

## Painful finger, diagnosis and surgical management: Clinical puzzle

Mukta Verma<sup>1</sup>, Manish Singh<sup>2</sup>

From <sup>1</sup>Senior Resident, Department of Plastic Surgery, King George's Medical University, Lucknow, Uttar Pradesh, <sup>2</sup>Ex Senior Resident(MD), Department of Pathology, AIIMS, New Delhi, India, Department of Pathology, All India Institute of Medical Sciences, New Delhi, India

**Correspondence to:** Mukta Verma, 8/189, Jankipuram Extension, Near Bhitoli Crossing 226031, Lucknow, Uttar Pradesh, India.  
E-mail: drmukta23@gmail.com

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### ABSTRACT

It is really very difficult to live with a painful finger. Here, we are discussing a case who presented with a complaint of severe lancinating pain in her left index finger for about 7 years. This pain was so distressing to her that she was requesting for the amputation of her finger. Being a reconstructive surgeon, it was really very difficult to fulfill her wish. In the past 7 years, she consulted to several practitioners but did not get relief of her pain. Clinical suspicion of Glomus tumor was made and magnetic resonance imaging was done to confirm the diagnosis. Surgical excision of the swelling was done, and the patient was completely relieved of her pain.

**Key words:** Excision, Glomus tumor, Magnetic resonance imaging, Painful finger

Glomus tumor is mainly found in the digits of hand [1,2]. It is a rare, benign, small, and painful swelling which is mainly present at the fingertips. Glomus tumor accounts for 1–2% of soft tissue tumors [3]. It may be present under the nail or on the fingertip but can also be found over flexor arm/knee, gastrointestinal tract, and rarely in head and neck region. The origin of glomus tumor is the glomus body [3,4]. Glomus bodies are the thermoregulatory shunts mainly present in the dermis of the fingertips [5]. It regulates peripheral blood flow to the digits. Glomus tumors occur more in females and the most common age of presentation is 30–50 years [4]. Even light pressure or cold sensation can cause severe pain in the finger. Diagnosis is usually delayed as the swelling is too small to be identified on physical examination [6].

The classic triad of pain, temperature sensitivity, and point tenderness may not be present in every patient [1,2]. A good clinical, radiological, and histopathological correlation is required to make the diagnosis. We present the case of a glomus tumor in a 35-year-old female coming in with the chief complaint of pain at the tip of her left index finger for 7 years.

### CASE REPORT

A 35-year-old female presented to our OPD with a 7 years history of pain at the tip of her left non-dominant index finger. She visited a number of the physicians in the past 7 years, but her symptoms were not relieved. She complained of severe pain whenever pressure was applied to the tip of the index finger and during night. The intensity of pain increases on exposure to cold. This pain was so distressing to her that she was requesting for the amputation of her finger. There were no systemic complaints.

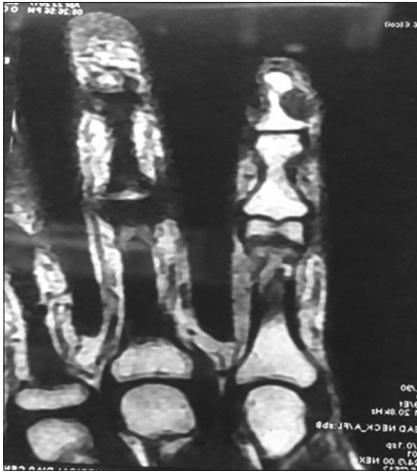
The physical examination revealed no abnormality except tenderness was present in the pulp of the left index finger. Systemic examination was normal. Routine laboratory investigations were normal. Clinical suspicion of glomus tumor was made and magnetic resonance imaging (MRI) was done to confirm the diagnosis. The MRI revealed a round swelling (size 5 mm × 4 mm) at the tip of distal phalanx. The lesion appeared as a well-circumscribed mass on T1-weighted images and as a bright contrast-enhancing mass on post-gadolinium fat saturation images. The swelling had eroded the distal phalanx of the index finger. Intense bright signals were present in T2 MRI (Figs. 1 and 2).

Surgical excision of the swelling was planned. A volar approach to the index finger was made and swelling was excised under the digital block with tourniquet control (Fig. 3). Loupe magnification was used for proper visualization of the surgical field. A swelling of 5 mm×4 mm was identified without gross surrounding tissue abnormality. The closure was done with nylon 4-0.

The patient was discharged 2 h after surgery, and sutures were removed after 10 days. Biopsy confirmed the diagnosis of glomus tumor. Histopathology revealed small vessels surrounded by glomus cells. There were small round cells with darkly staining nuclei with fibrous stroma and blood cells. In follow-up visits, the patient reported complete relief of her pre-operative symptoms and wound healed well without any post-operative fingertip deformity (Fig. 4).

### DISCUSSION

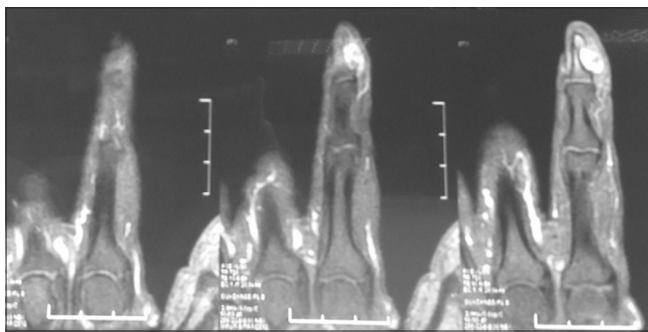
Glomus tumors were first described by Hoyer, in 1877, and the first complete clinical description was given by Masson, in 1924 [6].



**Figure 1:** T1-weighted magnetic resonance imaging showing swelling at tip of index finger



**Figure 3:** Surgical excision of swelling through volar approach; 5 cm × 4 cm swelling was excised and sent for histopathological examination



**Figure 2:** Post-gadolinium contrast enhancement in the swelling

Glomus tumor is a benign condition with high morbidity to the patient before correct diagnosis and treatment is done. Pain is the most common presentation of glomus tumor. Our patient had the classical triad of symptoms - temperature sensitivity, severe pain, and localized tenderness. This can be found in 63–100% of the patients [1,2]. A careful history and physical examination are essential for early diagnosis and management. Clinical suspicion and MRI can make the diagnosis in >80% of cases.

MRI is the investigation of choice for soft tissue swellings. Glomus tumor is typically dark on T1 and bright MRI appearance on T2-weighted images. Post-gadolinium and fat saturation images delineate the swelling accurately [7,8]. Excision is usually curative and pain alleviation with surgical excision is the rule. Nevertheless, tumor recurrences have been reported. Some authors advocate radiation therapy as a primary modality or as an adjuvant for incompletely resected lesions [9]. In surgical excision, dorsal (transungual) approach is preferred when swelling lies just beneath the nail. The volar approach is preferred when it lies in the pulp of the fingertip, and lateral subperiosteal approach is also used in some cases depending on the location of the swelling. A bloodless operation field and magnification are essential prerequisites for a successful surgery. In general, the wound is healed in 2–3 weeks. In transungual approach, a window is made in the nail or whole nail can be removed and nail fold is reflected and the tumor is excised through nail bed. The nail bed is repaired with 6-0 catgut and nail fold is also repaired.



**Figure 4:** Post-operative recovery without any fingertip deformity

In this approach, post-operative recovery may be prolonged and there may be deformity of the nail. In volar approach, the post-operative recovery is early with good functional and esthetic outcome.

The histopathological examination should be considered in every case to confirm the diagnosis. Glomus tumors are typically composed of three components: Glomus cells, vasculature, and smooth muscle cells. The tumors are composed of compact nests of monotonous polygonal cells with rounded nuclei and eosinophilic cytoplasm [3]. Microscopically, the structure consists of branching vascular channels lined with endothelial cells, interspersed with uniformly round-to-ovoid glomus cells forming nests, sheets, and trabeculae. Depending on the predominant aspect, three histologic types have been described: Solid (with poor vasculature and scant smooth muscle component), vascular or glomangioma (with prominent vascular component), and myxoid or glomangiomyoma (with prominent vascular and smooth muscle components). Solid glomus tumor is the most common variant (75%) followed by glomangioma (20%) and glomangiomyoma (5%). One patient can show multiple histologic tumors at the same time [3,10].

## CONCLUSION

Glomus tumors are uncommon and may represent a diagnostic challenge. Glomus tumor should be considered in the differential diagnosis of chronic local pain and dysesthesia. MRI can help in early anatomical localization and visualization of glomus lesion. Surgical excision is curative and allows the patient to live a pain-free life. The current case raises the awareness of the atypical cause of painful finger and its management.

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