

Island Pedicle Flap: A Useful Tool for the Repair of Forehead Defects

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The surgical treatment of malignant neoplasms involving the face is quite common. The repair options for surgical defects of the face have been largely limited to primary closure, second-intention healing, advancement flaps, rotation flaps, transposition flaps, and skin grafts. The island pedicle flap is presented here as a valuable closure option for the repair of facial defects that provides both predictable and acceptable results.

The closure of defects that results from the removal of benign or malignant lesions can sometimes be difficult for the dermatologic surgeon. Often, lesions are located in an area where there is minimal skin laxity or where adjacent structures do not allow tissue mobility, thus making closure difficult. Subcutaneous island pedicle flaps can facilitate the closure of wounds and often minimize the risk for complications that are frequently encountered with the use of alternative techniques, such as transposition flaps, rotation flaps, and skin grafts.¹ Although the island pedicle flap has traditionally been used for the repair of surgical defects following extirpation of skin cancers of the caudal, lateral, and upper lip, its use for the closure of defects involving the eyebrow, forehead, lower nose, cheek, postauricular neck, and extremities has been increasing. Given the simplicity of the island pedicle flap, its predictable results, and minimal operative risk, this procedure has become a valuable tool for the repair of facial defects.²

The island pedicle flap is a triangular flap that is completely separated from its adjacent lateral skin and

harbors an underlying vascular pedicle that retains its attachment to the subcutis.³ In the classic design, the flap is created by making 2 incisions of equal length that lead tangentially from the edges of the defect to a point some distance away from the defect (Figure 1). The incisions are made down to the level of the subcutis.⁴ Thus, a peripherally detached island of skin is created that maintains an uninterrupted vascular supply from its pedicle beneath. The island is a sliding flap that is advanced into the surgical defect, leaving a secondary defect at the apex of the flap. The secondary defect is then repaired via a primary closure, and the flap is sutured into place.⁵

The island pedicle flap has a more reliable blood source than other flaps and grafts, giving this procedure several advantages over flaps and grafts. The classic advancement flap's blood supply originates at the base of the flap and must span the entire length of the flap to the leading edge, as opposed to the island pedicle flap, which is not restricted to the 3:1 length-to-width ratio of typical advancement flaps.⁶ The richly vascular pedicle may be advantageous in those at risk for poor healing, such as smokers, patients with diabetes, and those with a history of radiation treatment. Additionally, there is rarely a need for undermining when compared with other flaps, which is particularly advantageous in patients with bleeding diathesis and in patients receiving anticoagulants.⁷

For larger defects, 2 island pedicle flaps can be utilized, thus reducing the need for a single large flap (Figures 2

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and 3). The final cosmetic result is usually quite acceptable (Figure 4).

Although the island pedicle flap is extremely reliable, with low morbidity and excellent survivability, there are a few disadvantages to this technique. The term *trapdooring*, or elevation of the flap, refers to a condition that may occur within 1 to 2 weeks after surgery, especially when closing facial defects.⁸ Trapdooring responds well to manual massage or intralesional corticosteroids. Therefore, surgical revision is rarely necessary. To reduce the risk for trapdooring, some physicians suggest slightly undersizing the flap by 1 to 2 mm on either side if at all possible. By doing so, some secondary movement will be necessary to suture the flap into place and must be predicted in advance.⁹ When planned for properly, the secondary movement will not result in tissue distortion. The flap should be advanced carefully into place using a skin hook or fine forceps after hemostasis is achieved. Not infrequently, the flap may require additional movement. This can be accomplished by slightly undermining the tail of the flap. If further movement is needed, one should first palpate the flap and push it into place. If necessary, undermining of the pedicle can be performed to allow additional movement, but doing so should be kept to a minimum since this reduces the vascular flow to the flap and increases the risk for flap necrosis.¹⁰

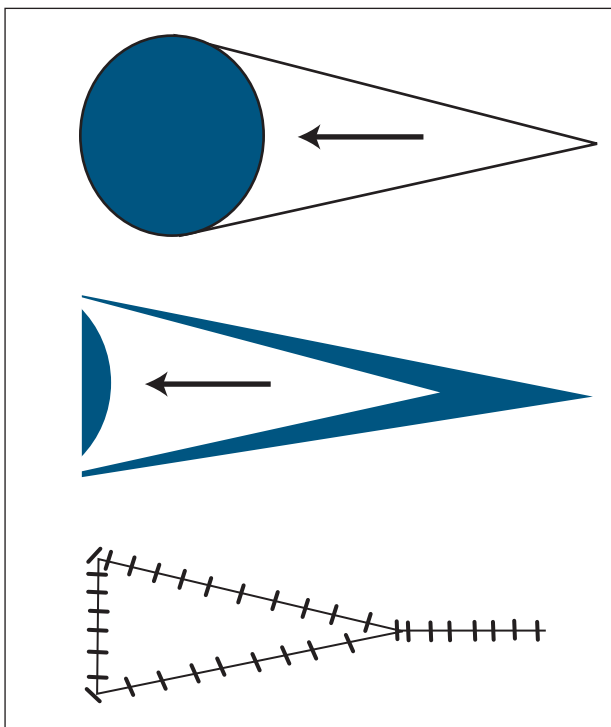


Figure 1. The classic design of an island pedicle flap, which is created by making 2 incisions of equal length that lead tangentially from the edges of the defect to a point some distance away from the defect.

The key suture is to be placed at the mid portion of the leading edge of the flap, although when there is moderate tension, it may be best to close the secondary defect first, pushing the flap into its correct position.

SUMMARY

The island pedicle flap is an excellent tool and should be in surgeons' armamentarium for the repair of facial defects. Similar to any local flap, the island pedicle flap



Figure 2. Patient with a large defect prior to closure with 2 island pedicle flaps.



Figure 3. Patient immediately after closure with 2 island pedicle flaps.



Figure 4. Patient 15 days after closure with 2 island pedicle flaps.

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has a perfect skin color and texture match, which is an advantage over skin grafts. The island pedicle flap is, by nature, a bulky flap and can provide sufficient bulk to repair nearly all full-thickness defects on the face. Furthermore, there is rarely a need for undermining, unlike with most other flaps. This is extremely advantageous in patients receiving anticoagulants or those with bleeding diathesis. This flap has been proven to be reliable and is a valuable tool that, with proper planning, can provide excellent cosmetic results with minimal morbidity.

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