CLINICAL NOTE

Endoscopic Excision of a Forehead Mass

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Endoscopic applications in facial plastic surgery have recently increased with the advent of new instrumentation and as surgeons have become more accustomed to their use. We report the first case (to our knowledge) of an endoscopic removal of a forehead soft tissue mass. The endoscopic approach allows the surgeon access to the forehead area with placement of a skin incision in the hair-bearing scalp. This type of approach is especially of value in patients with a predisposition to unusual scar formation or in those with smooth skin in which a direct incision would yield a noticeable scar.

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The frequency of endoscopic procedures in the head and neck has increased with improved endoscopic technology. The applications of endoscopy to facial plastic surgery have similarly risen. The current technology has allowed the surgeon an indirect access to surgical sites with selective incision placement for the best scar camouflage. In the head and neck, the most frequent use of endoscopy for cosmetic procedures is the endoscopic forehead lift. There are many reports of various approaches and refinements in the endoscopic forehead lift procedure.[1-5] Endoscopy-assisted facial skeletal recontouring has been mentioned in the literature[6] and has been performed by 2 of us (M.S.K. and J.R.T.) as well. A depressed frontal sinus fracture reduced by endoscopy was recently reported in the literature.[7] However, to our knowledge, there are no reports of an endoscopic excision of a forehead soft tissue mass in the literature. We used an endoscopic approach for the excision of a soft tissue forehead mass. The excision was accomplished by a single, small, scalp incision, which left an undetectable scar. The endoscopic forehead approach is indicated for removal of benign subcutaneous lesions in patients with hair on the frontal scalp area.

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To our knowledge, this is the first report of an endoscopic removal of a forehead mass. The results are significantly better than those with the conventional direct excision or bicoronal scalp flap approaches.[8] The patient is left with a small, well-hidden scar.

REPORT OF A CASE

A 23-year-old black woman presented with a 3-year history of a slowly enlarging forehead mass. She was noted to have a smooth complexion with no visible skin rhytids, not uncommon for her age group. She did have hypopigmented scars located elsewhere on her body. No predisposition to keloid formation or hypertrophic scarring was noted on history or physical examination. She denied any history of trauma to the forehead. On physical examination, the forehead mass was 3.0 cm in diameter, soft, fixed, and nontender (**Figure 1**). No skin surface abnormalities were noted overlying the mass. A computed tomographic scan obtained previously revealed no intracranial extension or underlying bony erosion.

The patient was treated with an endoscopic excision of the forehead mass under general anesthesia. The endoscopic unit consisted of a camera, xenon light source, video monitor, recorder, and printer. The position of the supratroch-

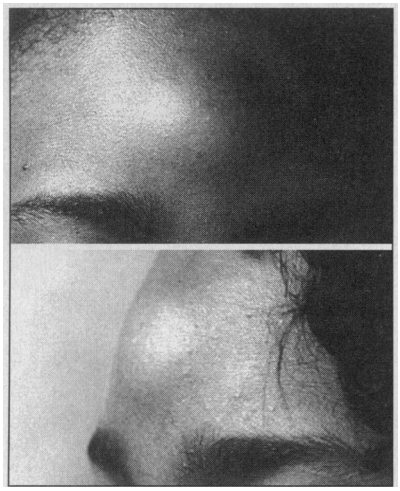

Figure 1. *Preoperative photographs of a patient with a 3-year history of a slowly growing forehead mass.*

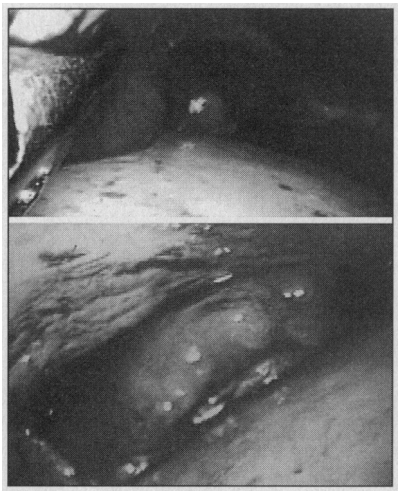

Figure 2. *Top, Endoscopic view of the incised and retracted periosteum and underlying frontal bone. Bottom, Endoscopic view of the mass during resection.*

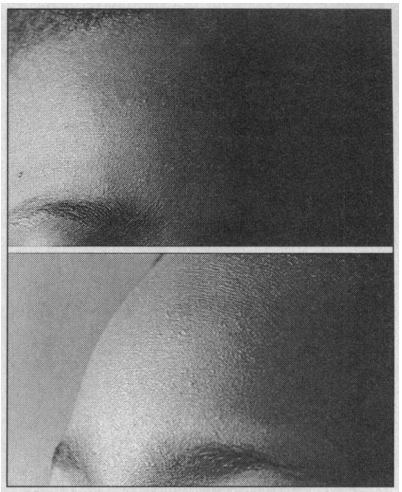

Figure 3. *Postoperative photographs of the patient taken at the 4-month follow-up visit demonstrating the return of a normal frontal contour with no visible scars.*

lear and supraorbital neurovascular bundles and mass borders and the proposed scalp incision were marked on the skin. A local anesthetic consisting of 1% lidocaine and 1:100 000 epinephrine was injected at these sites. The scalp and the facial skin were prepped, and the surgical areas were draped out. A 2.5-cm horizontal midline incision was made approximately 2 cm posterior to the anterior hairline. A scalpel was used to make a beveled incision through the scalp and periosteum (in the direction of the hair follicles). A periosteal elevator was used to dissect the periosteum off the frontal bone. A subperiosteal pocket was extended 2 cm around the border of the mass. A sheathed 4-mm, 30° rigid endoscope was introduced into the pocket using the same incision, allowing visualization of the intact periosteum underlying the mass. The superior border of the mass was localized by visualizing the underlying periosteum while placing digital pressure on the skin superficial to the mass. An incision was made on the periosteum that roughly matched the border of the overlying mass, except that one lateral attachment was maintained in the periosteum. The lateral periosteal attachment facilitated the subsequent replacement of the periosteum in its anatomic orientation over the bone after the mass was removed. The margin of the mass was identified and dissected from the surrounding subcutaneous tissue using the endoscopic grasper for traction and the scissors for sharp dissection (**Figure 2**). Feeding vessels were cauterized with the sheathed grasper and then cut. The endoscope provided an excellent view of surrounding neurovascular structures. Although the relative location of the endoscope and dissection instrument tips could be directly visualized in the pocket, occasional confirmation by external visualization on the skin surface was an added safety measure. Any torquing motion or pressure against the overlying skin surface was avoided to prevent possible skin breakthrough and injury to overlying nerves. After the mass was circumferentially dissected from the surrounding tissue, the wound was inspected for any bleeding. The incised periosteum was smoothed out over its underlying bone, and the scalp incision was reapproximated with deep and superficial sutures. Pressure was applied in a rolling fashion to the forehead skin from the orbital rim to the superior scalp incision to remove any air and blood remaining in the subperiosteal pocket. A pressure dressing was placed on the forehead to encourage periosteal reapproximation with the underlying bone and to discourage hematoma. After endoscopic excision of the mass, the patient's forehead was once again smooth and contoured (**Figure 3**). The pathologic diagnosis was a benign lipoma.

COMMENT

In an effort to minimize a scar incurred as a result of sugical incision, surgeons have previously considered the shape of an incision, location of incision in relaxed skin tension lines, and postoperative refinement of scars by dermabrasion or surgical revision.[9] Now, with the recent introduction of endoscopic instrumentation for surgical excision and cosmetic procedures, the surgeon has another option in his or her armamentarium for decreased incision size and selective incision placement to improve incision camouflage. We report what is to our knowledge the first case of endoscopic excision of a facial soft tissue mass. Some considerations regarding patient selection and counseling are warranted. Similar to other masses that are excised endoscopically, the mass should be benign, since malignant lesions require a wide excision and can potentially seed. In our patient, who had a subgaleal lipoma, the endoscopic approach not only resulted in a better scar, it also provided more immediate access to the mass via a subperiosteal dissection than through a direct excision.[10,11] In addition to soft tissue masses, benign bone irregularities may be reduced through the subperiosteal approach.[6] If the patient has deep or multiple skin furrows that would camouflage a skin incision well, then a direct approach may be pre-

ferred. However, if the patient has any predisposition to skin pigment changes, keloid, or hypertrophic scarring, then placing the incision in hair-bearing scalp is ideal. Extra thought should be given to incision placement in young male patients, whose hairlines may change dramatically with age. The patient should be counseled preoperatively and consent to a possible open excision of the mass if the endoscopic approach is not successful.

Similar to endoscopic forehead lifts, a subgaleal or subperiosteal approach can be used for excision of forehead masses. The subperiosteal approach is advantageous for several reasons. It is less apt to cause bleeding or straying from the dissection plane and is less likely to cause nerve injury in the inferior or lateral forehead areas of dissection. Depending on the location of the forehead mass, a single or an additional incision may be needed for access of endoscopic instrumentation. For masses in the medial third of the forehead, a single horizontal scalp incision should suffice. If the mass is more lateral, a 1-cm incision posterior to the frontal or temporal hairline can be used for access of the dissection instruments. If the lateral incision is needed, the plane of dissection should lie on the deep temporal fascia to avoid the frontal branch of the facial nerve. In this case, the medial subperiosteal pocket and the lateral dissection plane can be joined at the anterior temporal line (the anterior attachment of the temporalis fascia). All scalp incisions are incised with the scalpel beveled in the direction of the hair follicles, and bipolar cautery is used for hemostasis with avoidance of hair follicles to prevent hair loss. Periodic intraoperative superficial digital palpation of the tip of the endoscope and its relative position to the mass and the orbital rim is helpful for confirming the location of dissection and for avoiding the orbit. In our patient, the absence of occipitofrontalis muscle fibers in the midline allowed direct access to the mass through a periosteal incision. More lateral masses may require a more sagittally placed skin incision and retraction or incision of the occipitofrontalis muscle. Low inferior masses may require dissection through, or retraction of, the corrugator muscle.

We suggest using an endoscopic approach for the excision of benign subcutaneous forehead masses. This technique provides good access with better scar camouflage and is especially useful in patients with a dense hairline. In male patients with a sparse hairline or receding hairline, the technique is still applicable; however, future hairline changes should be considered in the incision placement.

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