

SUBUNGUAL GLOMUS TUMOUR

Authors:

Dr. Saurabh Garg

Dr. Aditya Aggarwal

Dr. Vimalendu Brajesh

Dept. of Plastic Surgery, Medanta Hospital, Gurugram.



ISSHACADEMICS

Glomus tumour is a rare benign neoplasm. Majority of the reported cases have been located on the upper limb. They account for approximately 1-5% of all hand tumors.¹ They are more common in adult females between 30 and 50 years of age and occur spontaneously. They are small sized tumours ranging from 0.5 cm to 1 cm².

Glomus tumours present most commonly as a solitary tumour. But, less commonly they may present as multiple painful glomus tumours or multiple painless tumours^{3,4}. A very rare presentation is plaque like lesions⁵.

The solitary tumours are most commonly present at the summits of the digits³, particularly in the subungual area but, it can also occur at other sites in the upper limb or lower limb including bone and nerve.^{6,7} Multiple tumour variants tend to occur in non-subungual areas and present at an earlier age.

The tumour arises from glomus bodies which are found in large numbers in the extremities particularly in the fingers and palms, and to a lesser extent in the trunk. Extra-digital glomus tumours have also been reported, though the incidences are rare⁷.

They result from hyperplasia of one of the component cells of glomus body. Glomus body (glomus apparatus) was first described by Masson in 1924.² It is composed of an afferent arteriole, an efferent venule, a vascular anastomosis (the Sucquet-Hoyer canal) without any capillary network.³ The pre-glomic arteriole receives rich

sympathetic supply and are concerned with the regulation of skin temperature.

(Figure-1)

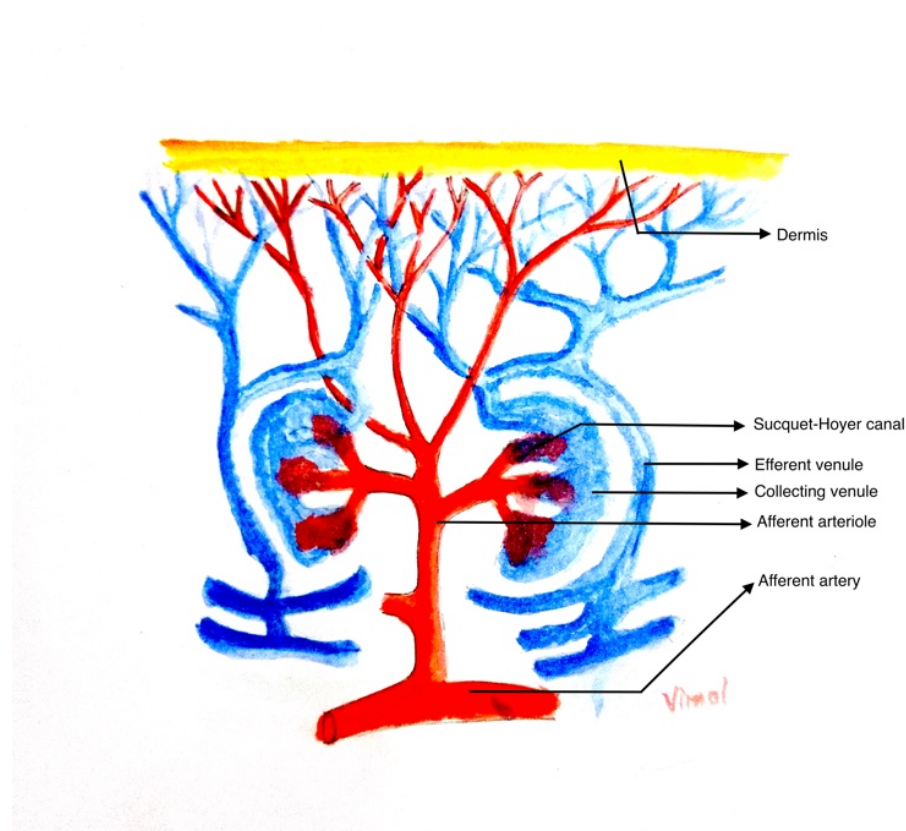


Figure1-Pictoral representation of glomus body

Clinical Features-

Glomus tumours usually present as a **classic triad**^{1-3,6}

- Severe (Excruciating paroxysmal) pain
- Point tenderness(100%)³
- Cold sensitivity(63%)³

Other features-

- Nail deformity(47%)²
- Bluish discoloration of nail(43%)²
- Palpable nodule(14%)²

DIAGNOSIS

Diagnosis of glomus tumours is primarily clinical. A high degree of suspicion for long standing pain aggravated by various clinical tests described below helps in arriving at a diagnosis. Localization is assisted by clinical examination and radiological investigations. Biopsy of the excised tumour can give confirmatory diagnosis.

1. *Love's pin Test* (1944)⁸

Love's test refers to localized severe tenderness elicited on application of a pinhead, ballpoint pen, paper clip or any similar sharp object on the skin or nail overlying the tumor and relief of pain on removal of pressure. This test has a sensitivity of 100%, but specificity is variable with some authors even reporting it as 0%.⁹

2. *The cold-sensitivity test*

On immersing the hand in cold water, the patient has severe pain in and around the lesion. This test has been reported to have a sensitivity and a specificity of 100%.⁹

3. *Joseph Posner test*¹⁰

Described in 1983 as an alternative to cold sensitivity test. It is a provocative test which involves spraying of ethyl chloride over the suspected part. This leads to a brief, sharp, excruciating pain. It has the advantage over the cold sensitivity test because it can be limited to a small area.

4. *Hildreth's test* (1970)

This test is performed by elevating the patients' arm to exsanguinate it. A tourniquet is inflated to 250 mm Hg and the tumor is palpated, the pain and tenderness should be reduced. A positive test is indicated by sudden onset of pain and tenderness in the area of the tumor on releasing the cuff. This test has a sensitivity of between 77.4% - 92% and a specificity between 91% - 100%.¹¹ It has a positive predictive value of 92% and negative predictive value of 91%.

5. *The Trans illumination test-*

The transillumination test is done in a darkened room by passing light through the finger pad. An opaque red image is noted in the region of the tumor that allows

estimation of its size. This test has a sensitivity of 23% to 38% and a specificity of 90%.¹²

Radiological Tests

Various radiological modalities are used in detecting the glomus tumours, these include- X-ray, USG, and MRI.

1. X-rays – May show erosion or thinning of the underlying bones, especially when the tumors are bigger. However, it is seen only in 30% to 60% of cases.

2. USG - It can also be used to preoperatively localize the glomus tumor, but it is of limited value in small tumors.¹³ This test is very subjective and, the diagnosis is more dependent on the expertise of the sonologist owing to the small size of the tumour.

3. MRI - The most useful for preoperative localization of the glomus tumor. It can detect tumors as small as 2 millimetre. The tumour appears hypo intense (**Figure-2**) on T1 and hyper intense on T2 images and enhances markedly on administration of contrast. Characteristic of a glomus tumour is a nidus appearance with a high signal central dot (**Figure-3**) surrounded by a zone of less signal intensity.¹⁴

The MRI has a sensitivity of 90%, specificity of 50%, positive predictive value of 97% and a negative predictive value of 20%.¹⁴

However, few authors disagree and consider it as a valuable investigation in the diagnosis and localization of the tumours.^{15,16}

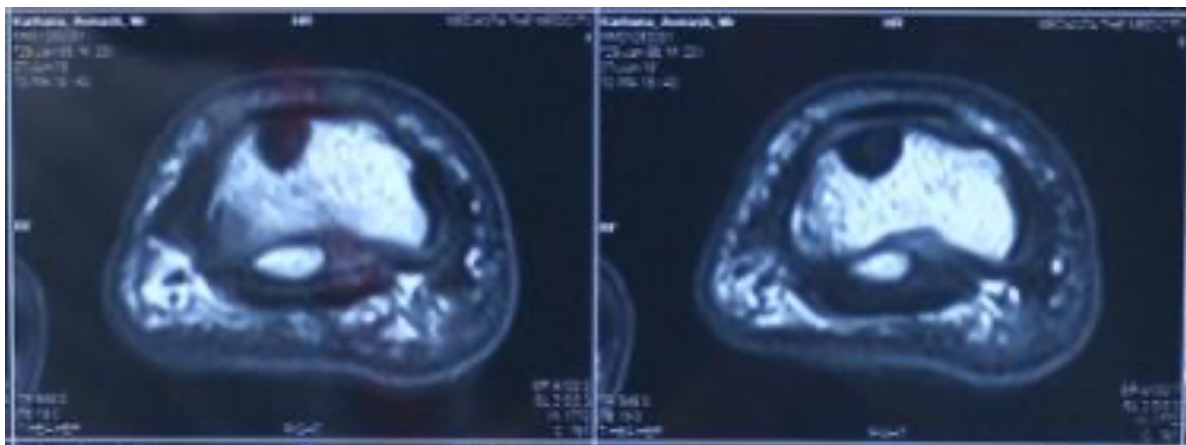


Figure 2 - Right great toe subungual glomus tumour (Hypo intense T1 image)

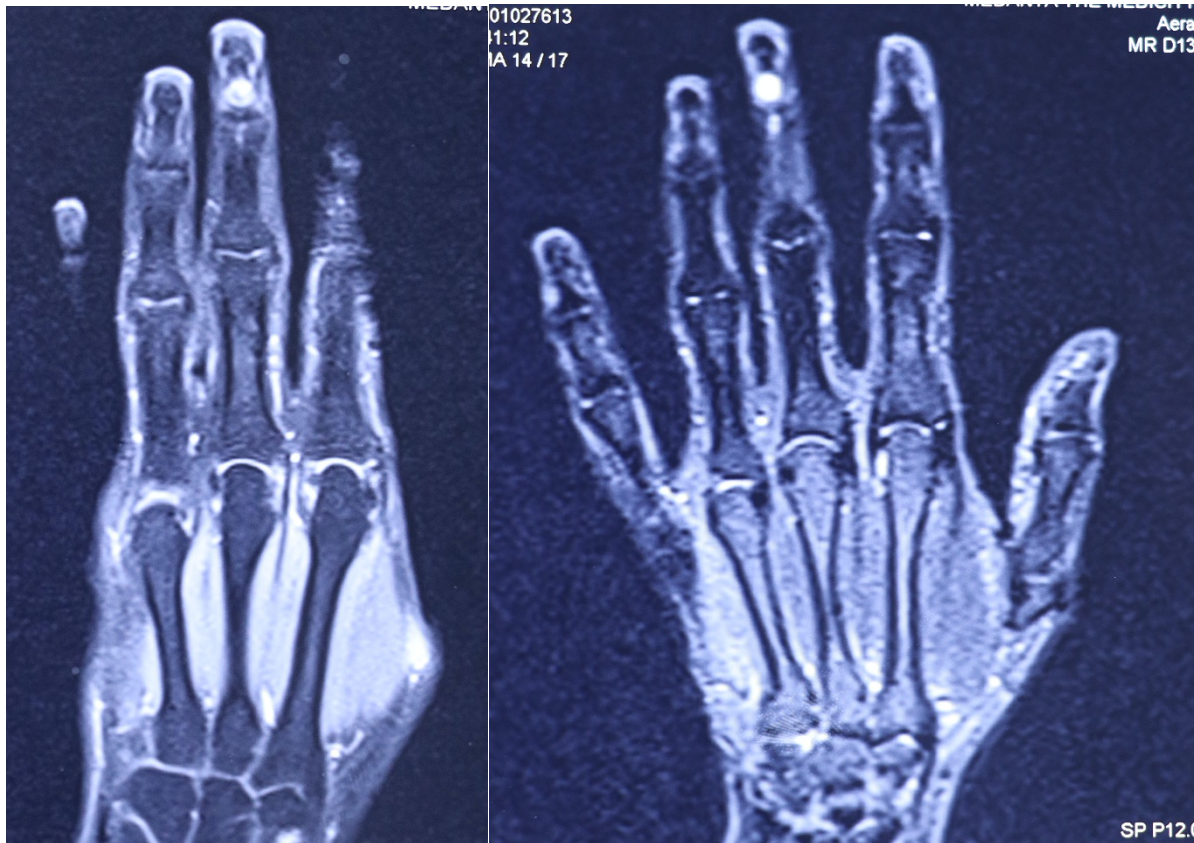


Figure 3 – Right middle finger subungual glomus tumour (Hyper intense T2 image)

Differential Diagnosis-

Glomus tumour can be confused with chronic paronychia, neuroma, angioma, vascular myoma, melanoma, eccrine spiradenoma, radiculitis, cavernous haemangioma, arthritis, subungual exostosis, nodular hidradenoma, subungual wart, fibroma etc.

Histopathological finding

Biopsy of the excised lesion is confirmatory of the diagnosis. It shows presence of multiple layers of large epithelioid glomus cells with presence of myelinated and non-myelinated nerve fibres.

Treatment-

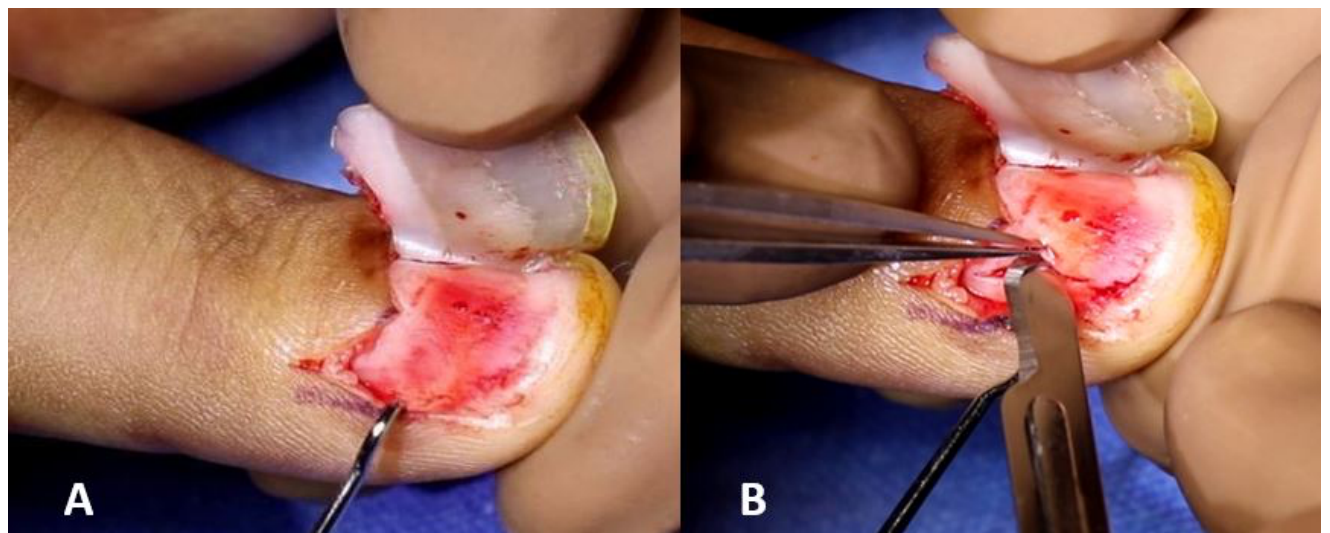
The mainstay of the treatment is surgical removal of the tumor by transungual or periungual approach. The transungual approach has better access to the lesion and

helps in complete removal of the tumour. It is also helpful in instances where the tumour has not been preoperatively localized.

Surgical Technique-

Surgical procedure is performed under tourniquet control (either using a tourniquet at the base of the finger with local block anaesthetic or an arm/forearm tourniquet with general anaesthesia).

Transungual Approach – This is a standard approach. First, the nail plate is removed using a Freer elevator and the nail bed is incised longitudinally over the tumor region with a number 15 blade. With the tip of the blade, the nail matrix is separated from the gelatinous-appearing tumour mass and then tumour is excised. After excision, distal phalanx bone is scraped to ensure complete removal. Haemostasis is secured and the nail bed is repaired using 5-0 rapid vicryl. Following nail bed repair, nail plate is placed back into the eponychial fold to act as a protective shield. A few punctures are made on the nail plate to allow for any collection to escape. Use of magnification improves the clearance of tumour, reduces the chance of recurrence and chances of nail deformity by ensuring good repair of the nail bed. **(Figure-4 A-D)**



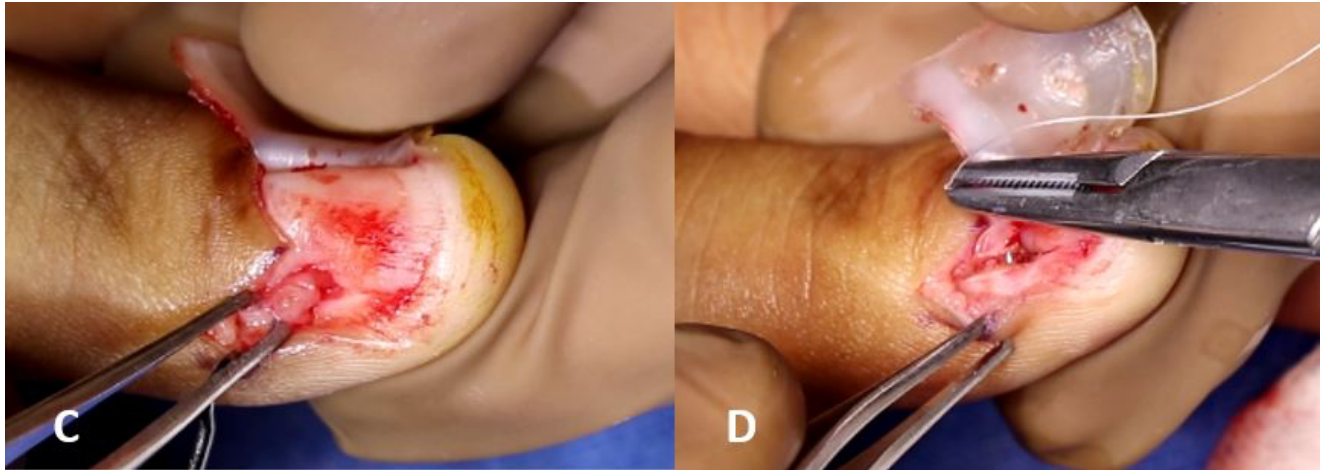


Figure -4 A) Elevation of the nail from nail bed. B) Longitudinal incision on the nailbed for access to the tumour. C) Dissection and retrieval of the tumour. D) Repair of the nail Bed.

Lateral Approach - lateral incision allows exposure to the dorsal distal phalanx without violating the nail matrix, thereby cutting down the risk of postoperative nail deformity. The lateral approach, however, affords a much narrow view of the tumor bed with a higher chance of incomplete excision compared with the transungual approach.

Complications-

1. Nail deformity – Possibility is more in the transungual approach, rather than in the lateral. It occurs due to damage to the nail matrix.
2. Recurrence³ - May occur in up to 20%-33% of cases. Recurrence is thought to be a consequence of incomplete excision, if it is noticed early within weeks or months, but in the event of late recurrence, development of a new lesion at or around the excision site may be the cause.¹⁷

Malignant Variant

Glomangiosarcoma¹⁸ is a rare malignant variant of the glomus tumor. It present as a painful nodule located in the subcutaneous tissue. This tumor is considered a low-grade malignant tumor with a propensity for local recurrence, although metastasis has been described. Treatment consists of complete local excision and close surveillance.¹⁹

Conclusion

Glomus tumours are rare tumours. Patients typically complain of long standing pain in the finger tips. Although diagnosis is fairly straightforward and mostly clinical, it is not unusual to miss the diagnosis. A high degree of suspicion combined with clinical examinations and radiological investigations helps reaching the diagnosis and surgical excision is the only valid treatment²⁰.

References:

1. Rettig AC, Strickland JW. (1977). *Glomus tumor of the digits. The Journal of Hand Surgery, 2(4), 261–265.*
2. Van Geertruyden, J., Lorea, P., Goldschmidt, D., De Fontaine, S., Schuind, F., Kinnen, L., Moermans, j.-p. (1996). Glomus tumours of the hand. *Journal of Hand surgery, 21(2), 257–260.*
3. Maxwell GP, Curtis RM, Wilgis EFS (1979). *Multiple digital glomus tumors. The Journal of Hand Surgery, 4(4), 363–367.*
4. Slepian AH. (1944). *Multiple Painful And Painless Glomus Tumors. Archives of Dermatology, 50(3), 179.*
5. Tony G, Hauxwell S, Nair N, Harrison DA, Richards PJ. (2013). *Large plaque-like glomangioma in a patient with multiple glomus tumours: review of imaging and histology. Clinical and Experimental Dermatology, 38(7), 693–700.*
6. Tomak, Y., Akcay, I., Dabak, N., & Eroglu, L. (2003). Subungual Glomus Tumours Of The Hand: Diagnosis And Treatment Of 14 Cases. *Scandinavian Journal Of Plastic And Reconstructive Surgery And Hand Surgery, 37(2), 121–124.*
7. Schiefer, T. K., Parker, W. L., Anakwenze, O. A., Amadio, P. C., Inwards, C. Y., & Spinner, R. J. (2006). *Extradigital Glomus Tumors: A 20-Year Experience. Mayo Clinic Proceedings, 81(10), 1337–1344.*
8. Love JG. Glomus tumors: diagnosis and treatment. *Proc Staff Meet, Mayo Clin. 1944;19:113–6.*
9. Bhaskaranand, K., & Navadgi, B. C. (2002). *Glomus tumour of the hand. Journal of hand surgery, 27(3), 229–231.*

10. Joseph, F. R., & Posner, M. A. (1983). *Glomus tumors of the wrist. The Journal of Hand Surgery, 8(6), 918–920.*
11. Giele, H. (2002). Hildreth's Test is a Reliable Clinical Sign for the Diagnosis of Glomus Tumours. *Journal of Hand Surgery, 27(2), 157–158.*
12. Kale, S. S., Rao, V. K., & Bentz, M. L. (2006). *Glomus Tumor of the Index Finger. Journal of Craniofacial Surgery, 17(4), 801–804.*
13. Samaniego E, Crespo A, Sanz A. Key diagnostic features and treatment of subungual glomus tumor. *Actas Dermosifiliogr 2009;100:875–82.*
14. Al-Qattan, M. M., Al-Namla, A., Al-Thunayan, A., Al-Subhi, F., & El-Shayeb, A. F. (2005). *Magnetic Resonance Imaging in the Diagnosis of Glomus Tumours of the Hand. Journal of Hand Surgery, 30(5), 535–540.*
15. Takemura, N., Fujii, N., & Tanaka, T. (2006). *Subungual glomus tumor diagnosis based on imaging. The Journal of Dermatology, 33(6), 389–393.*
16. Takata, H., Ikuta, Y., Ishida, O., & Kimori, K. (2001). Treatment Of Subungual Glomus Tumour. *Hand Surgery, 06(01), 25–27.*
17. Koman LA, Rush DS, Smith BP, Smith T. Vascular disorders. In: Green DP, Hotchkiss RN, Peterson WC, Wolfe SW, eds. *Green's Operative Hand Surgery*. Philadelphia, PA: Elsevier; 2005:2312.
18. Maselli, A. M., Jambhekar, A. V., & Hunter, J. G. (2017). *Glomangiosarcoma Arising from a Prior Biopsy Site. Plastic and Reconstructive Surgery - Global Open, 5(1), e1219.*
19. Pérez de la Fuente, T., Vega, C., Gutierrez Palacios, A., Sanchez Lorenzo, J., & Gonzalez Sarasua, J. (2005). *Glomangiosarcoma of the hypothenar eminence: a case report. Chirurgie de La Main, 24(3-4), 199–202.*
20. Jawalkar H, Reddy MV, Brahmajoshiyula V, Kotha GKV. Subungual glomus tumors of the hand: Treated by transungual excision. *Indian J Orthop. Jul-Aug 2015;49(4):403-7.*