

## Case Reports

### Authors:

Priscila Daiane Pavezzi<sup>1</sup>  
 Rogério Nabor Kondo<sup>1</sup>  
 Rubens Pontello Júnior<sup>1</sup>  
 Clarissa Patias Lena<sup>1</sup>  
 Júlia Pagung Kippert<sup>1</sup>

<sup>1</sup> Hospital Universitário Regional do Norte do Paraná, Universidade Estadual de Londrina - Londrina (PR), Brazil.

### Correspondence to:

Priscila Daiane Pavezzi  
 Rodovia PR 445, km 179  
 Campus Universitário (UEL) - Ambulatório de Especialidades (AEHU)  
 86051-990 Londrina, PR  
 Brasil.  
**E-mail:** pripavezzi@yahoo.com.br

**Received on:** 17/10/2016

**Approved on:** 13/12/2017

This study was performed at the Dermatology Service of the Hospital Universitário do Norte do Paraná – Universidade Estadual de Londrina (PR), Brazil.

**Financial support:** None

**Conflict of interests:** None

# Interpolation flap for closing a surgical defect in the cauda helix

*Retalho de interpolação para fechamento de defeito cirúrgico na cauda da hélice da orelha*

DOI: <http://dx.doi.org/10.5935/scd1984-8773.201794916>

## ABSTRACT

Oncologic ear resection can create partial skin and / or cartilage defects that make reconstruction of this site difficult and challenging. Several techniques have been described, however few cases of surgery for defects in the cauda helix have been reported. The authors describe an interpolation flap in this anatomical location for the correction of a defect secondary to the excision of a basal cell carcinoma.

**Keywords:** surgical flaps; ear; carcinoma, basal cell

## RESUMO

A ressecção oncológica auricular pode criar defeitos parciais da pele e/ou da cartilagem que tornam difícil e desafiadora a reconstrução desse local. Várias técnicas têm sido descritas, porém poucos casos de cirurgias para defeitos na cauda da hélice têm sido relatados. Os Autores descrevem um retalho de interpolação nessa localização anatômica para correção de defeito secundário à excisão de carcinoma basocelular.

**Palavras-chave:** retalhos cirúrgicos; orelha; carcinoma basocelular

## INTRODUCTION

Among skin tumors, basal cell carcinoma (BCC) is the most common type, accounting for roughly 70% of all skin cancers. Surgical excision is the recommended treatment; nevertheless situations where direct closure is not possible can occur, leading to the need of implementing a flap or graft.<sup>1</sup>

The interpolation flap consists of a segment of skin and subcutaneous cellular tissue that rotates on a pivoting point, in a path resembling an arch that reaches a nearby – but not immediately adjacent – defect. This flap's pedicle passes over the normal skin that is being repaired.<sup>2-6</sup>

The authors of the present paper describe the implementation of an interpolation flap to resolve a wound secondary to the exeresis of a BCC in the *cauda helix* of the right ear, in which the lobe remained intact.

## CASE REPORT

A white, 70 years old female patient sought care due to the presence of a lesion in the *cauda helix* of the right ear that was clinically and histologically compatible with BCC (Figure 1A). The demarcation of the lesions and 0.5cm safety margins entailed a large defect after excision of the tumor (Figure 1B). A decision was made for the implementation

of an interpolation flap to close the wound (Figure 2). The flap was sutured in the correct position with 5.0 and 6.0 mononylon threads, with a small vascular pedicle being left in place. The donor area was sutured with 5.0 mononylon (Figure 3). The sutures were removed one week after (Figure 4). The resection of the pedicle was performed three weeks after the intervention (Figure 5). The patient coursed with a good aesthetic result (Figure 6). Figure 7 outlines the steps of the surgery.

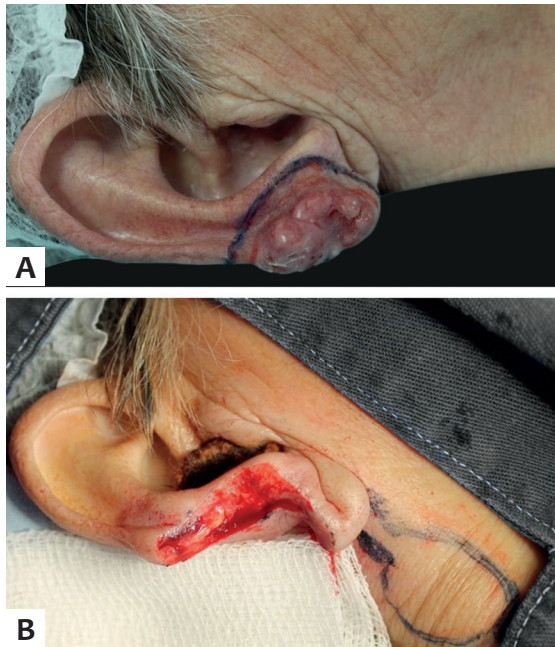


FIGURE 1: A - Marking of the lesion with 0.5cm margins, B - Surgical defect's appearance after resection with 0.5cm margins; the earlobe remained intact

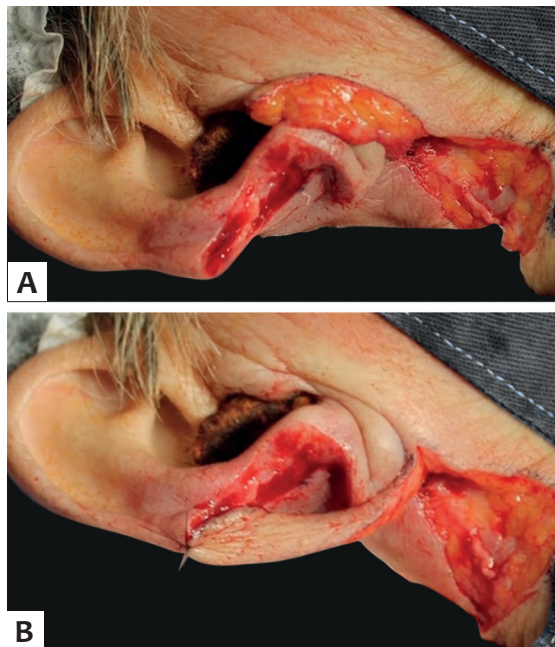


FIGURE 2: A and B - Interpolation flap

DISCUSSION

Cutaneous flaps may be necessary for the closure of skin tumor excisions.<sup>1-5</sup> In dermatologic surgery, most flaps use skin originating from sites located nearby the surgical wound, aiming at better integrating and providing similarity with the recipient area, which results in a better aesthetic outcome.<sup>5,6</sup>

Large surgical wounds resulting from excisions of cutaneous neoplasms of the auricular region can be challenging for the surgeon. Satisfactory outcomes depend on the used technique and the skill to perform it, in addition to the patient's health conditions.<sup>5,6</sup>

Techniques for the closure of defects or correction of the ear lobe have been quoted in the literature.<sup>5-10</sup> Nonetheless, there are a few cases describing the correction of only cauda helix with preservation of the lobe.

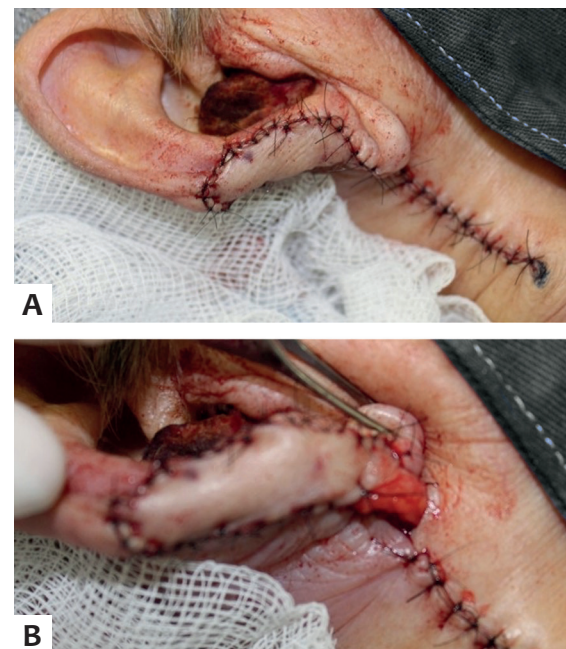


FIGURE 3: A and B - Closing of the donor area and flap in the receiving position with its vascular pedicle

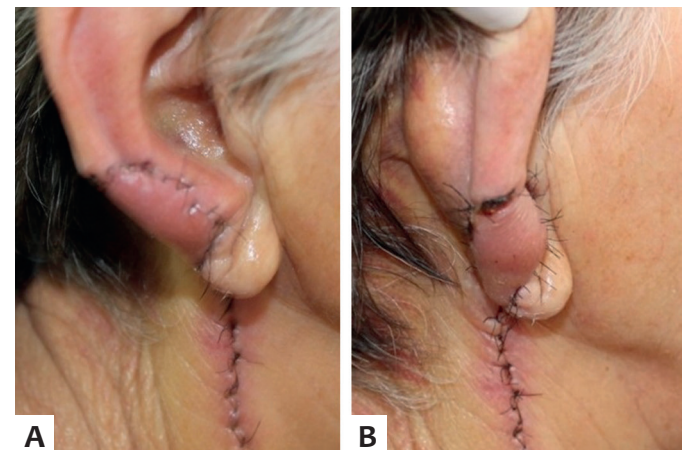


FIGURE 4: A and B - Flap 7 days after surgery with the vascular pedicle

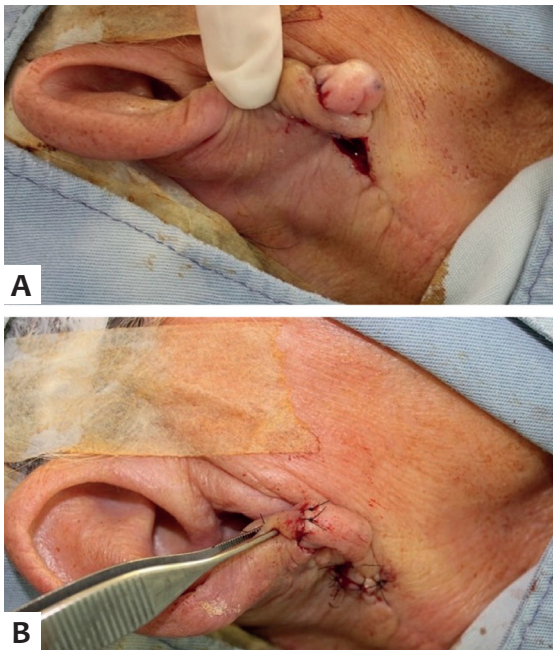


FIGURE 5: A and B: After the resection of the vascular pedicle



FIGURE 6: Outcome 4 weeks after

The interpolation flap is an excellent method for resolving a wide and deep defect in which the adjacent tissue does not allow direct closure. The tissue from a nonadjacent area is used, with the implementation of a vascular pedicle aimed at supplying the flap up until neovascularization has been established between the flap and the recipient bed. The main disadvantage

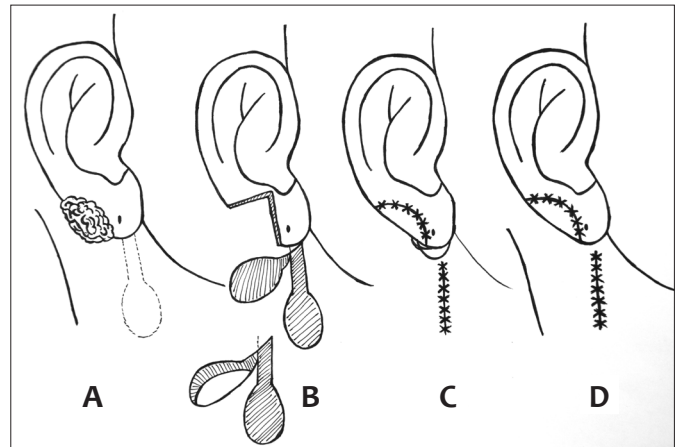


FIGURE 7: A - Marking of the lesion and flap's donor area. B - Excision of the lesion, incision and detachment of the flap. C - Flap suture and maintenance of the pedicle. D - Resection of the pedicle

of this type of flap is that it requires two stages to be completed. The resection of the pedicle is performed after the complete neovascularization of the recipient area has been achieved, which occurs in about 3 weeks.<sup>6</sup> In oncological cases in the *cauda heliis*, some surgeons prefer to amputate the remainder of the auricular lobe (lower third of the ear) and then perform local reconstruction in order to avoid risks of distal necrosis.<sup>7-10</sup> In the present case, part of the interpolation flap's pedicle (cervical donor area) has covered the lobe, which has been preserved all along, ensuring its vascularization as well as that of the flap itself (Figures 2, 3 and 4). There was good integration of the flap with the recipient area. The second stage was carried out 3 weeks after with the resection of the vascular pedicle, leading to optimal aesthetic outcome (Figure 6).

In the case present case, the primary closure of the lesion would not result in a good esthetic outcome, entailing the traction of the lobe towards the propeller. A graft would probably progress to local necrosis. The authors decided to implement a flap and preserve the earlobe, aiming at achieving the best aesthetic and functional outcomes.

### CONCLUSION

The interpolation flap can be an excellent option to resolve defects in the *cauda heliis*, in which the lobe can be preserved, as demonstrated in the present case. ●

**DECLARATION OF PARTICIPATION:****Priscila Daiane Pavezzi:**

Completion of the manuscript's writing, bibliographic review, submission

**Rogério Nabor Kondo:**

Guidance on surgical reconstruction (procedure conception), surgical supervision, guidance on the manuscript's writing, final approval

**Rubens Pontello Junior:**

Literature review, spelling correction

**Clarissa Patias Lena:**

Step-by-step illustration, bibliographic review

**Júlia Pagung Kippert:**

Framing of the illustrations, subtitles, bibliographic review

**REFERENCES**

1. Amaral ACN, Azulay DR, Azulay RD. Neoplasias malignas da epiderme e anexos. In: Azulay RD, Azulay DR, Azulay-Abulafia L. Dermatologia. 5. ed. Rio de Janeiro: Guanabara Koogan; 2011.p.605.
2. Mellette JR, Ho DQ. Interpolation flaps. Dermatol Clin. 2005; 23(1):87-112.
3. Barlow RJ, Swanson NA. The nasofacial interpolated flap in reconstruction of the nasal ala. J Am Acad Dermatol. 1997; 36(6 Pt 1):965-9.
4. Johnson MT, Fader DJ. The staged retroauricular to auricular direct pedicle (interpolation) flap for helical ear reconstruction. J Am Acad Dermatol. 1997; 37(6):975-8.
5. Di Mascio D, Castagnetti F. Tubed flap interpolation in reconstruction of helical and ear lobe defects. Dermatol Surg. 2004; 30(4 Pt 1): 572-8.
6. Kondo RN, Pontello Júnior R, Lopes VCH, Bittar RA, Pereira AM. Interpolation flap for closing a surgical defect in the ear lobe. Surg Cosmet Dermatol. 2012; 4(2):192-94.
7. Cabral AR, Alonso N, Brinca A, Vieira R, Figueiredo A. Earlobe reconstruction by the Gavello technique and bilobed flap. An Bras Dermatol. 2013; 88(2):272-5.
8. Reddy LV, Zide MF. Reconstruction of skin cancer defects of the auricle. J Oral Maxillofac Surg. 2004; 62(12):1457-71.
9. Fidalgo Rodríguez F, Navarro Cecilia J, Rioja Torrejón L. Earlobe reconstruction with a modified bilobed flap. Plast Reconstr Surg. 2010; 126(1):23e-4.
10. Hessam S, Georgas D, Bruns N, Sand M, Kassa T, Bechara FG. A retroauricular flap for earlobe construction. J Am Acad Dermatol. 2014; 71(4):e129-30.