

Original Article

Sub-ungual Glomus Tumor: Study of 20 Cases

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Abstract:

Glomus tumors are benign hamartoma of glomus body. It accounts 1-5% of all soft tissue tumors of hand. They can cause recurrent episodes of intense lancinating pain and disability. Patients often undergo undiagnosed or misdiagnosed for many years because the tumors are small. Twenty patients were operated during the period of 2010 to 2015. Most of the cases were selected on the basis of clinical diagnosis. The help of magnetic resonance imaging was taken in suspicious cases. The only treatment of glomus tumor is total surgical excision. In this study surgical excision were performed by direct trans-ungual approach. All patients showed dramatic relief of pain after surgical excision. Early diagnosis and surgical excision decreases patient's sufferings from severe pain and disability. Eagerness in early diagnosis and surgical excision can reduce long period of sufferings.

Key words: Glomus tumor, Subungual.

Introduction:

Glomus tumors are rare benign hamartoma of vascular origin, arising from Glomus body¹. Glomus body is a contractile neuromyoarterial receptor which is innervated, coiled, arterio-venous dermal shunt that normally regulates skin temperature by regulating blood flow in the cutaneous microvasculature. Glomus bodies are highly concentrated in the tips of the digits, particularly in the subungual area².

Glomus tumor causes severe pain and disability to the patient, with only subtle clinical sign, which can be easily missed unless specifically looked for by

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meticulous clinical examination³. They pose a unique challenge to the unwary orthopaedic surgeon. Some diagnostic tests for glomus tumor include the Love's pin test, Hildreth's test and the cold sensitivity test⁴. Magnetic resonance imaging (MRI) is used in some cases to support clinical diagnosis⁵.

Surgical excision is the only known treatment option for subungual glomus tumor^{4,6,7}. Two surgical approaches are described in literature-transungual and periungual and transungual approach is described as classical^{1,2,4,6-9}. This retrospective study reviewed the results of subungual glomus tumors of hand treated by surgical excision.

Patients and Method:

From January 2010 to December 2015, we operated 20 patients in different hospitals of Dhaka, Bangladesh with a subungual glomus tumor of hand whose diagnosis was confirmed histopathologically. Data were obtained retrospectively from hospital record and the patients were called for clinical follow up. Sixteen patients were female and four patients were male. Their mean age at the time of operation was 32 years (range 21 to 51). All the cases were found on the fingers of the hands. All complained of severe pain provoked by touching, eleven complained of cold sensitivity, and twelve complained of spontaneous paroxysmal pain. Bluish coloration was seen in ten cases. All patients had at least two of the three common symptoms: spontaneous paroxysmal pain, often at night;

cold sensitivity and point tenderness when touched. All 20 cases had a positive Love's test where pressure is applied with head of a straight pin or tip of a pencil on the tumor and this causes pain, and this test is useful for localizing small glomus tumor. X-ray was done in all cases to see any bony excavation and to exclude other bony lesion. The help of MRI was taken in four cases. All patients were operated through direct trans-ungual approach. Diagnosis was confirmed in all cases by histopathology. Patients were asked to attend first follow up after 2 months, then 6 monthly for 2 years.

Surgical approach and technique:

The treatment of glomus tumor is total surgical excision. Complete excision is curative and necessary to avoid recurrence. Surgery is performed under tourniquet control. Rubber band of surgical gloves is used as tourniquet placed at base of finger with local anesthetic digital block.

The standard approach is direct trans-ungual excision, in which the nail plate is removed and nail bed is incised longitudinally with a number 15 blade directly over the area of the tumor. The nail matrix in this location is quite thin compared with the unaffected nail matrix. By using the tip of number 15 blade, the nail matrix is separated from the gelatinous-appearing tumor mass. The tumor is then excised completely, easily shelled out of its fibrous capsule⁴, scraping the bone of the phalanx to ensure complete removal. Repair of nail bed is done using 5-0 plain catgut suture.

Postoperative first dressing was done on 4th or 5th day. Nail plate, usually fell off by 2-4 weeks and a new nail completely formed by 8-10 weeks.

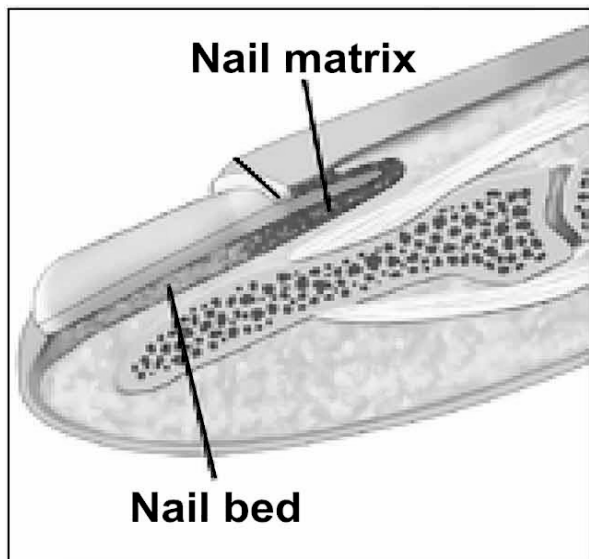


Fig-1 Anatomy of nail showing nail matrix.

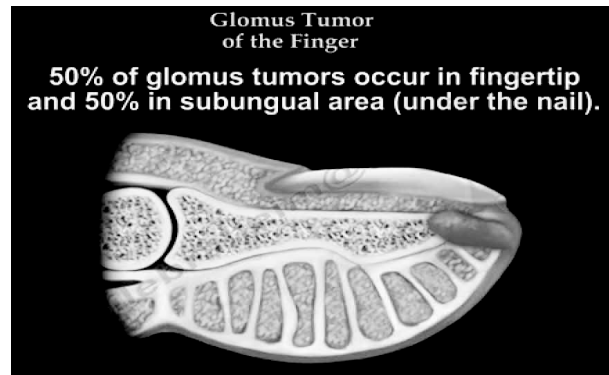


Fig-2 Glomus Tumor of the Finger

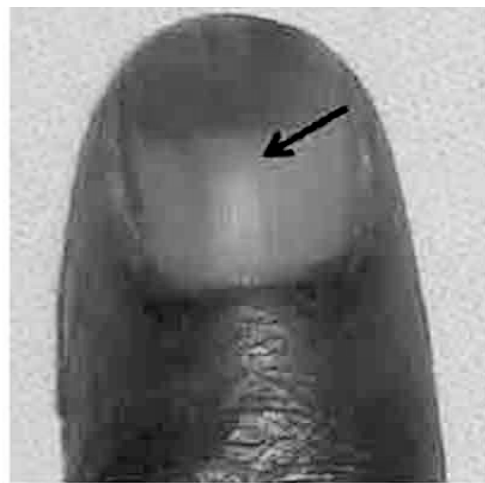


Fig-3 Bluish spot on the nail bed

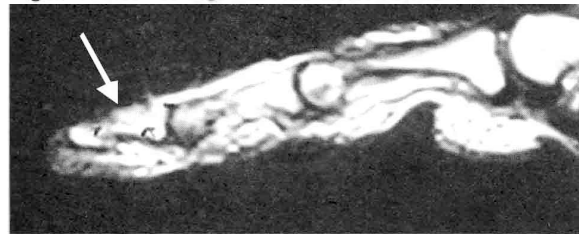


Fig-4 Tumor just under the nail bed on MRI



Fig-5 Bony excavation just beneath the nail bed



Fig-6 Tumor excised through direct approach

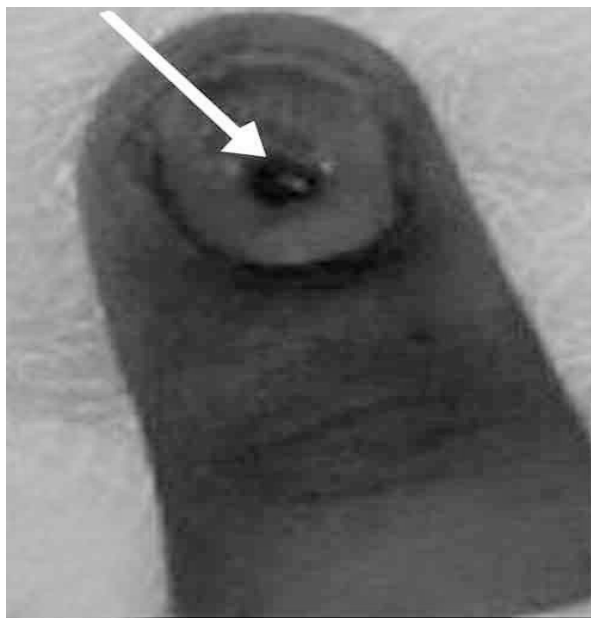


Fig-7 Tumor excised from nail bed



Fig-8 Nail bed after excision of glomus tumor



Fig-9 After 2 weeks. Nail has fallen off

Result:

Table I: Distribution of the patient by age and sex

Sex	Age (Years)				Total
	21-30 Years	31-40 Years	41-50 Years	51-60 Years	
Male	0	3	1	0	4
Female	2	8	2	4	16
Total	2	11	3	4	20

Table I shows mean age of the patients with glomus tumor evaluated in this study was 32 years with age range 21-51 years. Eighty percent of the patients were female and 20% were male.

Table II: Distribution of the patient by location of the tumor

Location	Total
Thumb	7
Index finger	8
Ring finger	2
Middle finger	2
Little finger	1
Total	20

All of the glomus tumors were found on the distal part of the finger, beneath the nail plate. Index finger was found affected more (40%) (Table II).

X-ray was done in all patients. It revealed positive results in 3 (15%) patients demonstrating bone remodeling (pressure excavation) on the dorsal aspects of the distal phalanx.

MRI was done in 4 cases, showing well-defined, solid nodules with hypointense signal on T₁ weighted images and signal hyperintensity on T₂ weighted images with homogenous intravenous contrast enhancement.

All patients were operated through direct transungual approach under local anesthesia. The average follow up period was 10 months (range 6 months to 2 years). All patients had complete relief of pain. None of the patients had recurrence of tumor or complications including postoperative nail deformity in follow up period. All of them returned to their preoperative occupation and regained full function of the hand.

Discussion:

Glomus bodies are neuromyoarterial structures within the reticular dermis composed of an afferent arteriole and efferent venules with multiple communications. The arterial end is surrounded by glomus cells containing actins that contract and regulate blood flow^{7,10-12}. Glomus bodies are found throughout the body but are concentrated in the fingers and the sole of the foot. Glomus tumor arises from glomus cells and it accounts for 1 to 5% of soft tissue tumors of the hand and 75% are subungual^{12,13}. They are more common in women particularly in middle age⁶. In our study mean age of the patients was 32 years and 80% of the patients were female. All of the glomus tumors were found on the distal part of the finger, beneath the nail plate. Index finger was found affected more (40%).

Usually a patient of glomus tumor presents with classical triad of excruciating pain, point tenderness and increased sensitivity to cold. Clinical tests, such as Love's test, Hildreth's test, cold sensitivity test and transillumination may aid diagnosis. In our study, X-ray was done in all cases but a positive finding (Pressure excavation on the dorsal aspects of the distal phalanx) was found in only 3(15%) cases. MRI was done in only 4 doubtful cases, showing well-defined, solid nodules with hypointense signal on T₁ weighted images and signal hyperintensity on T₂ weighted images with homogenous intravenous contrast enhancement.

Surgical excision is curative and the transungual approach and lateral subperiosteal approach are widely reported. All patients in our series were operated through direct transungual approach under local anesthesia. Although this approach is advantageous in offering a good field of view, it can yield cosmetically unsatisfying results if the nail bed is severely damaged

while removing tumor or if sutures of the nail bed are made without care, causing postoperative nail deformity. Total surgical excision results dramatic pain relief in immediate postoperative period. Persistence of pain is due to incomplete removal of the tumor or multiple lesions that are left unexcised. The average follow up period was 10 months (range 6 months to 2 years). All patients had complete relief of pain. None of the patients had recurrence of tumor or complications. There were cosmetic deformity of the nail bed for some period but all the nails became normal within two months as the nail growing advances and when it is completed all the nails became alright within one year. All of them returned to their preoperative occupation and regained full function of the hand.

Conclusion:

The only treatment of glomus tumor is surgical excision. There is no other remedy for its treatment and cure. So early diagnosis of Sub-ungual Glomus tumor and total surgical excision reduces suffering of patients from severe lancinating pain.

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