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Transfollicular subcutaneous forehead and brow lift

Lifting transfollicular subcutâneo do terço superior da face

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ABSTRACT

The appearance of the upper third of the face is a key indicator of aging and plays a significant role in communication by conveying non-verbal information. Different surgical techniques have been described for the rejuvenation of this region, with transfollicular subcutaneous forehead and brow lift enabling excellent results by lowering the hairline, reducing forehead height, softening forehead and glabellar rhytids, raising the eyebrows, and improving pseudodermatochalasis. This technique offers the advantages of reduced risk of nerve injury and excellent scalp scar camouflage.

Keywords: Dermatologic Surgical Procedures; Rejuvenation; Rhytidoplasty; Skin Aging; Surgery, Plastic.

RESUMO

A aparência do terço superior da face é um dos principais indicadores de envelhecimento e desempenha um papel significativo na comunicação ao transmitir informações não verbais. Diferentes técnicas cirúrgicas têm sido descritas para o rejuvenescimento dessa região, com o lifting transfollicular subcutâneo do terço superior da face possibilitando excelentes resultados ao abaixar a linha de implantação capilar, reduzir a altura da fronte, atenuar rítmides frontais e glabulares, elevar as sobrancelhas e melhorar a pseudodermatocálase. Essa técnica apresenta as vantagens de menor risco de lesão nervosa e excelente camuflagem da cicatriz no couro cabeludo.

Palavras-chave: Cirurgia Plástica; Envelhecimento da Pele; Procedimentos Cirúrgicos Dermatológicos; Rejuvenescimento; Ritidoplastia.

How do I do it?

Authors:

Anna Karoline Gouveia¹
Guillermo Loda¹
Marcela Benez¹
Anna Beatriz Loda¹

¹ Santa Casa de Misericórdia do Rio de Janeiro, Instituto de Dermatologia Professor Rubem David Azulay, Rio de Janeiro (RJ), Brazil

Correspondence:

Anna Karoline Gouveia
E-mail: a.karolineoliveira@gmail.com

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INTRODUCTION

The appearance of the upper third of the face is a key indicator of aging, characterized by rhytids, forehead and brow ptosis, and changes in the periocular region, which result from bone resorption, transmission of muscle action to the skin surface, and skin-ligamentous laxity. The upper third of the face also plays a significant role in communication by conveying non-verbal information. Regarding the aesthetics of this region, young men typically have straighter horizontal brows positioned at the level of the orbital rim. In young women, the brows are usually positioned above the level of the orbital rim, featuring a fuller, more quadrangular medial portion and becoming progressively arched and thinner toward the lateral portion, with the brow apex often coinciding with a vertical line drawn from the lateral corneal limbus. Aging leads to a progressive descent of the eyebrows, which can be positioned below the orbital rim, depending on the degree of aging.

Different surgical techniques have been described for the rejuvenation of this region, each with its own advantages and limitations, which, combined with the surgeon's experience, will determine the choice of technique for each patient. While non-surgical treatments can be beneficial and used in combination, the most substantial and long-lasting results are only achieved with surgical lifting. We describe the transfollicular subcutaneous forehead and brow lift (TSFBL), a technique that allows rejuvenation of the eyebrow, glabellar, and forehead regions.

SURGICAL TECHNIQUE

With the patient seated, the incision line is marked. In the lateral third, a line with superior concavity below the eyebrow delineates the area of maximal elevation, where the detachment will be performed in the subcutaneous plane. In the medial region, where the supraorbital and supratrochlear nerves are located, a line with inferior concavity is marked above the eyebrow, serving as the lower limit of the detachment, with the aim of reducing the risk of nerve injury and avoiding over-elevation of the medial brow portion. In the glabellar region, a line with superior concavity is marked as a reference point for the lower limit of the detachment (Figure 1). The lateral limits are marked with a vertical line drawn at the level of the temporal crest. The scalp incision is marked approximately 5 mm posterior to the hairline, drawn in a jagged fashion to simulate the shape of the natural hairline (Figure 2). The procedure is performed under tumescent local anesthesia using an anesthetic solution consisting of 80 mL of 0.9% sodium chloride, 20 mL of 2% lidocaine, and 0.4 mL of 1 mg/mL epinephrine. The solution is injected subcutaneously along the previously marked area, and the total volume to be used depends on the extent of the frontal region. In our experience, this volume ranges from 60 to 80 mL. The incision and dissection plane give the procedure its name, TSFBL. The incision is made using a No. 11 blade, angled between 10 and 20 degrees relative to the horizontal plane. This angle allows for the hair follicles to be sectioned at different



FIGURE 1: Skin marking. Area of maximal elevation marked in the lateral third and inferior to the eyebrows with a line with superior concavity, indicating the inferior limit of the detachment in the subcutaneous plane. In the medial region, where the supraorbital and supratrochlear nerves are located, the inferior limit of the detachment is marked with a line with inferior concavity above the eyebrow. In the glabellar region, the limit of detachment is marked with a line with superior concavity. The lateral limits are marked with a vertical line drawn at the level of the temporal crest

heights, preserving part of the bulbs, which will allow for the most anterior follicles to grow in front of the scar (Figure 3), promoting effective scalp scar camouflage. These incision characteristics also produce very thin wound edges, contributing to a better aesthetic outcome. The dissection is performed in the subcutaneous plane, maintaining fat both on the roof and floor, thus creating an adipocutaneous flap and avoiding damage to the underlying frontalis muscle. By respecting the uppermost marking line in the proximal region of the eyebrows, over-elevation of their medial portion is avoided, while the lower dissection of the glabella and lateral portions allows elevation of the tail of the brow and correction of glabellar ptosis, restoring a more you-



FIGURE 2: The scalp incision is marked approximately 5 mm posterior to the hairline, drawn in a jagged fashion to simulate the shape of the natural hairline



FIGURE 3: Dermoscopy showing hair growth in front of the scar

thful appearance. Because this subcutaneous technique allows direct visualization, there is a lower risk of injury to the primary sensory and motor nerves in the glabellar region compared with endoscopic and suprapariosteal techniques. The lateral limit of

the detachment should not exceed the temporal crest to avoid injury to the temporal nerve. The superficial musculoaponeurotic system (SMAS) fibrous septa connect the frontalis muscle to the forehead skin. During dissection in the subcutaneous plane, most of these septa are disrupted, resulting in a significant improvement in forehead and glabellar rhytids. While the depressor supercilii muscles can be sectioned under direct visualization, we have chosen not to approach them due to the lack of superiority in the observed results, as well as not to increase the risk of complications. Once the dissection is complete, the flap is pulled over the scalp and 3 vertical incisions are made (back cut): one in the central region of the forehead, which corresponds inferiorly to the glabella; and two paramedian incisions, which correspond to the point of maximal brow elevation, often coinciding with a vertical line drawn from the lateral corneal limbus. The length of these incisions ranges from 15 to 30 mm, depending on the eyebrow position, the distance between the scalp and eyebrows, and the surgeon's experience. In our practice, a length between 20 and 25 mm is adequate in most cases. The flap is secured with key sutures placed between the distal part of these incisions and the scalp, using simple 5.0 nylon sutures (Figure 4). Excess skin is then removed using a No. 11 blade, following the same design and angle of the scalp incision, and the wound edges are gently closed using simple 5.0 nylon sutures (Figure 5). The procedure is completed with the application of a pressure dressing, and the patient is reassessed within 48 hours. After this period, dressings are no longer required. The sutures are removed after 10 to 14 days (Figure 6).



FIGURE 4: Three vertical incisions (back cut) and flap fixation with key sutures placed between the distal part of these incisions and the scalp, using simple 5.0 nylon sutures



FIGURE 5: After excess skin removal, following the same design of the scalp incision

DISCUSSION

There are several surgical options for the treatment of brow ptosis, which can be didactically divided into direct visualization, transblepharoplasty, and endoscopic techniques. The di-

rect visualization techniques vary based on the incision location, including excisions performed just above the eyebrows (Castañares technique), in the mid-forehead, pretrichial, coronal, and transfollicular. Endoscopic brow lift is performed in the subgaleal or subperiosteal plane and uses bone fixation materials, resulting in smaller incisions and reduced postoperative edema, dysesthesia, and alopecia. However, this technique requires specialized equipment, is more expensive, has a steeper learning curve, and may offer less long-lasting results compared with direct methods, since the amount of elevation is determined by flap release and fixation, without direct skin excision.¹ It is particularly indicated when there is brow asymmetry.² The transpalpebral approach involves securing the brow tissue, muscles, and subcutaneous fat to the periosteum through an upper blepharoplasty incision. This can be performed intraoperatively during an upper blepharoplasty when a traditional brow lift is not planned. Mokhtarzadeh et al., evaluating 98 patients who underwent internal fixation during blepharoplasty, identified an average elevation in central/lateral brow position of 1.47 to 2.29 mm over a follow-up of 4-5 months.³ The direct brow lift includes variations of bilateral elliptical incisions just above the eyebrows (including the Castañares technique), hiding the scar along the hairline, or midfrontal incisions to camouflage scars within horizontal forehead rhytids. These two types are particularly suitable for patients with unstable hairlines. The technique can be modified to address lateral ptosis alone or to compensate for asymmetries. These techniques may also lower the hairline by shortening the forehead. While dissection in the subcutaneous plane can be performed medially



FIGURE 6: Results on postoperative day 15



FIGURE 7: Results 1 year after treatment (same patient as in figure 1). Note the significant improvement in forehead and glabellar rhytids, eyebrow position, and pseudodermatochalasis. The resultant scar is a thin hypochromic line, only visible with the hair pulled back

to improve glabellar rhytids, it does not improve forehead rhytids, and the scar may remain visible for a long period.³ The coronal brow lift, an open technique using an ear-to-ear scalp incision, elevates the hairline but can cause alopecia and nerve damage. The pretrichial approach involves an incision on the forehead, just outside and below the scalp. Unlike the coronal brow lift, this technique lowers the hairline by shortening the forehead, but it can lead to the same complications as the other methods, with the added disadvantage of leaving a more visible scar. The transfollicular approach can lower the hairline, reduce forehead height, and soften forehead and glabellar rhytids, elevating the entire upper third of the face, with improvement in pseudodermatochalasis. If excess upper eyelid skin persists after TSFBL, an upper blepharoplasty can be performed in the same surgical procedure to complement the results. In our experience, we prefer performing blepharoplasty at a later stage to obtain a more accurate assessment of the amount of excess skin. The appearance of the resultant scar is satisfactory, resulting in a thin hypochromic line, only visible with the hair pulled back (Figure 7). Overall, all surgical brow elevation techniques have a low incidence of complications, with the most common being hematoma, dama-

ge to sensory and motor nerves leading to dysesthesia, paresis, asymmetry, alopecia, and unsightly scarring. Currently available data do not demonstrate the superiority of one technique over another, nor of endoscopic techniques over direct visualization techniques.^{4,5}

CONCLUSION

The various brow lifting techniques have their own peculiarities regarding specific indications, execution methods, and contraindications, which will determine the choice of the optimal procedure for each patient. In patients with high hair density in the frontotemporal region, our technique of choice is the transfollicular subcutaneous approach due to the satisfactory and long-lasting results in lifting the entire upper third of the face, associated with improvements in rhytids, excellent scalp scar camouflage, safe dissection in the subcutaneous plane under direct visualization, and the possibility to be performed with low-cost materials, compared with endoscopic techniques. The main contraindications to this approach are unstable hairlines and alopecia in the frontotemporal region. ●

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AUTHOR'S CONTRIBUTION:

Anna Karoline Gouveia  ORCID 0000-0001-6258-9824

Conception and design of the study; preparation and writing of the manuscript; intellectual participation in propaedeutic and/or therapeutic approach to studied cases; critical review of the literature.

Guillermo Loda  ORCID 0000-0003-0511-0025

Approval of the final version of the manuscript; conception and design of the study; effective participation in the conduct of the study; intellectual participation in propaedeutic and/or therapeutic approach to studied cases; critical revision of the manuscript.

Marcela Benez  ORCID 0000-0003-0289-5656

Approval of the final version of the manuscript; intellectual participation in propaedeutic and/or therapeutic approach to studied cases.

Anna Beatriz Loda  ORCID 0009-0000-7319-2531

Intellectual participation in propaedeutic and/or therapeutic approach to studied cases.