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## CASE REPORT

# Subcutaneous Pedicled V-Y Advancement Flap for Surgical Reconstruction of the Auricle of the Ear<sup>☆</sup>

B. González-Sixto,<sup>\*</sup> A. Pérez-Bustillo, M.M. Otero-Rivas, M.Á. Rodríguez-Prieto

Servicio de Dermatología, Complejo Asistencial Universitario de León, León, Spain

### KEYWORDS

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### PALABRAS CLAVE

Pabellón auricular;  
Procedimientos quirúrgicos reconstructivos;  
Neoplasias cutáneas;  
Colgajos quirúrgicos

**Abstract** The subcutaneous pedicled V-Y advancement flap is useful for the repair of small and medium-sized defects in areas where it is easy to obtain a good subcutaneous pedicle (upper lip, cheek, eyebrow, and nasal tip and ala). The almost complete absence of subcutaneous tissue on the anterior aspect of the auricle of the ear can limit the use of this approach in this region. We present 4 patients in whom subcutaneous pedicled V-Y advancement flaps were used to repair surgical defects of the helix, scaphoid fossa, and antitragus, achieving a good functional and aesthetic result in all cases.

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### Colgajo de pedículo subcutáneo en V-Y: su utilidad en la reconstrucción quirúrgica del pabellón auricular

**Resumen** El colgajo de pedículo subcutáneo en V-Y es útil en la cobertura de defectos de pequeño-mediano tamaño en áreas donde es fácil obtener un buen pedículo subcutáneo (labio superior, región malar, ciliar, punta y alas nasales). La práctica ausencia de tejido subcutáneo en la cara anterior del pabellón auricular condiciona su uso en esta localización. Presentamos 4 casos en los que utilizamos este colgajo para la reparación de defectos quirúrgicos ubicados en hélix, fosa escafoidea y antitrago, con un buen resultado funcional y estético.

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## Introduction

As oncologic surgeons, dermatologists must keep 2 very important principles in mind: complete excision of the tumor, which is the fundamental and imperative aim of onco-

logic surgery, and reconstruction of the surgical defect with a good functional and cosmetic result.

Evaluation of the characteristics of the anatomical area in which the defect is located and identification of the best reserve of skin will enable us to choose the best option for closure of the defect. We must also understand the principles that will determine the most suitable design of the selected plasty.<sup>1,2</sup>

The subcutaneous pedicled V-Y flap is an advancement flap first described by Barron and Emmett.<sup>3</sup> This flap usually has random vascularization. Technically, it consists of a triangular island designed adjacent to the defect, with its base along one of the borders of the defect. The width of

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<sup>\*</sup> Corresponding author.

E-mail address: [bgonsix@aedv.es](mailto:bgonsix@aedv.es) (B. González-Sixto).



**Figure 1** Subcutaneous pedicled V-Y flap with an inferior vertex on the helix.

the flap should be similar to the width of the defect and its length should be twice the height of the defect. After incision of the borders, the flap is released laterally. Dissection of the deep part of the flap is avoided as this will be its vascular pedicle. If necessary, the incisions that make up the triangle can be curved in those areas in which the tension lines suggest such a design, as this will better camouflage the scar.<sup>4</sup>

The flap must be dissected with a bevel outwards, so that the subcutaneous pedicle is broader, thus ensuring the vascular supply. It is then advanced towards the defect; leaving a V-shaped secondary defect that is closed as a Y. Advancement is limited by mobility of the subcutaneous pedicle; greater displacement is possible in areas with abundant fatty tissue.<sup>4</sup>

### Case Descriptions

We present 4 surgical reconstructions of the auricle of the ear using subcutaneous pedicled V-Y flaps.

Cases 1 and 2. The surgical defects in both patients were situated on the superior border of the helix. For reconstruction we used island flaps obtained in the first patient from the root of the helix and in the second patient from the superolateral border adjacent to the defect; these were the areas adjacent to the defects with greatest tissue laxity that would allow advancement of the flap. The flaps were dissected, always ensuring a good subcutaneous pedicle, and

the skin island was advanced and sutured border-to-border within the defect and in Y at the vertex (Figs. 1 and 2).

Cases 3 and 4. In these cases the surgical defects were situated in the scaphoid fossa and on the antitragus and affected the cartilage. For these patients we designed chondrocutaneous island flaps with the vertex inferiorly in the first patient and superiorly in the second patient. The flaps were dissected to permit their advancement. Finally, the perichondrium was sutured with reabsorbable 4/0 suture, without manipulating the cartilage in order to avoid its fragmentation, and the skin was closed with 4/0 silk. In these cases, the subcutaneous pedicle was obtained from the posterior aspect of the auricle of the ear (Figs. 3 and 4).

A good cosmetic result was achieved in all patients, maintaining the shape and symmetry of the ears.

### Discussion

Reconstruction of the auricle of the ear can be a challenge due to its complex anatomical structure. The difficulty is increased by the fact that the ear is a bilateral and symmetrical structure.

The subcutaneous pedicled V-Y flap is more commonly used to cover small- to medium-sized defects in areas such as the upper lip, cheek, eyebrows, tip of the nose, or alae nasi. A good subcutaneous pedicle is easy to obtain in all these areas.<sup>4-6</sup>



**Figure 2** Subcutaneous pedicled V-Y flap with a superior vertex on the helix.



**Figure 3** Chondrocutaneous subcutaneous pedicled V-Y flap with an inferior vertex in the scaphoid fossa.



**Figure 4** Chondrocutaneous subcutaneous pedicled V-Y flap with a superior vertex on the helix.

Flap mobility increases as its pedicle becomes narrower. The objective is to strike a balance between good advancement and an adequate blood supply. This is achieved through meticulous dissection of the base and release of the vertex of the island.

The practical absence of subcutaneous tissue on the anterior surface of the auricle of the ear, except in the area of the helix (cases 1 and 2) or earlobe,<sup>7,8</sup> can compromise the viability of this type of plasty. However, a combined chondrocutaneous island flap can be used in cases in which there is a defect of skin and cartilage (cases 3 and 4). Not only is the defect repaired, but also the survival of the flap is guaranteed as it obtains its blood supply from the posterior surface of the ear, where there is a thicker layer of subcutaneous tissue. At this site, by recreating the natural curvature of the helix, the scaphoid fossa, and the antitragus, the cosmetic result of the surgical reconstruction can be very good.

The main advantages of this technique are that it avoids the formation of permanent skin deformities, it has a good blood supply (as long as the dissection is correctly performed), and the skin is obtained from an area adjacent to the defect, often from within the same anatomical subunit, and it thus has a similar color and texture. Furthermore, the surgical defect can be closed in a single operation.

Drawbacks include the possibility of flap necrosis and the trapdoor effect.<sup>3,5</sup> To avoid these complications, the pedicle must be correctly dissected, the size of the flap should be slightly smaller than the defect, and tissue release around the flap should be generous to avoid tissue contraction,

which would give rise to elevation.<sup>5</sup> When this flap is used around mobile structures, such as the commissure of the mouth, the eyebrows, or the alae nasi, it must be correctly positioned in order not to deform these structures.<sup>4</sup>

The subcutaneous pedicled V-Y flap is very versatile, easy to design, and has good survival. We should therefore keep this option in mind for reconstruction of the auricle of the ear, though its limitations described above must be taken into account.

## Ethical Disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this investigation.

**Confidentiality of Data.** The authors declare that they followed their hospital's regulations regarding the publication of patient information.

**Right to Privacy and Informed Consent.** The authors declare that no private patient data are disclosed in this article.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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