


HOW I DO IT **HEAD AND NECK**

Scratch and split: how I minimise bleeding, visible scarring and alopecia during incision and closure in the hair-bearing scalp

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Introduction

In general, a favourable scar is achieved by meticulous skin apposition and the absence of tension across the dermis. However, wounds within hair-bearing areas are different. While suture marks may be invisible in the scalp, a stretched scar or alopecia may result in a clearly visible scar through the hair. In addition to achieving tension-free closure, care must be taken to preserve the hair follicles at the immediate edges of the incision to provide an inconspicuous scar that is surrounded by hair (**Figure 1**). The technique described in this paper was performed during an endoscopic brow lift but applies to scalp incisions in general.

Operative technique

The incision is made with a number 15 blade after infiltration with local anaesthetic with adrenaline. Care is taken to only incise the dermis with the blade, to a depth of no more than 1 mm. A tenotomy scissor is then used to punch through the superficial dermal incision to the full thickness of the dermis, splitting it through natural planes without damaging any hair follicles (see **Supplementary video**).

The technique produces minimal bleeding and displays small arteries, veins and sensory nerves running through the exposed area. It does not stop small intradermal bleeders, which will stop quickly with pressure. Diathermy to dermal bleeders should be avoided. The visible deeper structures can be preserved or sacrificed according to exposure need.

The incisions are closed with 4-0 Vicryl (Ethicon Inc) interrupted sutures to the superficial fascia to

remove dermal closure tension. The skin is then closed with a 5-0 plain gut (Ethicon Inc) continuous running suture with bites placed 1 mm from the wound edge and no deeper than 1 mm. Dressings are dry gauze and crepe.

Discussion

Tension-free closure is well recognised as the cornerstone of achieving aesthetically favourable scars, preventing scar widening and hypertrophy.¹ Previous investigation into minimising cicatricial alopecia in hair-bearing skin has focused on the angle of the skin incision relative to the orientation of hair follicles.² The anatomical and physiological basis for this approach is to preserve the stem cells within the hair follicle and allow hair regrowth.

The authors agree that minimising damage to hair follicles is crucial to achieving well-concealed scars in the hair-bearing scalp, but would like to emphasise that while a bevelled sharp incision has utility for an

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Fig 1. The right temporal incision of a 57-year-old female two years after undergoing an endoscopic brow lift using the scratch and split technique. Note the dense regrowth of hairs around the scar (right)

incision at the hairline, it has no utility for an in-hair incision as hair follicles will be damaged on the way in by sharp cutting or by diathermy.

The scratch and split technique prevents four sources of operative injury to hair follicles:

1. injury during incision via transection with sharp blade
2. injury during incision via coagulation by electrocautery during haemostasis
3. ischaemic injury during closure via excessive wound tension
4. mechanical injury during closure by placing suture material through hair follicles.

The scalp is highly vascular with a relatively higher volume of blood flow and a reduced capacity for peripheral vasoconstriction owing to the large metabolic demand of the brain and the communication between the internal and external carotid systems.^{3,4} The scalp is covered by a rich subdermal vascular plexus that will bleed significantly if approached with the blade. An atraumatic approach of the subdermal plexus with the tenotomy scissors and selective diathermy allows the surgeon to incise the scalp without causing significant bleeding and without coagulating the hair follicles adjacent to the incision.

Tension is taken off the wound edge by galeal undermining and suturing. The galeal sutures ensure that any tension in the wound is distributed deeply, not at the level of the dermis. The skin sutures only serve to appose the dermis.

The placement of sutures in the scalp has been well investigated, with many surgeons opting to use staples as they appose the skin with relatively minimal tissue handling and with no trauma

to the adjacent hair follicles.⁵ The drawback of surgical staples is the need for their removal in the office, which is time-consuming for the surgeon and uncomfortable for the patient. The use of absorbable, fine sutures that closely approximate the skin under low tension achieves a superior result for patient and surgeon. The wound once repaired may be forgotten about (see **Figure 1**).

Conclusion

The scratch and split technique is a reliable method for achieving well-concealed, thin scars in the hair-bearing scalp. By minimising trauma to hair follicles and avoiding unnecessary diathermy, this approach preserves hair growth and reduces visible scarring.

Patient consent

Patients/guardians have given informed consent to the publication of images and/or data.

Conflict of interest

The authors have no conflicts of interest to disclose.

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Supplementary online material

A video accompanying this guide can be found on the AJOPS YouTube channel: <https://youtu.be/NRizzIrHU6Q>. Please note that due to YouTube content restrictions, you may be required to sign in or create a login to access the video.



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