



ORIGINAL ARTICLE

Single-port endoscope-assisted resection of forehead osteoma



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KEYWORDS

endoscopic resection;
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Summary *Background/Introduction:* Endoscope-assisted resection of forehead osteoma is a well-established procedure with the advantages of improved safety, accessibility, and visualization of the mass, avoidance of visible scarring or pigmentation on the forehead, and reduced risk of bleeding, hematoma formation, nerve injury, or paresthesia. The potential drawbacks are alopecia on the scalp incision sites and injury of the deep supraorbital nerve branch.

Purpose/Aim: This study aimed to evaluate the feasibility of using a single scalp access point to remove forehead osteomata.

Methods: From 2003 to 2008, 13 patients diagnosed with forehead osteoma were retrieved from the pathology database of Taipei Veterans General Hospital, Taipei, Taiwan. Ten of the 13 patients underwent endoscope-assisted resection of the osteoma with a single scalp incision. Retrospective data collection and chart reviews were performed.

Results: The mean age of patients undergoing the operation was 49 years. The mean size of the osteoma was 13.5 mm and the mean operative time was 27 minutes (25–30 minutes). No complications such as hematoma, alopecia, nerve injury, or infection were identified and the patients were satisfied with the esthetic results. Mean follow-up duration was 76.3 months (63–122 months).

Conclusion: Removal of forehead osteoma from a single remote access with the aid of endoscopy is a safe and effective alternative. It can achieve the same esthetic and therapeutic results as the conventional two- or three-port approach without increasing the operative time or morbidities.

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Conflicts of interest: The authors declare that they have no conflict of interest.

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1. Introduction

Endoscope-assisted resection of forehead masses is a well-established, widely accepted procedure. This technique is used to treat lesions including lipoma, hemangioma, dermoid cyst, epidermal cyst, neurofibroma, and osteoma.¹ In comparison with simple direct excision of the forehead mass, forehead endoscopic surgery has advantages in safety, accessibility, visualization of the mass, avoidance of visible scar or pigmentation on the forehead, reduction in the risk of bleeding, hematoma formation, nerve injury, and paresthesia. Osteoma is a benign osseous tumor. It is a protruding mass and easily identified in the forehead. It is fixed, nontender, and slow growing. Most of the time, it is asymptomatic and can be differentiated from lipoma, hemangioma, or other soft tissue tumors by physical examination.¹ It is juxtacortically located and can be separated from the underlying normal frontal bone easily.² The incidence of forehead osteoma is low (0.014–0.43%) and the reported average size is small.^{1–3}

The increasing number of reports of endoscope-assisted forehead has indicated that endoscopy is important for the treatment of forehead soft tissue tumors. Because of the unique location and characteristics of forehead osteoma, experienced surgeons can diagnosis this condition preoperatively and perform superficial osteotomy from remote access with the aid of endoscopy.^{1–4}

The supraorbital nerve is an important sensory nerve in the forehead and scalp, which is at risk in many forehead surgeries. Injury to the deep branch of the nerve will result in scalp numbness and paresthesia, which is a distressful sequela for both patients and surgeons. Theoretically, surgeons should be able to use their understanding of anatomy and function to avoid injury to the nerve.⁵ However, the deep branch of the supraorbital nerve is vulnerable in forehead endoscopic surgeries, and caution should be exercised to avoid injury to the nerve. For endoscope-assisted osteoma resection, two- or three-port approaches are routinely suggested with a mean operative time of around 15–30 minutes.^{2,4,6–9} However, our experience has shown that a single port is enough for the resection of an osteoma. The fewer incision sites needed may also be instrumental in minimizing the risk of injury to the supraorbital nerve. In our hospital, most forehead osteomata have been excised through single remote scalp incision since 2003, and we here describe our experiences.

2. Materials and methods

Records of 13 patients diagnosed with forehead osteoma from 2003 to 2008 were retrieved from the pathology database of Taipei Veterans General Hospital, Taipei, Taiwan. Retrospective data collection and chart review were performed. Three were removed by the direct approach and were excluded.

Forehead osteoma was diagnosed from history and physical examination. Sonography was performed in uncertain cases to rule out soft tissue tumors. None of the lesions was larger than 3 cm in diameter. The presurgery medications prescribed included midazolam (Dormicum; Roche, Basel, Switzerland) 7.5 mg and tramadol

(Grünenthal, Aachen, Germany) 50 mg administered via the oral route 60 minutes before surgery, and regional block of the supraorbital nerve was routinely used. After adequate sensory block, the planned vertical incision line of about 2–3 cm in length was drawn above the hairline and infiltrated with 2% xylocaine with 1:200,000 epinephrine. The dissection area from the incision point to 1 cm distal to the osteoma with a width of around 2–3 cm was infiltrated with tumescent solution (0.1 mL epinephrine 1 mg/mL, 4 mL 2% xylocaine, and 2 mL 7% sodium bicarbonate added to 100 mL Ringer's lactate solution) subperiosteally (Figure 1). After gentle massage of the infiltrated area for a few minutes, a vertical scalp incision about 2–3 cm in length was made directly to the level of the bone. Subperiosteal dissection straight towards the osteoma with periosteal elevation can be performed under the guidance of the fingers of the opposite hand.^{3,4} Total elevation and separation of the tumor from the surrounding soft tissue was easy in all cases, and this is the key to successful surgery. Endoscopic inspection was carried out after isolation of the tumor to confirm the diagnosis of osteoma and ensure adequate release of the tumor from other soft tissues.

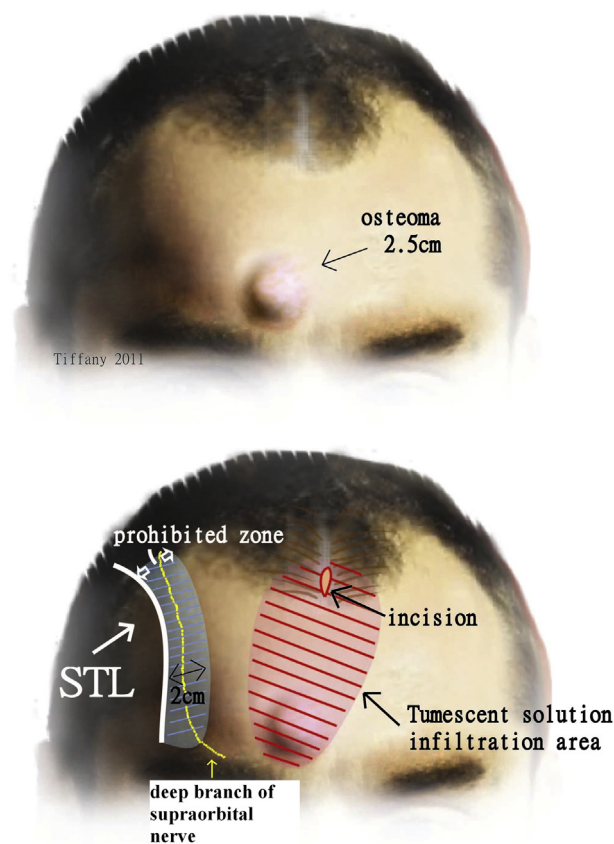


Figure 1 The planned vertical incision line (arrow) about 2–3 cm in length was drawn above the hairline and tumescent solution was infiltrated into the operative area (hatched zone from incision to 1 cm distal to the osteoma, with width around 2–3 cm). No incisions were made in the zone between the superior temporal line (STL) and a line 2.0 cm medial to the STL to avoid injury to the deep branch of the supraorbital nerve.

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