EXTENSIVE LOSS OF CRANIUM AND SCALP FOLLOWING ELECTRICAL BURNS—INTERESTING FEATURES

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SUMMARY

Small scalp defects can be repaired by mobilisation, rotation, transposition or advancement of local flaps. Conventional 'visor' flaps are not sufficient for covering larger losses. The remnant scalp even up to 50 percent can be used with advantage provided the temporal areas are intact and are in continuity with the undamaged portion of the scalp left out anteriorly or posteriorly. The cases of extensive loss of cranium and scalp following electrical burns are presented here to highlight some important observations.

Case No. 1

A young boy sustained electrical burns of the scalp when he went up an electric pole. He reported to us three months after the injury with loss of parts of frontal and parietal bones, measuring $7'' \times 5''$ (Fig. 1). Scalp in the posterior region measuring $7\frac{1}{2}'' \times 6''$ was undamaged and was in continuity with the lateral and temporal region of the scalp. Whole of this posterior scalp based on two tube pedicles containing posterior branches of the superficial temporal vessels on either side was shifted anteriorly into the area of loss after a preliminary delay (Fig. 2).

Fig. 1. Area of full thickness loss following electrical burns.

Fig. 2. Posterior scalp flap ($7\frac{1}{2}'' \times 6''$) to be transferred anteriorly--posterior parts of both superficial temporal pedicles are seen.

Cranioplasty defect was made up with an acrylic plate. Post-operative healing was uneventful. Cosmetically the result was pleasing (Fig. 3 & 4).
Case No. 2

A young boy sustained extensive scalp and cranial loss in occipito-parietal area following electrical burns (Fig. 5). Posterior part of parietal bones in an area 6" in diameter appeared clinically dead. Seven days after the injury an anterior scalp flap measuring 8" × 7" was raised based on both the temporal pedicles and was
transposed back to cover the defect (Fig. 6). Flap healed uneventfully. About two months later swelling appeared in the centre of the flap which was drained and a thin sequestrum roughly two inches in diameter consisting of the outer table only was removed following which the wound healed. Subsequent follow-up showed on palpation that the area under the flap had a hard cover all over.

**Observations**

The main vascularity of the scalp is from the superficial temporal vessels (Converse, 1977). Occipital, mastoid and other vessels do not sustain extensive flaps (Orticochea, 1971).

The dependability of superficial temporal vessels in maintaining the vascularity of anterior or posterior bipedicle flaps is exhibited by easy transfer of these flaps to cover more than 50 percent of the scalp provided the flap is supplied by a branch of the superficial temporal vessels.

In the transfer of the posterior bipedicle flap, a preliminary delay makes the flap much safer. However, when anterior scalp flap is to be transferred posteriorly, no delay procedure is required.

It is suggested that an early coverage of skull bones which have been subjected to an electrical burn with vascularised scalp flaps is a worthwhile procedure.

**Conclusions**

Upto 50-60 percent of scalp defects can be safely covered from an anterior or a posterior bipedicle flap provided the scalp flap to be transferred has tissue continuity with superficial temporal pedicles. Further it may be possible to salvage the exposed cranial bones if they are covered early with such a flap.

**REFERENCES**


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