# Traumatic neuroma in the left temporal region of a pediatric patient. A case report

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Case Report

Plastic Surgery

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**Background:** Traumatic neuromas are benign, non-neoplastic lesions that develop as a result of disorganized regeneration of a peripheral nerve following nerve injury. They most commonly occur after trauma, surgical procedures, or amputations and predominantly affect the extremities, while their occurrence in the craniofacial region is rare, especially in pediatric patients. We present the case of a previously healthy 13-year-old female with progressive pulsatile headache in the left temporal region, associated with nausea, vomiting, and a palpable mass, without a history of trauma or surgery. Contrast-enhanced computed tomography revealed a well-defined 1.7 cm subcutaneous nodule with no evidence of intracranial extension. Complete surgical excision of the lesion was performed, and histopathological examination confirmed the diagnosis of traumatic neuroma by demonstrating a disorganized proliferation of neural structures embedded in fibroadipose tissue and skeletal muscle. The patient had a favorable postoperative course, with no complications and complete resolution of symptoms. This case highlights the importance of considering traumatic neuroma in the differential diagnosis of painful masses in the temporal region, even in pediatric patients without an identifiable history of nerve injury. It also underscores that complete surgical excision remains an effective therapeutic option for symptomatic lesions and contributes to the limited literature on this rare entity in pediatric craniofacial locations.

**KEYWORDS:** Traumatic neuroma, Temporal region, Peripheral nerve tumor, Pediatric patient, Surgical excision, Neuropathic pain.

Traumatic neuromas are benign, non-neoplastic lesions that develop as a result of disorganized axonal regeneration after injury to a peripheral nerve. Histologically, they are characterized by a disorganized proliferation of axons, Schwann cells, and connective tissue, forming a nodular mass that may cause neuropathic pain, hypersensitivity, a positive Tinel sign, and functional limitation. Although they represent a reparative response to nerve injury, they are frequently associated with persistent pain and impaired quality of life (1,2).

Most traumatic neuromas occur after penetrating trauma, surgical procedures, or amputations and most commonly affect the extremities. In contrast, involvement of the craniofacial region is uncommon, and cases reported in the temporal region are exceptional, which may hinder clinical recognition and delay diagnosis (2–4).
Diagnosis relies primarily on a thorough medical history and physical examination, supported by imaging studies such as high-resolution ultrasound or magnetic resonance imaging to define the location and extent of the lesion. Nevertheless, definitive diagnosis still depends on histopathological examination, which demonstrates a disorganized proliferation of nerve fascicles embedded in fibrous tissue (2,3).

Treatment should be individualized according to symptom severity and lesion characteristics. Although conservative measures may be useful in patients with mild symptoms, surgery remains the treatment of choice in symptomatic or refractory cases. Several surgical techniques have been described, including simple excision, nerve transposition, nerve reconstruction, and more recent procedures such as targeted muscle reinnervation (TMR) and regenerative peripheral nerve interface (RPNI). However, a meta-analysis including 1,381 patients found insufficient evidence to demonstrate the superiority of one technique over another, underscoring the importance of appropriate patient selection and accurate diagnosis before surgical intervention (5).

We present the case of a 13-year-old female patient with a traumatic neuroma located in the left temporal region, with no known history of trauma or prior surgery, treated by complete surgical excision. Given its unusual location and the absence of an identifiable triggering factor, this case highlights the importance of including traumatic neuroma in the differential diagnosis of painful masses in the temporal region, even in pediatric patients without an obvious history of nerve injury.

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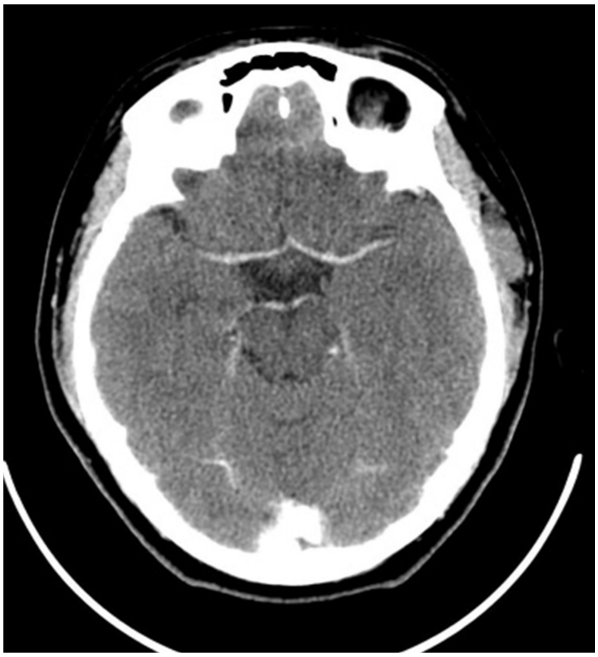

**Figure 1:** Contrast-enhanced computed tomography (CT) scan of the head demonstrating a mass in the left temporal region.

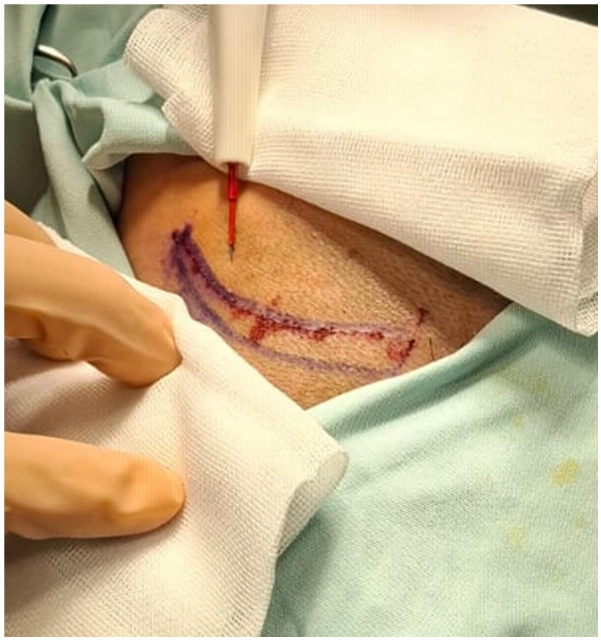

**Figure 2:** Intraoperative incision marking in the left temporal region.

## Case report

We present the case of a 13-year-old female patient, previously healthy, who began experiencing a pulsatile headache localized to the left hemicranium in November 2025. This was later associated with nausea, vomiting of gastroalimentary contents, and the progressive appearance of a palpable mass in the left temporal region. The patient denied any history of craniofacial trauma, surgical procedures, or other prior interventions in that area.

She was initially evaluated by the Pediatrics service, where laboratory studies were requested as part of the diagnostic workup, and symptomatic treatment with acetaminophen was prescribed. Despite the instituted management, her symptoms persisted without significant clinical improvement.

Given the persistence of the clinical picture, she was evaluated by the Pediatric Neurology service in June 2026. A contrast-enhanced cranial computed tomography scan was performed, which revealed a well-defined subcutaneous nodule measuring approximately 1.7 cm in diameter located in the left temporal region, without evidence of intracranial involvement or other relevant findings. Based on these results, the patient was referred to the Plastic Surgery service for further evaluation and treatment.

During the Plastic Surgery consultation, surgical resection of the lesion was planned. Under appropriate anesthesia, a longitudinal incision was made over the left temporal region, and careful dissection through the tissue planes was performed until a well-circumscribed nodular lesion was identified. Complete excision of the mass was then carried out, preserving the adjacent anatomical structures. After achieving adequate hemostasis, the surgical wound was closed in layers using simple interrupted sutures, with no intraoperative complications.

The postoperative course was satisfactory, with no immediate adverse events. The surgical specimen was sent to the Pathology Department for histopathological examination. Microscopic analysis showed fibroadipose tissue and skeletal muscle with fragmented hypertrophic vascular structures and neural plexuses, findings consistent with a traumatic neuroma.

## Discussion

Traumatic neuromas are benign reactive lesions that arise after peripheral nerve injury and represent a disorganized regenerative response rather than a true neoplasm. Following nerve transection, the distal nerve segment undergoes Wallerian degeneration, while Schwann cell activation promotes axonal regeneration. However, when regenerating axons fail to reach their distal target, aberrant sprouting together with progressive fibrosis results in the formation of a traumatic neuroma. **Wan et al.** further demonstrated that chronic inflammation and excessive fibrosis contribute to this abnormal regenerative process, increasing the likelihood of neuroma development [6].

From a histopathological perspective, traumatic neuromas are characterized by irregular,


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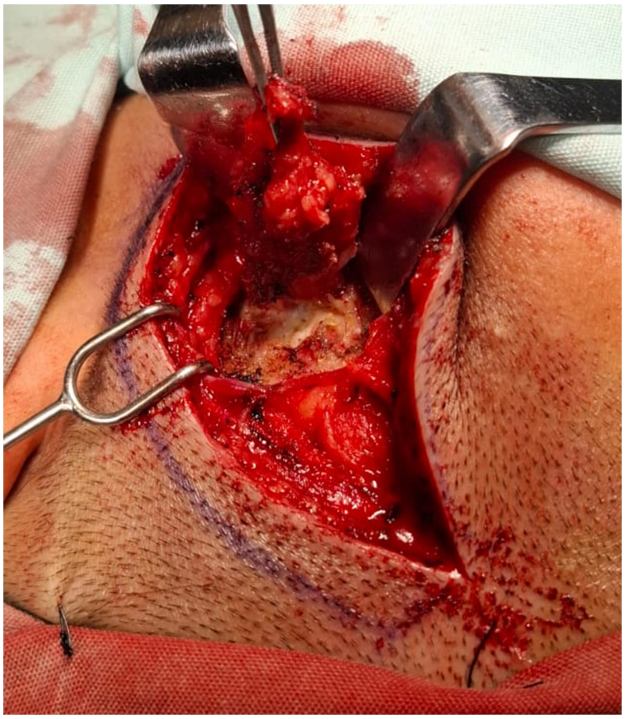

**Figure 3:** Intraoperative photograph demonstrating a traumatic neuroma arising from a branch of the superficial temporal nerve before complete surgical excision.

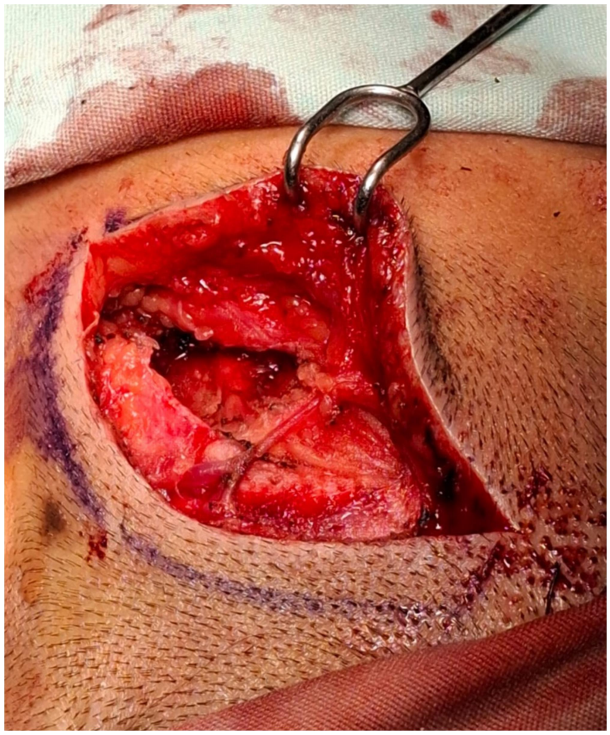

**Figure 4:** Complete excision of the lesion with grossly negative margins.

non-encapsulated fascicles of regenerating axons embedded within dense fibrous connective tissue containing Schwann cells and fibroblasts. Experimental evidence has shown that this process begins within the first few days after nerve injury, whereas mature neuroma formation becomes evident approximately four weeks later as scar tissue progressively interferes with organized axonal regeneration [7]. In our patient, the histopathological findings were consistent with these characteristic features, confirming the diagnosis of traumatic neuroma.

The diagnosis of traumatic neuroma remains primarily clinical. A detailed history of previous trauma or surgery, together with careful physical examination, is fundamental for establishing the diagnosis. Patients commonly present with a palpable nodular lesion associated with localized pain, tenderness, paresthesia, or a positive Tinel sign, whereas ultrasound or magnetic resonance imaging may provide additional information when the diagnosis is uncertain or for preoperative planning [9]. Likewise, Hill et al. emphasized that correlating symptoms with the anatomical course of the affected nerve is essential, since not every neuropathic pain syndrome represents a true traumatic neuroma amenable to surgical treatment [2].

Regarding management, treatment should be individualized according to the anatomical location of lesion, residual nerve function, and patient characteristics. Although conservative therapy may be considered in selected patients with adequate symptom control, surgical excision remains the preferred treatment for symptomatic lesions or when complete resection is feasible [8]. Similarly, recent evidence supports surgery as the cornerstone of treatment, although no single operative technique has consistently demonstrated superior outcomes over another, emphasizing that meticulous surgical planning and appropriate patient selection are more important determinants of success than the specific procedure performed [10].

Despite favorable postoperative outcomes reported in most series, recurrence remains an important concern. A recent prospective cohort study reported that approximately 27% of patients required revision surgery because of recurrent symptomatic neuroma, suggesting that persistent recurrence may reflect failure to adequately address the underlying biology of nerve regeneration rather than deficiencies in the surgical technique itself [4]. Consequently, complete excision with appropriate management of the involved nerve remains the principal strategy for minimizing recurrence and optimizing long-term outcomes [5].

Traumatic neuromas in the pediatric population are exceptionally uncommon, particularly in the cranial region. Giannatos et al. reported one of


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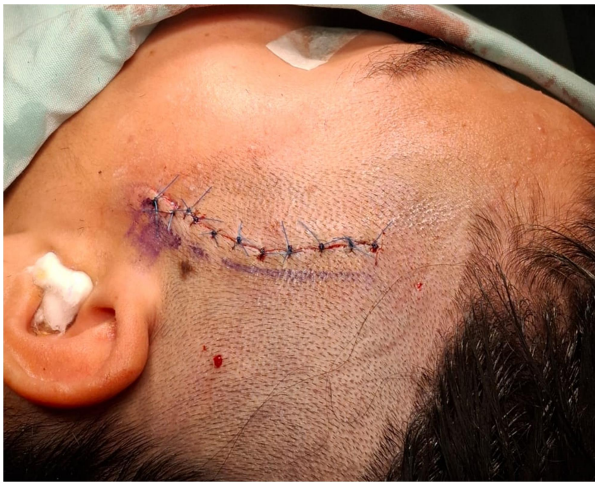

**Figure 5:** Layered wound closure using simple interrupted sutures following complete excision of the lesion.

the few pediatric cases available in the literature, describing successful surgical treatment of a post-traumatic median nerve neuroma in an 8-year-old child and highlighting the greater regenerative potential of the pediatric peripheral nervous system **[3]**. Consistent with that report, our patient underwent complete surgical excision with an uneventful postoperative course, and histopathological examination confirmed the diagnosis of traumatic neuroma. To our knowledge, reports describing traumatic neuromas involving the cranial region in pediatric patients remain exceedingly scarce, making the present case a valuable contribution to the limited literature on this uncommon entity.

## Conclusion

Traumatic neuroma of the cranial region is an uncommon benign lesion, particularly in the pediatric population, and should be considered in the differential diagnosis of post-traumatic scalp masses. Careful clinical evaluation combined with histopathological confirmation is essential for accurate diagnosis. Complete surgical excision can provide excellent clinical outcomes when the lesion is well localized and amenable to safe resection.

## Conflicts of interests

The authors declare no conflicts of interests.

## Acknowledgements

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