Single Port Endoscopy-assisted Excision of Forehead Lesions—An Innovative Way of Improving the Optical Cavity

Vairavan Narayanan, FRCS,* Ronie Romelean Jayapalan, MRCS,† Amritpal Singh, FRCS,* and Koh Kiok Miam, FRCS

Abstract: Exophytic lesions involving the face present with an undesirable esthetic deformity and usually necessitate surgical excision. Conventional open excision techniques may lead to scar formation or pigmentation issues postoperatively. Minimally invasive endoscope-assisted surgery will be able to overcome these problems. However, this technique is not widely used because of the limited optical cavity working space, which hinders good visualization. We describe a technique to improve the optical cavity workspace to enable adequate endoscope-assisted surgical excision of forehead lesions in 2 cases. Foley’s catheter and ribbon gauze were used in both cases to gain optical cavity workspace. The surgical technique is described in detail. One case had a frontal osteoma, whereas another was a nodular fasciitis of the forehead, confirmed by histology. Postoperative follow-up showed good outcomes at 1 year with no recurrences. Both patients were satisfied with the surgical and cosmetic outcomes. Endoscopic excision of a forehead lesion using the described technique is both safe and reliable. It is an excellent method for excising benign growths over the forehead while being cosmetically acceptable.

Key Words: Benign, endoscope, forehead, optical cavity, single port

METHODS

We describe 2 patients who presented with forehead lesions over the mid-frontal region. Both were female patients, aged 14 and 36 years, respectively. The first patient had a progressively enlarging lesion along the right superior temporal line of the mid-forehead, measuring 9 mm in diameter. The second patient had a progressively enlarging bony lesion 2 cm superior to the supraorbital notch, measuring about 1.2 cm in diameter. Clinical examination and imaging were suggestive of an exophytic soft tissue lesion below the subcutaneous tissue for the first case, whereas the second case was consistent with a frontal osteoma. Both the lesions were firmly adherent to the underlying bone.

The procedure utilized a 30-degree Karl Storz 4.5-mm endoscope, periosteal elevator, Midas Rex Legend high-speed drill, Legend Ball or Match Head-Fluted 2.0 mm burr, ribbon gauze, and Foley catheter. A high-definition (HD) endoscope monitor was used for visualization.

OPERATIVE PROCEDURE

Both surgeries were performed under general anesthesia. The lesion was marked out preoperatively. A linear 1.5-cm incision was marked 2 cm posterior to the hairline (Fig. 1A). The hair along the incision was clipped, cleaned, and draped in a sterile manner.

Local anesthesia (Marcaine 0.5%-adrenaline) was infiltrated along the incision. A size 11 blade was used to make the incision deep to the galea aponeurotica. A periosteal elevator was used to elevate the subperiosteal layer through a relatively bloodless plane toward the marked lesion.

Once the periosteum was elevated, 2 size 16 Foley catheters were inserted and inflated with air within the subperiosteal plane to create the initial cavity (Fig. 1B). An endoscope was introduced into the space created to visualize the target lesion (Fig. 1C). To keep the optical cavity open without overzealous retraction, ribbon gauze...
FIGURE 1. (A) The yellow arrow depicts the forehead lesion, whereas the white arrow depicts the incision marking. (B) The Foley catheter (red arrow) inserted within the subperiosteal plane and inflated creating the optical cavity. (C) The soft tissue lesion (yellow arrow) densely adherent to bone visualised with Foley catheter (black arrow) on the right. (D) The frontal osteoma (black arrow) visualised while the optical cavity remained open with the ribbon gauze packing (yellow arrow). (E) The incision (black arrow) closed with absorbable subcuticular sutures for optimal cosmetic outcome. (F) A pre (yellow arrow) and post (red arrow) computed tomography of brain demonstrating complete excision of the lesion.

RESULTS

Two frontal lesions were removed. The soft tissue lesion was confirmed as nodular fasciitis by histology. The duration of each surgery was 30 minutes on average. Both patients were discharged well 1 day post surgery.

The patients were followed up for 1 year postoperatively. There were no complications observed. No evidence of residual mass, scalp anesthesia, or paresthesia was noted. Both patients were happy with the procedure and the cosmetic outcome. Pre and postoperative scans confirmed complete excision (Fig. 1F).

DISCUSSION

Endoscopic excision of forehead lesion was first described in the literature in 1995, by Onishi et al. Since then, the technique had been refined and has been found to be an effective alternative to conventional open approach. This minimally invasive technique offers excellent cosmetic results by allowing the surgeon to excise forehead lesions through a well-hidden incision beyond the hairline.

The effectiveness of this approach is largely dependent on the creation of a good optical cavity, which in turn provides sufficient visualization and space for excision maneuvers and prevents entanglement. Some surgeons prefer a 2- or 3-port approach for these reasons. Recently, 2 reports were published describing a single-port endoscopic excision carried out using lignocaine hydrodissection. This was intended to create a potential space around the lesion, thus reducing the risk of entanglement and provide good visualization. As opposed to hydrodissection, we have improvised the technique by expansion of subperiosteal space using Foley catheter allowing the periosteum to be stripped away safely without much blood loss. Subgaleal dissection is completely avoided; thus, in turn this carries an advantage of preserving neurovascular structures of the scalp. Injury to the deep branch of supraorbital nerve during endoscopic approach is a possible complication during supraperiosteal dissection. This often results in debilitating scalp numbness and paresthesia. Bearing this in mind, we have averted the risk of supraorbital nerve injury by our expansion technique.

Both of our patients did not develop the aforementioned complications. No hematoma collection within the potential space created during surgery. There was no bony defect post excision needing repair. Once complete, the endoscope was removed, and the wound was packed on either side of the lump (Fig. 1D). The Foley catheter was then removed. This maneuver provided the much-needed working space to excise the lesion by holding up the overlying scalp (Supplemental Video, Supplemental Digital Content, http://links.lww.com/SCS/A404).

Subsequently, the frontal osteoma arising from the frontal bone was drilled off using a high-speed drill. The soft tissue lesion in the second case was excised with ease and was sent for histopathological examination. There was no bony defect post excision needing repair. Once complete, the endoscope was removed, and the wound was closed primarily with absorbable sutures (Fig. 1E). A compression dressing was applied to the wound for the first 24 hours to prevent any hematoma collection within the potential space created during surgery.

REFERENCE

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