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Dermatosurgical pearls: the plesiosaurus flap for covering a primary defect of the scalp after surgical excision of a problematic lesion

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Availability of data and materials: all data underlying the findings are fully available.

The case

A 54-year-old male presented with a painful nodular, tumor-like lesion, in the right occipital region, present for approximately two years, clinically suspected of atheroma. Surgical excision of the lesion was recommended.

Our choice

We present a case involving a medium-sized primary defect following surgical excision of a scalp lesion. Because the primary defect resulting from excision was circular, primary closure was unsuitable. Healing by granulation or secondary intention would result in prolonged wound recovery and increased infection risk, while skin grafts would cause alopecia and mismatched color and texture. The defect was successfully reconstructed using a novel technique, termed as the plesiosaurus flap. The final scar was planned to be camouflaged within the hair-bearing area region to optimize both functional and aesthetic outcomes.

Procedure

The lesion was preoperatively marked (Figure 1) and removed with an oval excision under local anesthesia using 2% lidocaine. For reconstruction of the scalp defect, the team initially selected a classical flap design – the double (bilateral) opposing rotation advancement (Ying-Yang) flap. Considering the thinned skin in the retroauricular region, the flap was designed parallel to the ear, with each opposing flap approximately twice the size of the primary defect. To preserve the underlying vascular supply, careful flap elevation and dissection were performed down to the hypodermis, followed by undermining of both flaps (Figure 2). The resulting defect resembled a shuriken, with an S-shaped configuration (Figure 3).

Leaving the flap at this stage didn't ensure a tension-free result. The thickness of the regional skin, combined with the opposing Langer lines in the two areas, further complicated the closure. To reduce tension and achieve proper adaptation, the flap design was modified: two additional parallel Burrow's triangles were made extending from the inferior margin of the left opposing flap on each side (Figure 3; triangle A on the left side of the resection line and triangle B on the right), and one triangle from the junction between the two opposing flaps (Figure 3; triangle C). The final defect was closed using single interrupted 2-0/3-0 polypropylene sutures (Figure 4). This modification created a final appearance resembling a plesiosaurus (a type of dinosaur), inspiring the team to name the technique as the "plesiosaurus flap" due to its characteristic configuration (Figures 5 and 6). The postoperative period was uneventful.

Comment

Reconstructive options include rotational, advancement, and transposition flaps.[1] In the scalp region, advancement and transposition flaps may be technically challenging due to the scalp's thickness and limited mobility, often requiring extensive undermining to achieve adequate tissue advancement.[1] Rotational flaps can provide superior and creative solution for effective scalp defect coverage while maintaining tension-free closure.[2,3]

Through the introduction of this new reconstructive approach – the plesiosaurus flap technique – our team emphasizes the importance of innovation and adaptability within the surgical mindset.

The outcome

Figure 6 illustrates the 10-days postoperative results.

References

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Figure 1. Preoperative marking: a nodular, tumor-like lesion, elevated above the surrounding skin, with irregular borders located in the right occipital region.

Figure 2. Intraoperative view: careful flap elevation and dissection are performed down to the hypodermis, followed by undermining of both flaps.

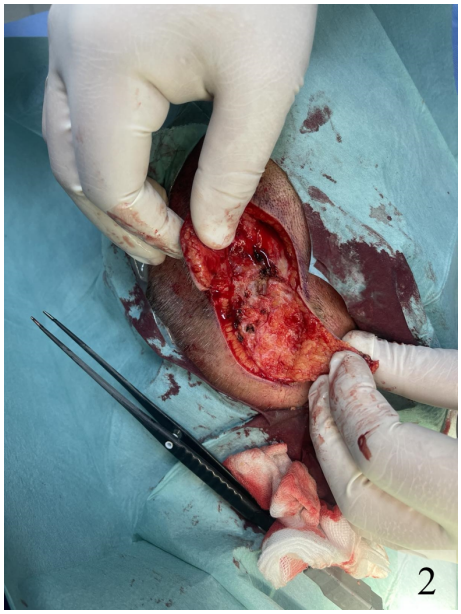

Figure 3. Intraoperative view: the resulting defect resembles a shuriken, with an S-shaped configuration. Two additional parallel Burrow's triangles were made extending from the inferior margin of the left opposing flap on each side (triangle A on the left side of the resection line and triangle B on the right), and one triangle from the junction between the two opposing flaps (triangle C).

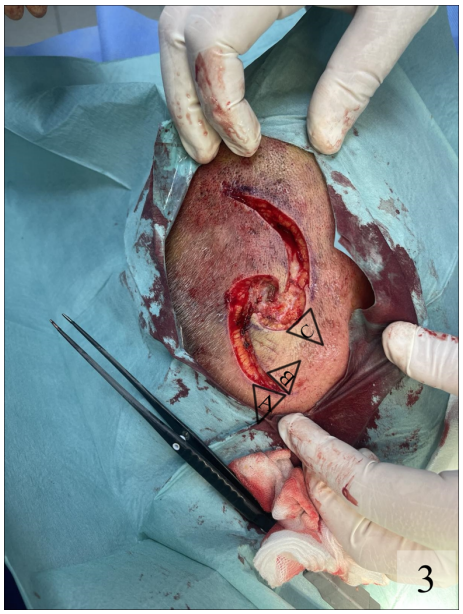

Figure 4. Intraoperative view: the plesiosaurus flap. The final defect is closed using single interrupted 2-0/3-0 polypropylene sutures.

Figure 5. Postoperative view: the plesiosaurus flap. 10-days postoperative results.

Figure 6. The plesiosaurus design.