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# Repair of Postauricular Defects Using a New Technique: The Swallowtail Flap

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**Abstract.** *We describe a case of an 81-year-old patient, where we used a new technique for the reconstruction of postauricular defects (of 3×4 cm diameter). The swallowtail flap is an advancement flap that allows getting beyond the repair of the defect, providing an excellent aesthetic result because the scar is masked in the neck and retroauricular folds and does not alter the shape and projection of the ear.*

The postauricular region is a common site of occurrence for skin malignancies because of the exposure of the auricle to sunlight (1). A variety of different techniques have been described for reconstruction of posterior auricular defects, including skin grafts and local or distant flaps (1, 2).
We describe a novel technique for retroauricular resurfacing with a swallowtail flap, making use of readily available cervical and mastoid donor skin.

## Case Report

An 81-year-old patient presented with a 3 by 4 cm defect of the left posterior auricle, after excision of a mass. The first flap was designed using skin from the region of neck which overlies the sternocleidomastoid muscle. The progress of this first flap was not enough to cover the loss of substance. So a second advancement flap was drawn using the skin of the mastoid region (Figure 1). The progress of both flaps has allowed the masking of the defect without tension on the suture behind the ear. The use of this flap also did not lead to any alteration of the structure of the ear and continues to conceal the surgical scar in the retroauricular fold (Figure 2). In addition, the excision of an additional Burow's triangle at the upper flap has allowed the advancement of the flap without tension at the surgical scar. The name of the flap derives from its shape.

## Discussion

Various techniques have been described for reconstruction of retroauricular defects due to cancer and congenital malformation. Flaps used for reconstruction of larger defects of the posterior auricular region include direct advancement flaps, mastoid skin rotation flaps, the temporoparietal flap, and scalp rotation flap (1, 3). Local advancement flaps can often result in loss or blunting of the auricular sulcus due to inadequate donor tissue. Tissue expanders have therefore been used in this setting to increase the surface area of the mastoid donor site, but are associated with a higher complication rate (4). In addition, placement of the expander can often require multiple additional incisions within the scalp. Simple, single-lobed, transposition flaps rarely provide enough surface area to cover large defects. Furthermore, temporoparietal flaps can result in a loss of hair from the donor site and require additional skin grafting over the fascial flaps. The bilobed transposition flap is an extremely useful technique because it can very effectively transfer tissue from areas of abundance to areas of deficiency. This flap was originally described by Esser and was popularized in the 1950 by Zimmini [cited in (5)].

In evaluating the potential donor sites in the postauricular region, the most obvious donor site for resurfacing a postauricular defects is the skin overlying the mastoid. This skin is thin, supple, and hairless. The drawback of a using single-lobed transposition flap here is the fact the tight skin overlying the mastoid only allows for small flap to be borrowed without requiring a skin graft for the donor site, or creating larger, unsightly 'dog ears'. With the swallowtail flap, the skin from the upper cervical area overlying the sternocleidomastoid and extending into the creases of the neck, which is lax and well vascularized, and a significant amount can be harvested while still allowing for primary closure, without the closure of a donor site as in the bilobed flap.

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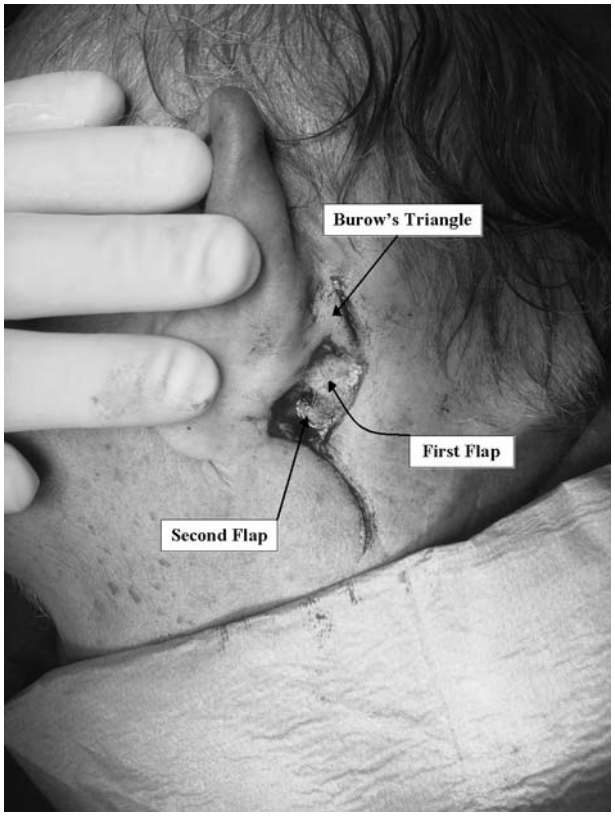


Figure 1. *Swallowtail flap. The first flap is designed over the remaining postauricular skin and contiguous mastoid skin. The second flap is designed overlying the cervical skin.*

## Conclusion

This swallowtail flap design allows one-stage reconstruction of retroauricular defects using both mastoid and cervical donor skin. Extensive areas 3×7 cm large, or up to three quarters of the posterior auricle, can be covered. The swallowtail flap may be elevated using local anaesthesia and is well vascularized and highly reliable.

Reconstruction of retroauricular defects through this flap is recommended for elderly patients in whom increased skin laxity compared to a young patient promotes the advancement of the flap above the mastoid region where the skin is thin. Moreover, the presence of the folds of the neck helps mask the scar.

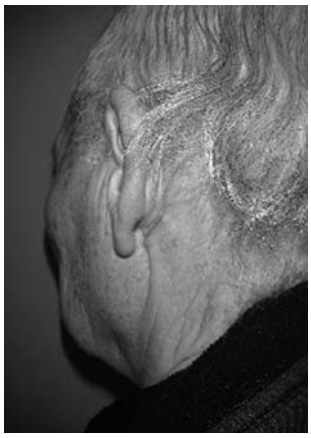

Figure 2. *Postoperative view of a retroauricular defect 1 month after reconstruction by the present technique.*

This technique offers an excellent aesthetic result because it does not alter the anatomical structure and the shape of the ear, furthermore, if the flap is designed in the direction of the neck, the surgical scar will be aesthetically pleasing. This novel design results in excellent cosmesis and an inconspicuous scar without disruption of the natural hairline.

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