

Single Stage Ear Lobule Reconstruction with Hemifacial Multiple Z Plasty – A Unique Case

Abstract:

This case report aims to present a combined technique of Z-plasty with ear lobule reconstruction in a rare case of hemifacial full-thickness contused lacerated wound (CLW) with ear lobule defect. This case was planned for a two-stage surgery. In the first stage, primary closure was done with the preservation of the facial nerve. In the second stage of surgery, multiple Z-plasty along with ear lobule reconstruction was carried out. Multiple Z-plasty provides a greater degree of flap mobilisation for ear lobule reconstruction. A single flap was used in the rollback method to create an ear lobule. The technique used was contrary to Gavello's technique. Positive results were obtained. Post-surgically, no active intervention was required. The ear lobule flap was completely accepted by the recipient site and a natural-looking ear lobule was formed.

Key Message

Single-stage repair of ear lobule defects is a reliable option. In case of deficiency of tissue for reconstruction, the flap lengthening can be achieved with incorporation of multiple Z-plasty technique.

Key-words: Ear lobule reconstruction, Gavello's method, Multiple Z-plasty

Introduction:

Ear lobule reconstruction has always been a challenge in reconstructive surgery. It also has an extreme psychological effect on the patient. The ear defects can be either acquired or may be of congenital type. The most common cause of ear lobule defect is a bite injury (35-72%). Other causes of ear defects are burns, skin cancer surgeries and trauma. Reconstruction of the ear lobule requires a meticulous consideration of certain parameters such as matching the colour of the final flap to the surrounding tissue, its bulk, other aspects for a close to natural appearance (non-adherent tissue) and most importantly, maintenance of facial proportion. It is very important to plan a flap design in such a way that the outcome should be that of the patient having an ear width of approximately 55% of its length. The surgeon also has to accommodate for post-operative shrinkage of the graft. The local flap is the gold standard for ear lobule reconstruction, being ideal for all the parameters required. Preauricular tissue and post-auricular tissue are the most common tissues harvested for lobule reconstruction.

Case History:

A 52-year-old female patient sustained an injury in an alleged accidental fall over the working end of a running marble polishing machine, at her house. The accidental fall resulted in a hemifacial, full-thickness defect that extended from the left oral commissure to the junction of the middle and lower third of the ear lobule. The patient immediately reported to the emergency room with an apparent history of a huge amount of blood loss. By the time the patient reported to the emergency room, the bleeding had already arrested spontaneously and the wound had a large blood clot in situ (figure 1). Primary resuscitation was done and the vitals were stabilised. CT Scan

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was recommended and surprisingly, sections did not show any bony defect. The case was immediately planned for a primary closure to salvage the tissue and minimise necrosis. Preoperatively, all other blood markers were within normal limits except a borderline derangement of Haemoglobin, it being on the lower side, with a value of 9 gm/dl. The team decided to take up the case under general anaesthesia with an oral endotracheal tube. Transfusion of PRBCs, either post-operatively or intraoperatively was planned in reserve which was to be evaluated further, based on the subsequent blood loss during the surgery. Complete wound debridement was performed with a large amount of normal saline wash. Few stone particles were found and removed. All active bleeders were ligated. Identification of the branches of the facial artery was done and they were ligated. Mental nerve was identified and preserved. During suturing, adequate consideration was given to the location of the lip vermilion zone and the corner of the mouth. It was stabilised and then a closure was carried out from the commissure of the lip to the ear lobule (figure -2).



Figure -1: Preoperative Photograph



Figure 2- After First Stage Surgery

A complete barrier of oral mucosa was achieved by suturing in multiple layers. Meticulous suturing was done within the oral cavity. Multilayer suturing was performed and when we reach on the most superior surface i.e the skin, it was extremely tense because of oedema and tissue insult. Any attempt for everted

suturing over skin surface may have resulted in extremely taut surface and bigger scar formation under stress. Thus, most superior surface was sutured in a manner so that margins were approximated well without any tension. The patient was extubated uneventfully. Vitals were stable during the intra operative period as well as in the postoperative observation room. The patient was shifted to ICU for a 48-hour observation. Postoperatively, on day one the haemoglobin value was 8.1 gm/dl. On the second day, it showed a rising trend with a value of 8.6 gm/dl. A multispecialty discussion took place to consider the pros and cons of blood transfusion on the second day after surgery. After the recommendation of the internal medicine specialist, one unit of PRBC was transfused to the patient on the second day. The case was discharged on the seventh day after surgery.



Figure-3 : Three Month Post Op

Technique:

Multiple Z-plasty incisions were marked on the scar line. The angle selected for arms was 60 degrees. Approximately a 4 mm wide, thick and adherent tissue was removed to release the flap from both ends. Ear lobule reconstruction flap was first marked as per Alanis Z Method (commonly known as the 'Zenteno method') (figure -4.). Meticulous suturing was performed using a 5-0 prolene suture (figure-5). Two months Post operatively satisfactory results were noted (figure-6).



Figure-4: Markings As Per Zenteno Method



Figure 5- Immediate Post Op After Reconstruction



Figure 6: Two Month Post Op Results

Discussion:

Ear lobule reconstruction is unique, as the ear doesn't contain any cartilaginous or bony structure. Thus, maintaining shape post-operatively is a bit challenging task. A few cases have been reported wherein septal cartilage was used for structural stability of the reconstructed ear. There are many techniques written in literature for ear lobule reconstruction. The basic aim of all techniques is to achieve satisfactory aesthetic results. The first documented approach in literature was explained as Gavello's technique in 1907. Other remarkable techniques present in the literature are the VY advancement flap, Modified bilobed flap, Limberg flap, Sahai's Y flap technique, Okada and Maruyama technique.

There was a challenge an additional challenge of flap deficiency since a massive scar formation and its contraction had already taken place as a result of the first surgery. With the help of multiple Z-plasty, the flap could be lengthened to wards the ear lobule. In the present case, the flap was raised from the postauricular region to a projected vertical line through the ear lobule. The flap was then rotated anteriorly to create the ear lobule. A very minute flap was also raised pre auricularly to give a base for vital suturing and to achieve a non-adherent appearance. The advantage of this technique was a natural look imparted to the reconstructed ear lobule. It had bulk and was non-adherence to the posterior auricular region or base.

Multiple z platy is a time-tested method for scar revision. With the specific angle of incisions, the surgeon can achieve a wide range of increases in the length of the flap. Most commonly three angles are used for flap lengthening. These are 30 degrees, 45 degrees and 60 degrees. These incisions result in a total length increase of 25%, 50% and 75% respectively. In the present case, the 60-degree angle was used for multiple Z-plasty so that maximum scar lengthening can be achieved and additional tissue (which incorporates the scar part also) can be assimilated in the ear reconstruction design.

Declaration of patient consent:

The author certifies that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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