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Title

Postoperative pressure-induced alopecia after segmental osteotomy at the upper and lower frontal edentulous areas for distraction osteogenesis.

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## Abstract

We report a parieto-occipital pressure-induced alopecia firstly developed in a patient who had undergone repeated surgery for 10 years after a traffic accident.

## Report of a Case

A 29-year-old male underwent segmental osteotomy at the upper and lower frontal edentulous areas for distraction osteogenesis to enable implant placement. He was healthy except for the traffic accident 10 years ago. Since the accident, he had undergone repeated surgery, including reduction and fixation of fractures, jaw mobilization surgery, advancement sagittal split ramous osteotomy, nasal bone reconstruction, and segmental osteotomy of the lower lateral alveolar bone to effect functional improvements. The surgery had been performed under general anesthesia and in the present case, the surgery lasted five and a half hours and the anaesthesia seven. General anesthesia was maintained with total intravenous anaesthesia (remifentanil and propofol). Throughout the operation, he was in the supine position with the hair covered with a paper cap and the head on a plastic vinyl chloride covered soft foam horseshoe-shaped urethane sponge placed on the horseshoe-shaped headrest (Fig. 1). The head position was maintained as immobilized because of the delicate maneuver required to elevate thin cicatricial tissue and to make a precise osteotomy. The surgery was completed without complications with a blood loss of 50 ml. The distraction

was begun after a latency period of three days. About two weeks after the surgery, two patches of parieto-occipital alopecia was observed at the barber's. This had not previously been noticed by the patient or acquaintances. On a regularly scheduled visit to the clinic, the patches were observed at both lateral sides of the midline on the parieto-occipital region of the scalp, which were almost corresponded closely with the site of the horseshoe-shaped headrest (Fig. 2). A diagnosis of pressure-induced alopecia was made. We advised him to massage the scalp. Hair regrowth was observed to have occurred during the follow-up visits (Fig. 3).

## Discussion

Postoperative alopecia is the temporary or permanent loss of hair that occurs following prolonged immobilization during general anesthesia<sup>1</sup>, and it usually occurs within 3-28 days of surgery<sup>2</sup>. The direct cause of the alopecia is a temporary cessation of follicle activity<sup>1</sup>. One exacerbating factor is hypoperfusion induced by hypotensive anesthesia or massive blood loss<sup>3</sup>. Perioperative psychiatric comorbidity also contributes to the development of alopecia<sup>4</sup>

This patient had undergone repeated surgery and had never experienced alopecia previously. At further surgery in the department of plastic surgery following the occurrence reported here, there was no further alopecia. The alopecia occurred only once in the course of a number of operations. One reason for the occurrence may be that the present surgery differs from other

surgery the patient has been subjected to in that the area where the surgery took place was limited to the frontal edentulous area and that the delicate maneuver required made it essential not to change the head position frequently.

In addition to the speculation above, the surgical maneuver itself may impose a burden upon the scalp and this may deteriorate perfusion.

Especially when the surgical field is at the midline, forces are transmitted directly to the parieto-occipital area. Even though such an effect would be small in each single maneuver, frequent and continuous one may result in an accumulation of damage to the scalp. This suggests the need to take care not to apply excessive force in a perpendicular.

The mental stress induced by frequent surgery may also have played a role in the development of the alopecia.

Pressure-induced alopecia is generally reversible but it is distressing both to patient and surgeon. We should understand the pathogenesis and prophylaxis.

## References

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Legends.

Fig. 1 The horseshoe-shaped headrest.

Relief of the force on the scalp was attempted by placing the soft foam horseshoe-shaped urethane sponge on the horseshoe-shaped headrest.

Fig. 2 The area of the alopecia.

Fig. 3 The hair after regrowth.



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