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Case Report

Salvage of a cartilage framework exposure in total ear reconstruction using a retro-auricular fascia flap with double axial irrigation

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ARTICLE INFO

Article history:

Received 13 April 2018

Accepted 18 July 2018

Available online 27 July 2018

Keywords:

Cartilage framework

Salvage procedure

Retro-auricular fascia

Ear reconstruction

ABSTRACT

Cartilage framework exposure during total ear reconstruction requires an early salvage procedure and a secure coverage. We present a case that has been successfully covered by a retro-auricular fascia flap and a skin graft. Because we were dealing with a post-traumatic ear amputation with extensive scarring, the flap was designed to include both the retro-auricular artery and the occipital artery for an enhanced vascular security. This flap design may play a more important role especially in post-traumatic ear reconstruction.

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Introduction

Cartilage framework exposure is a dreadful complication of total ear reconstruction. It may be caused by a hematoma, an infection or bad skin vascularity due to scars and trauma. A prompt and efficient salvage procedure should be performed in order to save the framework and go on with the reconstruction.

We present the case of a successful salvage procedure using a retro-auricular fascia flap with double axial irrigation

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<https://doi.org/10.1016/j.jpra.2018.07.002>

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Figure 1. Marking of skin necrosis over the stem of the antihelix.

Case report

A 40-year-old female patient, with smoking history, underwent the first stage of total ear reconstruction 8 months following a crush amputation of her left ear. In the following 48 h she developed a 10×18 mm area of skin necrosis at the level of the reconstructed antihelix stem (Figure 1). At day seven, before skin breakdown, she was readmitted to the operating room, the necrotic skin was debrided and the cartilage was covered by a 6 cm long turn-over flap of retro-auricular fascia that included both the retro-auricular and occipital arteries (Figure 2). A skin graft from the opposite retro-auricular skin was applied over the fascia. The wounds healed thereafter with no other incidents (Figure 3).

Discussion

Exposure of the framework of a reconstructed ear is a serious and classical complication. Early recognition and treatment is mandatory to avoid infection and loss of the framework.

Reports on salvage procedures in the literature are scarce and focus on microtia cases. These procedures usually rely on adjacent skin flaps, the temporoparietal fascia complex flaps or the mastoid fascia flap.^{1,2}

Skin flaps require additional incisions in visible areas and are less reliable in an already cicatricial environment. Suture line, directly over the framework, may be subject to tension, breakdown and recurrence of the exposure.

The advantage of fascia flaps is their capacity to be redraped over the framework going well beyond and under the necrotic skin limits for more secure coverage.

The temporoparietal fascia flap is the most commonly used flap for salvage procedures. It is a large and reliable flap, but in our ear reconstruction protocol, we reserve it for the second stage of ear elevation and the creation of the retro-auricular sulcus.

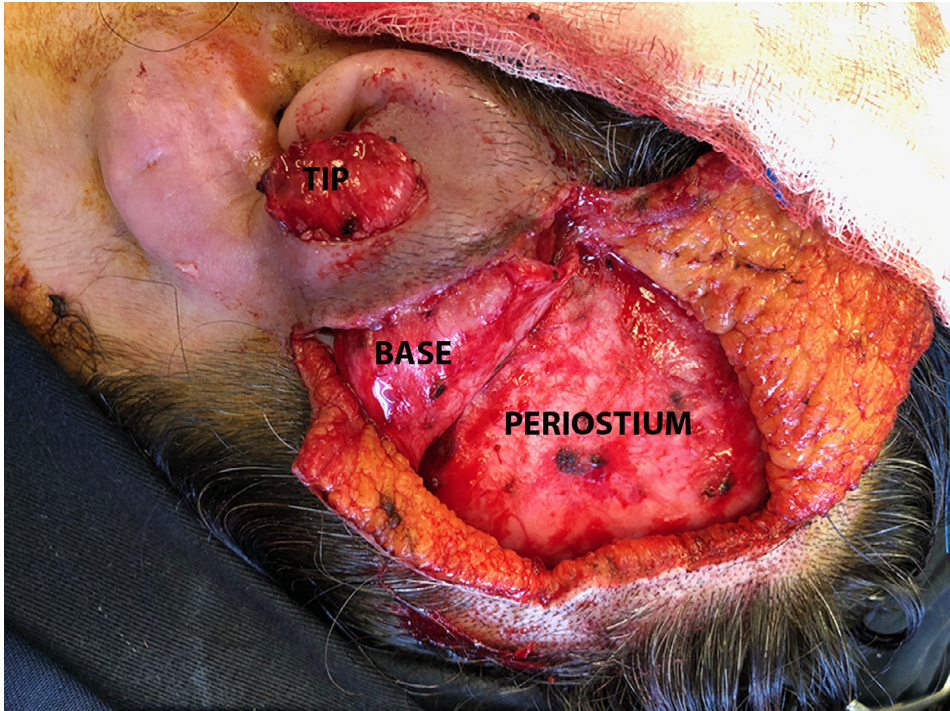


Figure 2. Retro-auricular fascia flap elevated and turned over the exposed cartilage.

The deep temporal fascia flap has also been used as a salvage flap in case the temporoparietal fascia is not available.¹

The mastoid fascia flap irrigated by the retro-auricular artery is another option to cover exposed cartilage. It has been used with success as a hinge flap based on the retro-auricular pedicle.²

We know that the retro-auricular fascia, surpassing widely the mastoid fascia cephalad and posteriorly, benefits from a rich vascular network from the retro-auricular pedicle, the occipital pedicle, and the superficial temporal pedicle.^{3,4}

In our post-traumatic case, the retro-auricular pedicle could have been injured and was unreliable. To have a secure retro-auricular fascia flap, we chose to include in our flap the occipital artery which runs about 6cm behind the external acoustic meatus. This artery is usually excluded or disrupted during regular mastoid fascia flap elevation. By using this double irrigation, we chose the most reliable solution to save the framework.

The dissection was easy and straightforward. The occipital artery was easily identified and of good diameter. We were not sure of the maximum available size of the flap but it was clearly superior to what was needed. By following the occipital artery distally, we obtained a long flap with its tip situated 6 cm cephalad to the upper pole of the reconstructed ear.

The only drawback we encountered was the posterior tethering of the flap by the occipital pedicle, necessitating a longer flap to reach the defect.

Conclusion

Salvage procedures following cartilage framework exposure should be performed early, before skin breakdown. We highly recommend the use of the retro-auricular fascia flap with double retro-auricular artery and occipital artery irrigation. We believe that this flap, after further studies, could



Figure 3. Satisfactory healing at 10 days.

play a more important role in other aspects of ear reconstruction, particularly in post-traumatic cases with extensive scarring where the regular flaps are less reliable.

Disclosure of interest

The authors report no conflicts of interest.

Funding sources

No funding sources to declare.

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