Facelifts and browlifts: Amelioration of scars

André Camirand MD, Jocelyne Doucet IL
Chirurgie Esthétique et Plastique, Montréal, Québec

As a person ages, the hairline recedes at the frontal and temporal regions. The brow lowers, and the hairline recedes; the resulting wide forehead gives the face a cadaveric look. In the temporal region, the distance between the brow and temporal hairs increases, ageing the face. Any incision behind the hairline increases these distances and further ages the patient. This is true for coronal, endoscopic and facelift incisions made behind the hairline. However, a hairline incision (a few millimeters behind the hairline) can reduce the width of the forehead or temporal area, and the resulting abundance of hair can give a look of youth. However, one must know how to exploit this alternative by obtaining less noticeable scars. We explain how to produce less obvious scars and provide examples of what can be accomplished.

In the literature, there are examples of physicians who have improved bad scalp scars by grafting hair follicles containing dermal grafts under the epidermis of healed scars (1). These grafts allow the hair growing through the epidermis to camouflage the scars. Some surgeons improve hairline scars by grafting hair. If grafts work, it is expected that flaps will work even better.

A top surgeon once suggested that bevelling incisions to preserve the deep follicles of the proximal flap would result in hair growing through and anterior to the scars. This surgeon meant that the skin should be incised with a bevel parallel to the hair follicles so as not to injure any follicles. The surgeon was misunderstood, and the incision was instead bevelled to contain cut hair follicles in the proximal flap, so that they would grow under the distal flap and in front of the scar (Figure 1). As a result, the facelift and browlift scars were dramatically improved (Figure 2).

Figure 1) Incision perpendicular to the hair follicles

Correspondence and reprints: Dr. André Camirand, 12245 Greenest Street, Suite 112B, Montréal, Quebec H4J 2J6. Telephone 514-745-1360, fax 514-745-5906, e-mail camirand@telus.net
Figure 2) Top left Reoperation of a bad facelift scar. Top right The result of reoperation one year after the operation. Bottom left The temporal scar before using the beveled incision. Bottom right The result of using the beveled incision.
Anatomically, the skin is composed of the epidermis and the dermis, which lie over the hypodermis. The epidermis is composed of many layers of cells: the stratum germinativum, the stratum spinosum, the stratum granulosum and the stratum corneum, which lies at the surface of the skin. The cells that make up the lower layer, the stratum germinativum, grow towards the skin’s surface and finally lose their nucleus to become a dead protective layer called the stratum corneum, which eventually sheds to be replaced with younger cells. This migration takes approximately 30 days under normal circumstances. However, the normal cycle is greatly accelerated under certain circumstances, such as injury, surgery, dermabrasion or incision. Under such circumstances the cycle may last from three to four days instead of the usual 30 days.

With dermabrasion of a man’s cheek, the epidermis and part of the dermis are eliminated. With a proper physiological dressing such as Vigilon (Bard Home Health Division, New Jersey) the skin re-epithelializes within three days. Also, because of the healing and inflammation, the local temperature increases and the beard grows faster than usual. This accelerated growth may be due to the same mechanism that is responsible for the accelerated migration of the cells from the stratum germinativum to the skin’s surface in three days to become the stratum corneum. With dermabrasion, removing the superficial part of the skin does not prevent the underlying hair from growing to the surface. Men continue to shave after a dermabrasion.

**MATERIALS AND METHODS**

An incision is made approximately 2 to 3 mm within the hairline (2-16), anteriorly at an angle of 30° to 45° to the proximal scalp (Figure 1). As the excessive skin is excised from the distal flap, it is incised with at least as much bevelling. This is imperative because hair will not grow through fat or hypodermis.

A micro W incision (Table 1) is made to increase the real length of the incision of the proximal flap by 45% (Figure 3) without increasing its apparent length, because a straight line is the shortest distance between two points. As the distal flap is pulled closed, the length of the distal flap is increased. As

### TABLE 1

**Advantages of W-plasty**

<table>
<thead>
<tr>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increases the real length of the proximal scar by 40% without increasing the apparent length</td>
</tr>
<tr>
<td>2. Decreases tension by 40%</td>
</tr>
<tr>
<td>3. Facilitates closure because the distal flap stretches by 30% to 40% because of the pull, resulting in no pleating and no dogears</td>
</tr>
<tr>
<td>4. Multiple hinges allow the scar to be mobile and stretchable with motion or facial expression</td>
</tr>
<tr>
<td>5. Improves neovascularization, as in Z-plasty, with less edema</td>
</tr>
<tr>
<td>6. Different tension and different points of the scar result in a more natural appearance</td>
</tr>
<tr>
<td>7. Breaks the hairline, resulting in a more natural appearance (the hairline is never linear)</td>
</tr>
</tbody>
</table>

![Mathematical formula demonstrating that a W incision with a 45° angle can lengthen the scar by 41%](image)
the distal flap is excised, the incision should not be W-plastied because this further increases the length of the distal flap, which is already lengthened by stretching (30% to 40%) when tension is placed on it. The surgeon should try to suture skin edges of the same length to prevent pleating and obtain a better closure (dog ears, when present, persist and must be avoided).

The W-plasty creates a multitude of hinges that make the scar mobile and more inconspicuous with facial motion and expression.

Increasing the length of the incision by 45% inevitably reduces the tension by 45% and furthermore improves the scar, the quality of which is inversely proportional to the tension of the level of the closure. Also, swelling at the level of the scar...
is reduced because W-plasty, as with Z-plasty, reduces the
"trap door" phenomenon and facilitates neovascularization,
which is believed to occur because bevelling of the incised
blood vessels increases the diameter of the cut vessels and
capillaries.

At the venous level, where pressure is low, the calibre of
vessels increases and venous return improves; the same
situation occurs in the capillaries. Increasing the calibre of ar-
teries lowers the pressure locally and improves the local he-
modynamic equilibrium.

It is very important to bevel the distal flap. The distal stra-
tum corneum behaves as a biological dressing, allowing the
proximal flap hair to grow for a few days as it is sheds off.

In the proximal flap, the cut hair shafts in the stratum spi-
nosium, the stratum granulosum and the stratum germinati-
vum do not stop growing because they are cut. On the
contrary, they migrate towards the surface more rapidly than
usual as the opposite cells of the distal flap migrate at the
same rate, which is faster than the usual rate due to the surgi-
cal stimulus.
ischemia interferes with the cellular response, and the result-
and hypochromic scar.

the follicles and the melanocytes; this would cause a hairless
not be used near the hair follicles because they can destroy

grows anterior to the incision. Cauterization and laser should
with one that is meticulously sutured, even if plenty of hair

is not reapproximated very well, it will never be comparable

layers of the proximal flap. The closure must be meticulous.

flap should be sutured opposite to the equivalent cellular

browlifts, the tension is applied to the galea.

The different cellular layers of the epidermis of the distal
flap should be sutured opposite to the equivalent cellular
layers of the proximal flap. The closure must be meticulous.

Because scalp hair, temporal or frontal, grows anteriorly if
the incision is made perpendicular to the skin’s surface, the
hair shafts that grow into and in front of the scar are incised
(Figure 4). However, if the incision perpendicular to the hair
is bevelled (Figure 1) (at an angle to the scalp surface), many
more hairs grow through the distal flap and camouflage much
more of the scar. In a double-blind study, incision perpen-
dicular to the hair follicles (Figure 5). An incision made parallel to
the hair follicles, although resulting in an acceptable scar, was
linear and regular compared with an incision made perpen-
dicular to the hair follicles. With the latter incision, the hair
grew anterior to the scar, which was invisible and nonlinear;
the hairline was more anterior, and it was not possible in
some cases to see any sign of a surgical scar. The abundance
of hair was confirmed with a biopsy (Figure 6) from both ap-

some cases to see any sign of a surgical scar. The abundance

the hairline was more anterior, and it was not possible in

grew anterior to the scar, which was invisible and nonlinear;
the hairline was more anterior, and it was not possible in

TABLE 2
To improve facelift or browlift scar
• Bevel the incision properly
• Bevel the distal flap equally
• Avoid tension by
  – removing excess subcutaneous fat
  – extensive undermining beyond the osseocutaneaus ligaments of
    Furnas (17)
  – applying tension mostly on the superficial musculo-aponeurotic
    system and platysma
  – using W-plasty incision
• Avoid contamination
  • Avoid laser or cautery, which can destroy hair follicles and
    melanocytes and cause local ischemia and scarification (hairless and
    achromatic)
  • W-plasty the proximal flap only (not the distal flap)
• Ensure closures are meticuous

properly bevelling incisions at an angle to the hair follicles of
the scalp can allow the hair to grow through and anteriorly to
the scar.

Figure 8) Facial rejuvenation showing inconspicuous scars in the tem-
poral and postauricular area

Tension (Table 2) should be avoided because the local
ischemia interferes with the cellular response, and the result-
ing scarification is unesthetic. Contamination and infection
also interfere with the normal healing process. If the wound
is not reapproximated very well, it will never be comparable
with one that is meticulously sutured, even if plenty of hair
grows anterior to the incision. Cauterization and laser should
not be used near the hair follicles because they can destroy
the follicles and the melanocytes; this would cause a hairless
and hypochromic scar.

Tension on closure is improved by removing the excess
cervical fat, by extensive undermining beyond the osseocuta-
nous ligaments of Furnas (17), by putting tension on the su-

CONCLUSIONS
Properly bevelling incisions at an angle to the hair follicles of
the scalp can allow the hair to grow through and anteriorly to
the scar.
Figure 9) Invisible scars in the temporal and postauricular area after a facelift operation
REFERENCES