Surgical Pearls

Two-Layered, Auricular Composite Grafts

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Two-layered, composite grafts from the ear are versatile grafts for full-thickness defects of the lower third of the nose. The 2-layered composite grafts can be tenuous because of their marginal blood supply and the reduced contact surface between graft skin and recipient site. Rees[1] first described the use of composite auricular grafts in 1960 with an initial graft survival rate of 53%. Important variables for maximizing reliability and survival are thorough, careful preoperative preparation, including recognition of adverse patient factors; meticulous surgical techniques; and diligent postoperative care.

Preoperative Preparation

The recipient bed must be robust enough to allow for the stages of plasmatic imbibition, vascular inosculation, and finally neovascularization. Any old scar tissue should be excised, and only judicious use of electrocautery is advised. Patient comorbidities, especially smoking, must be recognized because they result in poorer graft survival. The quantity and duration of smoking should be quantified.[2]

Video at jamafacialplasticsurgery.com

Surgical Techniques

The technique can be viewed in the **Video**.

- Donor site – Auricular composite grafts of skin and cartilage are commonly harvested from the helical root, rim, concha bowl, or tragal cartilage, depending on the destination. If skin is needed on the convex side, ie, the cutaneous portion of the ala, the graft is harvested from the root of the helix. Conversely, internal lining defects require the epithelium to be on the *concave* surface of the cartilage, and the conchal bowl is the preferred donor site. Skin is not harvested from the posterior surface of the ear because the thick subcutaneous layer of fat compromises the viability of the graft.
- Injection – Local anesthetic is only injected *circumferentially* and not within the skin paddle of the graft. Care is taken to avoid any hydrodissection of the skin off the cartilage.
- Handling – The graft is handled gently, and the forceps always grabs cartilage and skin simultaneously. Pulling or retracting skin alone can lift it off the cartilage.
- Trimming skin – The cartilage is longer than the skin paddle because it is inserted within pockets on either side. The skin is carefully dissected off the cartilage, ensuring that the skin does not shear off the cartilage.
- Edge-to-edge closure – The skin edge is directly closed to the defect mucosal edge, ie, vestibular mucosa, with simple resorbable sutures. Deep intranasal sutures are placed first because access is limited once the graft is in position.
- Cartilage perforations – Small perforations can be made within the cartilage using a 2-mm punch biopsy instrument or a needle. This allows nutrients and granulation tissue to penetrate to the underlying skin. Perforations are through cartilage only and avoid violating the skin.
- Bolster – A through-and-through bolster is created to obliterate the dead space between graft and recipient bed, placing gentle pressure between the two. The suture is placed through a nonadhesive bandage on either side to create a "sandwich." The first suture throw is down to the graft but without compression. The second throw has a tiny "air knot" to allow for a degree of edema. The bandage is only holding the graft in close apposition to the recipient site, not applying pressure. It is removed after 1 week.

A donor site defect at the concha bowl that is up to 1.3 cm in size can be closed primarily with simple stitches. Slight medialization of the antihelix can occur temporarily, but this resolves with time. Alternatively, the defect can be resurfaced with a full-thickness skin graft harvested from the postauricular or preauricular area. The postauricular revolving-door island flap can also be used to close the defect, although the technique required is a little more elaborate.

Postoperative Care

Patients are instructed to "smother" the graft in ointment multiple times each day for at least 10 days. Graft desiccation is the single greatest risk for graft failure. Typically, the graft may appear somewhat pale or even congested. After a few days, it becomes progressively blue, then pink, as its vascularity improves. Steroid use has been shown in some studies to improve graft survival. Steroids are usually administered as a single preoperative dose within 1 hour before surgery, followed by daily postoperative administration for 3 days.[3] Postoperative cooling with ice packs is also a simple, convenient therapy that can potentially improve graft survival.[4]

In conclusion, 2-layered composite grafts from the ear are versatile grafts for full-thickness defects of the lower third of the nose. The reliability of the graft is always an issue, but when these careful measures are taken, improved survival seems to be the rule.

ARTICLE INFORMATION

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