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Case Report

Can full thickness skin grafting be a cost effective alternative to dermal substitutes for keloid management? A case report

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ABSTRACT

Keloids are always challenging to manage due to their high chances of recurrence and poorly understood pathophysiology. Various modalities have been described, to be used either alone or in combination. We opted to look for a cost effective solution, that was along the lines of the research done by Nguyen et al using a reconstruction that provides for a dermal component while avoiding a second procedure. Here, we present the management of a helical rim keloid by complete excision and reconstruction with a full-thickness skin graft to create a neo-dermis at the site of the defect. A 28 year old lady of Indian ethnicity presented with a mass lesion over right ear lobe since about one year, approximately measuring 6×2 cm. It was associated with occasional pruritis and there was a history of trauma to ear lobe about 1-2 months before noticing the lesion. On examination, a single, firm, well- circumscribed, non-tender mass was noted extending over the posterior and superior aspect of the helix of right ear. After routine preoperative evaluation, the patient was taken up for elective surgery where the keloid was excised with de-epithelization of 2mm margin and a full thickness skin graft harvested from the groin of size 3×2 cm was used to cover the defect. Postoperatively, the patient had an uneventful recovery and good cosmetic outcome was achieved. We found this to be an economically feasible and aesthetically superior alternative to reconstruction using a dermal substitute.

Keywords: Keloid, Full thickness skin graft, Dermal substitute, Helix of the ear

INTRODUCTION

Keloids of the ear are fairly common and are known to cause significant disfigurement. A combination of two or more treatment modalities has to be employed in dealing with these lesions, often giving variable results. We encountered a case of a large helical rim keloid which posed a unique challenge for us due to the site and high chances of recurrence. Nguyen et al published an innovative and interesting paper in the plastic and reconstructive surgery journal titled "A Novel approach to keloid reconstruction with bilaminar dermal substitute and epidermal skin grafting" where they demonstrated the use of integra to create a neo-dermis and reported reduced risk of recurrence and the better cosmetic outcomes.[1]

We opted to look for a cost effective solution, that was along the lines of the research done by Nguyen et al using a reconstruction that provides for a dermal component while avoiding a second procedure i.e., a full thickness skin graft. Generally, a full thickness skin graft is not preferred for a less vascularized defect with exposed cartilage.[2] However, de-epithelization of the recipient site margins will provide an adequately vascular bed in the periphery of the defect which will help the graft survive via the bridging phenomenon.[3] Thereby, compensating for the poor defect bed obtained post complete excision of the helical rim keloid.

Here, we present the management of a helical rim keloid by complete excision and reconstruction with a full-thickness skin graft with marginal de-epithelization technique to create a neo-dermis at the site of the defect.

CASE REPORT

A 28 year old Indian lady presented to the plastic surgery out patient department at our institute with a mass lesion over helical rim of right ear since about one year, which gradually progressed in size and was now measuring 6 cm × 2 cm approximately. The mass was associated with occasional pruritis and the patient gave a history of minor trauma to ear lobe about 1-2 months before she first noticed the lesion.

On examination, a single, firm, well-circumscribed, non-tender mass was noted extending over the posterior and superior aspect of helix of the right ear (Figure 1). The various treatment options were discussed with the patient and after routine preoperative assessment, the patient was taken up for elective surgery.

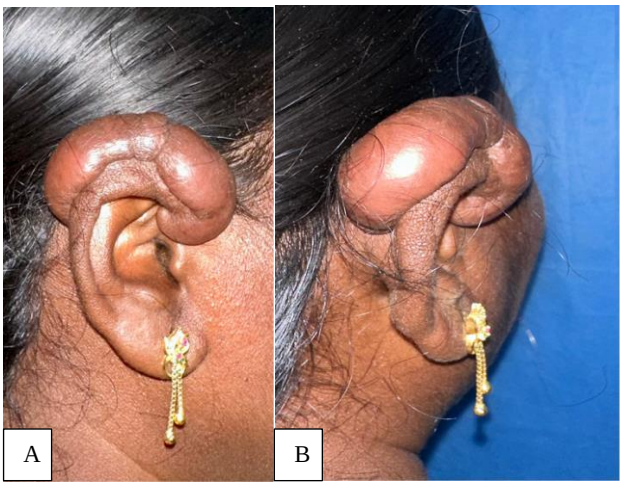

Figure 1 (A and B): Keloid over helical rim of right ear (at the time of presentation).

Under general anesthesia, the keloid margins were marked and a local infiltration with 1% lignocaine with 1:100000 adrenaline was given.

The keloid was excised completely (Figure 2) and a margin of 2 mm around the resulting defect was de-epithelized using a scalpel. The size of the defect was measured and a full thickness skin graft was harvested from the right groin of size 3×2 cm which was then fixed onto the defect using sutures (Figure 3).

A bolster dressing was applied to address any possible shear forces on the graft. The donor site was closed primarily using interrupted sutures. Postoperatively, the patient had an uneventful recovery and was discharged the next day.

The patient was followed up on postoperative day 4 and 14 to reveal successful graft take and expected routine healing of the donor site. The patient was evaluated after 3 months and 6 months, good cosmetic outcome was achieved with no evidence of any recurrence, pain or itching at the primary or donor site (Figure 4).

The patient is on continued follow-up to monitor for recurrence and is satisfied with the result so far.

Figure 2: Excised keloid specimen.

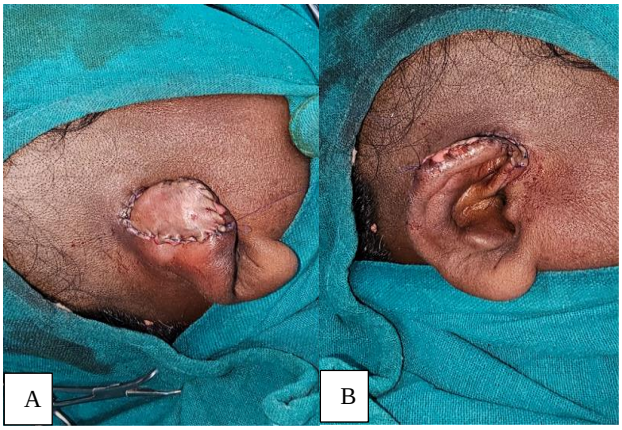

Figure 3 (A and B): Full thickness skin graft used to cover the defect.

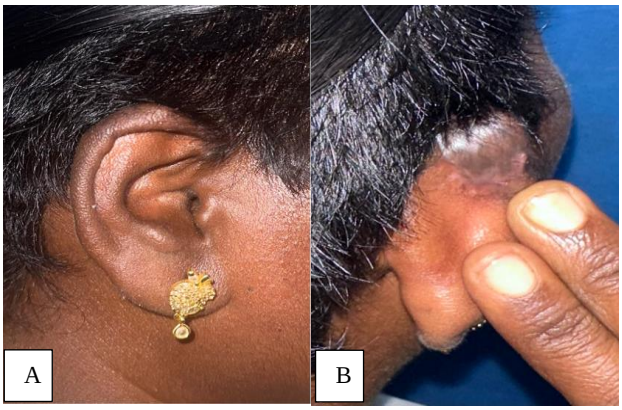

Figure 4 (A and B): Post-operative outcome.

DISCUSSION

The treatment of ear keloid has always remained tricky as none of the widely described treatment strategies either

alone or in combination give reliable, consistent, and permanent cure to every patient.[4]

Our goal of helical reconstruction after keloid excision was to obtain a good contour and colour match with simple technique at the same time minimizing the recurrence risk.

Several treatment modalities are available like excision followed by split thickness skin graft, reconstruction with bilaminar dermal substitute, excision followed by 5-fluorouracil therapy, cryotherapy, radiotherapy etc.

In this case, we decided to resort to a surgical excision that removes the bulky lesion immediately and deals with the diseased dermis followed by reconstruction with full thickness graft. The full thickness graft provides for a autologous and disease free dermal component with normal collagen that replaces the diseased dermis with disorganized collagen of the lesion. Thereby, reducing the risk of keloid recurrence. A tension free fixation of the graft also helps in normal, non proliferative healing.

When compared to a bilaminar dermal substitute followed by split skin grafting, it is much more *economically feasible* and also serves to be more ideal cosmetically when compared to a split thickness graft, especially in lesions occurring at aesthetic units like the ear in the presented case.[5]

Being a single stage procedure, it avoids two procedures as required when using a dermal substitute for reconstruction. The method also holds the same advantage against therapies such as 5-fluorouracil or corticosteroid intralesional injections that require multiple visits and sittings.

One of the possible complications of our technique is the risk of developing a keloid at the donor site as the patient has a known keloidogenic tendency. When the required graft is of small size and a good, tension-free primary repair of the donor site is done, this complication may be avoided. No evidence of proliferative scarring was noted at the donor site in our case on 6 months of follow-up.

CONCLUSION

Surgical excision and reconstruction by full thickness skin graft for keloid management proves to be a viable alternative to reconstruction using a dermal substitute. It is a single stage, simple and cost effective technique, with minimal donor site morbidity to achieve satisfactory results.

Further large-scale trials with this technique need to be conducted in order to evaluate the efficacy and reliability of this treatment option.

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