

# Prelaminated Supraclavicular Island Flap for Total Ear Reconstruction: A New Technique

Hélio R. N. Alves, MD, PhD

Juan Felipe G. U. M. de Rodriguez, MD

Thadeu R. R. Fernandes, MD

Fábio F. Busnardo, MD, PhD

Júlio M. Besteiro, MD, PhD

Cláudio Roberto Cernea, MD, PhD

Rolf Gemperli, MD, PhD

**Summary:** Major ear reconstruction has progressed over the past years with the emergence of new techniques directed mainly to patients without available or usable local skin. However, microsurgical transfer requires specific training and eligible patients. The authors report a successful ear reconstruction with a prelaminated supraclavicular island flap in 3 stages, which may be a valuable resource for selected patients or when microsurgery is not available. Advantages and disadvantages of this new technique are discussed, and a possible solution to achieve a more satisfactory result is suggested. (*Plast Reconstr Surg Glob Open* 2020;8:e2736; doi: [10.1097/GOX.0000000000002736](https://doi.org/10.1097/GOX.0000000000002736); Published online 26 May 2020.)

Total ear reconstruction is a challenging procedure for reconstructive surgeons.<sup>1</sup> In addition to its aesthetic and hearing-related properties, the ear also offers support for glasses, especially in elderly patients, who often have a visual impairment.<sup>2</sup> Total ear reconstruction depends on a good cartilaginous framework and a stable covering.<sup>3</sup> Oncologic resections may lead to volume loss and poor soft tissue quality in the mastoid region,<sup>4</sup> requiring a local (temporoparietal fascia<sup>5</sup>) or distant (forearm<sup>6</sup>) flap.

Prelaminated flaps allow the transfer of soft tissues free from the effect of radiotherapy and avoid the complications of nonvascularized grafts.<sup>7</sup> On the other hand, microsurgical flaps may increase morbidity, especially in patients with multiple comorbidities.<sup>8</sup>

Pallua et al<sup>9</sup> popularized the supraclavicular island flap (SCIF) and published a clinical series on the use of the flap in postburn neck contracture. Di Benedetto et al<sup>10</sup> reported this flap as being reliable for oral cavity lining after oncologic resection. Alves et al<sup>11</sup> published 47 cases in which the SCIF was applied for oncologic defects. The skin of the SCIF is thin and hairless and has a similar color and texture as that of the face. These qualities make the SCIF an ideal flap for ear reconstruction.<sup>11</sup> However, no studies to date have evaluated the application of the SCIF on total ear reconstruction. The authors describe here a

case in which a prelaminated SCIF was used for total ear reconstruction in an oncologic patient.

## CASE REPORT

In 2015, a 73-year-old man with epidermoid carcinoma underwent a total left ear resection associated with superficial parotidectomy and level II and III lymph node dissection. The superficial temporal artery was damaged during oncologic treatment, and only distant flaps were available for the reconstruction. The patient had diabetes mellitus, hypertension, and a history of smoking and alcoholism. After the resection, the defect was closed with a local cutaneous flap from the mastoid region. During the same procedure, a SCIF was elevated up to its middle portion, and an ear-shaped, autologous, costal cartilage framework was placed in a plane created above the deltoid muscle in the middle of the subcutaneous tissue to allow a better shape definition (Fig. 1).

Six months later, the composite SCIF was transferred to the mastoid region, considering the cartilaginous scaffold. A retroauricular sulcus reconstruction was performed with a full-thickness skin graft and earlobe reconstruction 1 year later (Fig. 2).

The patient underwent 3 surgical debridements in the anterior border of the flap due to exposure of the cartilaginous framework, which was addressed with a nasolabial island flap (Fig. 3).

After the cartilaginous exposure was treated, the patient refused further revisions for aesthetic improvements.

## DISCUSSION

Total ear reconstruction requires a thin covering that adapts to the cartilaginous framework. Most of the total ear reconstruction cases reported in the literature are performed for congenital abnormalities and have sufficient skin cover, whereas acquired abnormalities require expanded,<sup>6</sup> temporal fascia,<sup>12</sup> or omentum free flaps<sup>13</sup> for

From the Department of Plastic Surgery, Hospital das Clínicas, University of São Paulo, São Paulo, Brazil.

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**Fig. 1.** Intraoperative view after costal cartilage framework placement under the SCIF.



**Fig. 2.** Oblique view 6 months after composite SCIF transposition to the mastoid region.

best aesthetic results. The emergence of microsurgical and prelaminate flaps has brought important resources to reconstructive surgeons, including the possibility to search for thinner tissues, manipulate distant regions of the face, and decrease the local complication rate with transfer of vascularized grafts.

In oncologic resections, it is important to evaluate the degree of vascularization of local tissues after prior radiotherapy or tumor/lymph node dissection because the viability of local flaps may be impaired in these cases. In addition, oncologic patients are usually older and may have associated comorbidities; therefore, a quicker and simpler reconstruction technique is preferred to avoid perioperative morbidity.<sup>14</sup>

In the case described here, no sufficient skin to cover the cartilage framework or local flaps to reconstruct the ear were available. In addition, the patient's age and comorbidities led the authors to consider the SCIF as a viable option for total ear reconstruction while taking into account the possibility of reconstruction without microsurgery, as well as the color, texture, glabrous skin, and thickness of the flap.<sup>11</sup> Despite its benefits, this technique has disadvantages, including multiple-stage surgery, long reconstruction period, and possible donor site morbidity.

The authors considered that the revision procedures performed were necessary, due to inadequate graft vascularization, possibly related to the position of the framework in the subcutaneous tissue near the dermis. A deep

pocket in the subcutaneous plane could have prevented this complication. Supercharging the flap<sup>15</sup> was considered to improve vascularity,<sup>16</sup> but the temporal superficial artery as a donor pedicle was not viable after the oncologic resection.

In this case, a good definition of the helix and anti-helix was not obtained, but the main goal of this surgery was to offer a support for glasses as we see in [Figure 4](#). An expanded SCIF<sup>17</sup> possibly would provide a better



**Fig. 3.** Intraoperative view of the nasolabial flap transposition.



**Fig. 4.** Frontal view 1 year after reconstruction with glasses. Despite the upper pole deficiency, the cephalic ear positioning is symmetrical.

definition of the auricular convolutions with a stable coverage, due to an augmented vascularity and thinner soft tissue covering. However, an additional surgery and the expansion procedure could generate distress, especially in an oncologic patient, because it can delay the oncologic treatment.

**Hélio R. N. Alves, MD, PhD**

Department of Plastic Surgery of São Paulo  
Alameda Jau, 361 / apt 31  
São Paulo, Brazil 01420-000  
E-mail: [heliomed85@yahoo.com](mailto:heliomed85@yahoo.com)

#### PATIENT CONSENT STATEMENT

*The patient provided written consent for the use of his image.*

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