oval, sessile, tender, smooth-surfaced swelling was present on the back of the right ear lobe, measuring 7 mm superoinferiorly and 6 mm anteroposteriorly (Figure 1). The patient was on regular intralesional injection of corticosteroid. Custom-made methyl methacrylate pressure appliance was planned to be used for compression of the keloid.

Preparation of the Patient

The skin over the patient's ear and keloid was lubricated with petroleum jelly. A lubricated cotton pellet was placed in the external auditory meatus.

Impression Procedure

A cylindrical container of approximately 6 inches diameter with openings at both ends was used as a tray for the impression procedure. Thin mix of irreversible

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hydrocolloid impression material (Zelgan; Dentsply, India) was poured into the container. Gauze pieces were placed over it and a thin mix of plaster of Paris was poured over the irreversible hydrocolloid impression material for support (Figure 2). Completed impression was retrieved and then poured in Type III dental stone (Figures 3 and 4).

Steps in Fabrication

1. A small binder clip was selected for delivering sustained pressure on the keloid
2. The pressing lever (handle) of the binder clip was shortened for esthetics (Figure 5)
3. To make the binder clip active after its fabrication, a small amount of putty material was allowed to set inside the clip in a slightly opened position (Figure 6)
4. The binder clip was positioned over the cast and stabilized in place using a small amount of putty impression material (Figure 7)
5. Pressure plates were fabricated using tooth colored polymethylmethacrylate resin (Figure 8). The undercuts in the binder clip provided retention for the acrylic resin
6. Putty was removed from the inside of the clip and characterization was done to make the appliance more esthetically acceptable to the young patient (Figure 9)
7. Pressure of the clip was made comfortable to the wearer by putting a vertical slit at the elastic web (closed end) of the binder clip
8. A 2 mm layer of the intaglio surface of the appliance was uniformly removed and lined with silicone soft denture liner to provide a cushioning effect. The patient was taught how to wear the appliance (Figure 10)
9. The patient was instructed to use the pressure appliance for 12 h a day for 4-6 months⁵
10. Periodic recall at 2 weeks intervals was also scheduled. The patient was instructed to keep the keloid area and the appliance meticulously clean.

DISCUSSION

The auricular keloid is a recognized complication of ear piercing, and it has cosmetic implications.⁶ An earlobe



Figure 1: Keloid on the posterior surface of right earlobe



Figure 3: Hydrocolloid impression of right ear



Figure 2: Impression procedure



Figure 4: Stone cast obtained from impression



Figure 5: Pressing lever arms shortened for esthetics

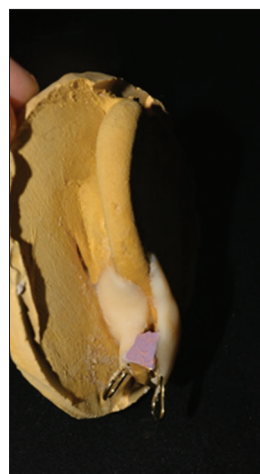


Figure 8: Acrylic pressure plates fabricated over binder clip



Figure 6: Putty allowed to set inside the clip in slightly opened position



Figure 9: Pressure earring appliance

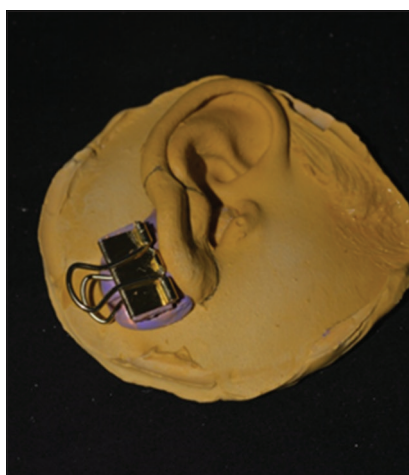


Figure 7: Binder clip positioned and stabilized over the cast



Figure 10: Patient with the pressure appliance

keloid presents a technically challenging task to the clinician. Treatment of ear keloid is complicated and is characterized by discomfort and high recurrence rates.⁷

The treatment of ear keloids relies heavily on the use of either steroids or radiotherapy and with either methods, some adjuvant surgery may be needed. Unfortunately, it is not always successful and may involve repeated surgeries

and steroid administration, which is painful. Radiotherapy is unpredictable in its effect and may produce various undesirable results.⁴

Compression therapy is effective for the keloid treatment by creating a hypoxic microenvironment resulting in tissue degradation and thereby reducing the size of the lesion.⁸ Through compression therapy, tissue metabolism and fibroblast proliferation are reduced. Compression has also been shown to increase collagenase activity and induce mast cell stabilization which ultimately lead to attenuation of hypertrophy and pruritic symptoms.⁹ Prefabricated devices are not indicated because they may lead to insufficient or excessive pressure, bleeding or ulceration of the site and is often uncomfortable to the wearer.

Custom-made pressure appliances provide uniform pressure by confining the soft tissue to the internal dimensions of the appliance. Furthermore, they are inexpensive and easily applied and removed by the patient and can be used for the treatment of both a helix and earlobe keloid.¹⁰ The patient compliance is essential when using post-operative pressure therapy for the treatment of keloids, as it may recur as soon as the external pressure is relieved. The patient training and cooperation may further decrease the recurrence rate of ear keloids.¹¹

CONCLUSION

A custom-made pressure appliance made from a binder clip for sustained compression of an auricular keloid is described. During the healing period, the appliance can

be adjusted by soft denture liners. By enlarging the slit in the closed end of the clip, the compression pressure can be reduced and it may be used as a passive appliance for the prophylaxis of recurrence in surgically removed ear keloid. For a successful outcome, the patient must use the appliance according to the instructions and undergo a regular follow-up.

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