

Nodular Fasciitis of Temporal Fossa Involving the Facial Nerve: Postoperative Evaluation in the Telemedicine Era

Rebecca A. Compton, MD¹, Genevieve M. Spagnuolo, MBS², and Andrew R. Scott, MD^{1,3}

Keywords

nodular fasciitis, temporal fossa, pediatric head and neck surgery, neuroorrhaphy

Received January 19, 2022; accepted January 27, 2022.

Nodular fasciitis is a benign growth that results from fibroblast proliferation, often after trauma.¹ This typically arises from deep fascial layers and may mimic malignancy. In children, nodular fasciitis is most often reported in the head and neck.² Involvement of neurovascular structures such as the facial nerve has been described and in some cases has led to avoidance of surgical excision given risk of damage.³ Here, we present the case of a young man with a 1-month history of an enlarging, painless temporal mass. His postoperative course was timed with a global pandemic but was amenable to telemedicine and demonstrated full return of nerve function.

Case Report

Permission for presentation of this case and associated photographs was obtained from the patient and his family; this case report was exempt from review by the Tufts Health Sciences Institutional Review Board. A 17-year-old male with no prior medical history presented with a 1-month history of a rapidly enlarging, painless, and fixed mass in the left temple region. Physical examination demonstrated a 3-cm mass abutting the zygoma that was minimally mobile but seemed free from underlying bone. There was no history of antecedent surgery, trauma, or illness. Contrast-enhanced magnetic resonance imaging showed a 2.2-cm solid, enhancing mass superficial to the temporalis muscle. Fine-needle aspiration revealed spindle cells suspicious for a soft tissue tumor.

The patient was taken to the operating room for an excisional biopsy with preservation of the facial nerve if possible. The mass was located in a clean plane between the temporo- parietal and temporalis fascia and was easily dissected off the inferior border of the zygoma (**Figure 1A** and **1B**). The transverse facial artery was sacrificed, as it coursed directly through the mass and the frontal branch of the facial nerve was markedly

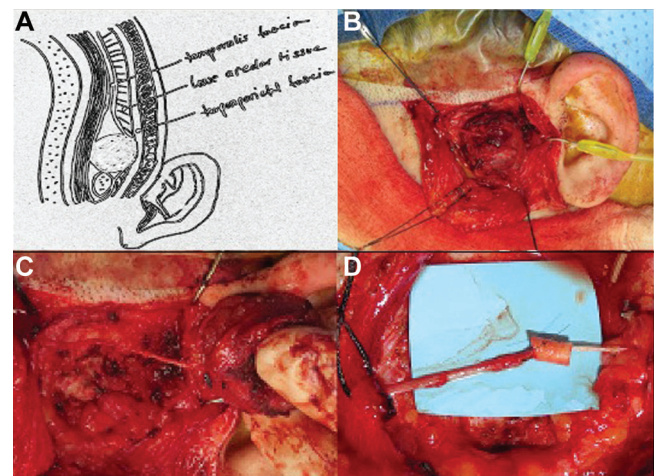


Figure 1. (A) Illustration of mass between the temporo- parietal and temporalis fascial planes. (B) Overview of temporal fossa mass. (C) Mass tethered by distal facial nerve. (D) Primary neuroorrhaphy of frontal branch of facial nerve.

stretched and encased by the mass (**Figure 1C**). Given the redundancy, a nerve segment was sacrificed to achieve complete resection, and a tension-free primary neuroorrhaphy was performed with a NeuraGen cuff (**Figure 1D**). Pathology demonstrated benign neoplastic growth of spindle cells surrounded by inflammatory cells and extravasated red blood cells in loose myxoid stroma, consistent with nodular fasciitis. Stains for markers of carcinogenesis, including S100, CD34, desmin, and BCL2, were negative. The patient was scheduled for

¹Department of Otolaryngology–Head and Neck Surgery, Tufts Medical Center, Boston, Massachusetts, USA

²School of Medicine, Tufts University, Boston, Massachusetts, USA

³Department of Pediatric Otolaryngology and Facial Plastic Surgery, Tufts Children’s Hospital, Boston, Massachusetts, USA

Corresponding Author:

Andrew R. Scott, MD, Department of Otolaryngology–Head and Neck Surgery, Tufts Medical Center, Box 850, 800 Washington St, Boston, MA 02111, USA.

Email: ascott@tuftsmedicalcenter.org





Figure 2. Postoperative follow-up at 6 months via telemedicine demonstrated normal facial nerve function.

postoperative follow-up to monitor facial nerve function; however, these appointments were canceled with the onset of the COVID-19 pandemic. A 6-month telemedicine visit was arranged, which demonstrated a well-healed surgical incision and restoration of frontalis function (**Figure 2**).

Discussion

Nodular fasciitis is a benign process that may demonstrate rapid growth and spontaneous resolution in some cases.⁴ If suspicion for malignancy is low, optimal management may be incisional biopsy with observation. The rapid rate of growth, location, and histologic spindle cell proliferation confused this clinical picture with malignancy, prompting full excision with transection of the transverse facial artery and frontalis branch of the facial nerve due to their intimate association with the mass. Tension-free primary neuroorrhaphy offers a high rate of functional restoration. Additionally, the patient's age coupled with the redundancy of the frontal branch likely contributed to the favorable outcome. NeuraGen technology has been described for repair of peripheral nerves in other pediatric patients.⁵

Additionally, this case was complicated by the onset of the COVID-19 pandemic shortly after surgery. Elective clinical activities were abruptly canceled, and care providers were deployed to other units, disrupting routine outpatient management. Fortunately, the benign diagnosis of nodular fasciitis was delivered via telephone to a relieved patient and his family. His follow-up was easily adaptable to telemedicine, which allowed for visualization of a well-healed incision and intact facial nerve. Many clinical resources were focused on the pandemic, but care of otolaryngology patients never ceased and, in some instances, unveiled the adaptation of new technology to the specialty.

Conclusion

Nodular fasciitis may mimic soft tissue malignancy with its rapid growth, histologic spindle cell proliferation, and involvement of

neurovascular structures. We present a case of this entity for which complete surgical excision with transection and primary neuroorrhaphy of the facial nerve was performed due to concern for malignancy. Further improvisation was required due to a global pandemic, but follow-up visits were converted to a virtual format and revealed effective evaluation of a satisfying postoperative result.

Author Contributions

Rebecca A. Compton, substantial contributions to conception and design; drafting and revising the article critically for important intellectual content; final approval of the version to be published; agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved; **Genevieve M. Spagnuolo**, substantial contributions to conception and design; drafting and revising the article critically for important intellectual content; final approval of the version to be published; agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved; **Andrew R. Scott**, substantial contributions to conception and design; drafting and revising the article critically for important intellectual content; final approval of the version to be published; agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Disclosures

Competing interests: None.

Sponsorships: None.

Funding source: None.

References

1. Hseu A, Watters K, Perez-Atayde A, Silvera VM, Rahbar R. Pediatric nodular fasciitis in the head and neck: evaluation and management. *JAMA Otolaryngol Head Neck Surg*. 2015;141(1):54-59.
2. DiNardo LJ, Wetmore RF, Potsic WP. Nodular fasciitis of the head and neck in children: a deceptive lesion. *Arch Otolaryngol Head Neck Surg*. 1991;117(9):1001-1002.
3. Bennett S, Hutson K, Ajayi O, Hilger A. Nodular fasciitis of the parotid gland engulfing the facial nerve: a conservative approach. *BMJ Case Rep*. 2019;12(10):1-3.
4. Stanley MW, Skoog L, Tani EM, Horwitz CA. Nodular fasciitis: spontaneous resolution following diagnosis by fine-needle aspiration. *Diagn Cytopathol*. 1993;9(3):322-324.
5. S n s FM, Catena N, S n s J. Use of tubulization (nerve conduits) in repairing nerve defects in children. *Indian J Orthop*. 2015;49(5):554-560.