Case study

Glomus Tumor of Finger Often Misdiagnosed as Peripheral Neuropathy: A Case Report

Abstract:

Introduction:

A glomus tumor is a benign, rare neoplasm that arises from the glomus body of palms, digits and soles of the feet. In the absence of visible local lesions or a complete triad, patients often visited different departments of hospitals for pain relief, which delayed diagnosis.

Objective:

This paper aims to present the case of a middle-aged female who was previously misdiagnosed with neuralgia, later diagnosed as a case of Glomus tumor right index finger successfully managed by surgical excision.

Case presentation:

30-year-old female initially managed as neuropathic pain at primary health centre as diagnosed as subungual Glomus tumor of right index finger, which was managed with transungual surgical excision and replacement of

nail to prevent with deformity, with clinical improvement in symptoms, no signs of recurrence, and no nail deformity at 2 month follow up.

Conclusion:

Glomus tumors are rare and often misdiagnosed due to gross inspection findings. A classic triad of symptoms is more effective at diagnosing than radiological methods. Complete surgical excision by transungual approach is a treatment of choice for subungual tumors.

Keywords: Glomus tumor, Peripheral Neuropathy, Neuralgia, Misdiagnosis, Excision, Transungual approach, Case report

Introduction:

A glomus tumor is a benign, rare neoplasm that arises from the glomus body; which is predominantly found on the palms, digits, and soles of the feet.(1) As a result of the smooth muscle properties of glomus cells, the glomus body regulates peripheral cutaneous blood flow, which in turn controls temperature and blood pressure.(2) An injury may weaken the glomus body, resulting in reactive hypertrophy.(3)

Its obvious visibility, low prevalence, and lack of awareness often delay the diagnosis.(4) There has been evidence that a delay in the diagnosis can last as long as 40 years.(5) In the absence of visible local lesions or a complete triad, patients often visits for pain relief, which delayed diagnosis.(2) A lack of familiarity with these tumors can also lead to misdiagnoses, such as neuralgias, complex regional pain syndromes, neuromas, neuritis, arthritis, gray nails, paronychias, hyperosteogeny, substantial masses, and Raynaud syndrome.(2,3,5–7)

Diagnosis can be made on based on the clinical findings, where most patients experience pain, pinpoint tenderness, and hypersensitivity to cold as a myriad of peculiar symptoms.(8) In order to confirm a diagnosis and see reactivity, magnetic resonance imaging (MRI) is the most useful imaging.(9) The treatment of choice is wide excision of the tumor.(10)

Compared to other tumors, subungual tumors have a higher recurrence rate of 4–15%.(11) It usually recurs within a year of surgery, indicating a failure to complete the excision or the presence of another tumor that was not detected and excised at the time of surgery.(8,12)

This paper aims to present the case of a middle-aged female who was previously managed as peripheral neuropathic pain, later diagnosed as a case of Glomus tumor right index finger successfully managed by surgical excision.

Case presentation:

A 30-year-old female homemaker by occupation with right dominance presented with complaints of pain on the right index finger for eight years, which was evaluated and treated by multiple physicians at the primary health center as neuropathic pain for three years. Analgesics somehow relived the pain on the right index finger, but symptoms reappeared after discontinuing the medication. On detailed history, the pain was aggravated during the winter season and on exposure to cold. There was also associated numbness and tingling sensation in the affected finger. There was no significant surgical history. There was no history of trauma.

At presentation, there was no clinical finding on inspection (Figure 1). Clinical examination revealed tenderness on the nail bed of the right index finger, Love Pin test positive, Hildreth negative, and cold sensitivity test positive. VAS score of the right index finger was 7/10. A plain radiograph shows normal bone and soft tissue shadow on the affected area (Figure 2). The diagnosis was made on MRI findings, which was suggestive of a small subungual mass of size 2x2 mm on the right index finger overlying nail matrix with hypo-intensity on T1-weighted images and hyperintensity onT2-weighted images, with vascular enhancement characteristic of Golums

tumor (Figure 3). The final diagnosis of glomus tumor right index finger was made.

Surgical excision was planned through a transungual approach. After taking the patient's consent, the patient was taken for surgery under a wrist block. A consultant orthopedic surgeon did the procedure through transungual approach. An incision was made longitudinally in the nail bed, and nail unit tissue was carefully elevated to expose the tumor adequately after the nail plate was removed with a septum elevator. In order to excision the tumor, the bluish color resulting from reactive hypertrophy of the glomus body was visualized, and its margin was taken, and surgical excision was done, where subungual mass of 4*3mm was removed (Figure 4), and closure was done by replacing the nail and stitches applied over it (Figure 5). The postoperative phase was uneventful, and discharged on the next day of the procedure. The patient was followed up on the postoperative phase at two months of follow-up to look for outcome, where; the Love pin test, and Hildreth test, were negative and cold insensitivity was absent, postoperative VAS Score was 1/10. Furthermore, no signs of recurrence and no any nail deformity seen at two-month of follow-up (Figure 6), with no surgical complications.

Discussion:

A glomus tumor is a benign neoplasm 75% occurs in hand, and approximately 65% of these are in the fingertips, particularly in the subungual location.(13) Glomus tumors are challenging to diagnose, particularly as they are often small and deep in the fingertip.(14) Most of the patients usually visit multiple physicians for many years without a definitive diagnosis or treatment plan.(15) In the Study done by Xie Y et al. the rate of misdiagnosis of glomus tumor is 34.6%, and the delayed diagnosis ranged from 3 months to 40 years, with the mean 5.5 ± 6.5 years.(5) Our case presents the Glomus tumor of the subungual region of the right index finger, which was misdiagnosed and has been treated as peripheral neuropathic pain for three years of duration.

In order to confirm the related symptoms, several clinical tests need to be conducted.(16) Love's pin test involves applying pinpointed pressure to the suspected and identifying the point with severe pain as a glomus tumor.(17) The Hildreth test induces transient ischemia in the arm with the use of a tourniquet, the test is positive when the patient's pain in the affected area subsides.(17) Neuralgias, complex regional pain syndromes, neuromas, neuritis, arthritis, gray nails, paronychias, hyperosteogeny, substantial

masses, and Raynaud syndrome are among the differential diagnoses that need to be considered for glomus tumors.(2,3,5–7)

The misdiagnosis of digital glomus tumors is common when gross inspection findings are negative.(5,10,15,18) According to Cha et al., the classic triad of symptoms is more effective at diagnosing and treating digital glomus tumors than radiological methods.(19) In our case, the initial diagnosis was made at the primary health center, where the expert opinion of the consultant was lacking. The misdiagnosis can be due to the rarity of the tumor and unfamiliarity of the clinical signs to newly emerging physicians in the rural area of a developing country. The delayed in diagnosis can be prevented by making familiar to the clinical presentation of tumor to emerging physicians working at peripheral hospitals, and timely referral of case to specialist when diagnosis is on doubt.

Radiologically, glomus tumors appear either as bone erosion or invasion, depending on where it arises.(15) Glomus tumors on MRI tend to be homogenous well-circumscribed lesions with hypointensity on T1-weighted images and hyperintensity on T2-weighted images, also it can detect glomus tumors as small as 2 mm in diameter with a high positive predictive value.(20) If a well-established clinical suspicion exists, however, a negative imaging study does not rule out the presence of a small tumor,

and surgical exploration should be conducted.(15,21) In our case, the final diagnosis of the glomus tumor was made on radiological findings in MRI along with clinical signs.

The treatment of glomus tumors is surgical.(10) In the case of glomus tumors that are completely subungual, the transungual approach is usually recommended.(22) Lateral subperiosteal and lateral ungual approaches for subungual lesions has also been described, but the lateral approach exposes less of the nail bed, especially in small tumors.(23) Replacing the nail plate in its original position has been suggested to prevent nail deformities.(15,24) In our case, surgical excision was made by transungual approach, and the nail was replaced back to its original place during the closure to prevent nail deformities.

The recurrence rates have varied from 4-15%.(8) It usually recurs recur within days to weeks of surgery may suggest inadequate excision indicating a failure to complete the excision or the presence of another tumor that was not detected and excised at the time of surgery.(15,25) In our case, clinical symptoms were resolved following the surgical excision with a VAS score for pain from 7/10 to 1/10 and a negative Love pin test and cold insensitivity test, without any nail deformity during the two-month follow-up.

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Conclusion:

Glomus tumors are rare and often misdiagnosed due to gross inspection findings, but familiarity with its clinical tests can helps to making timely diagnosis. A classic triad of symptoms is more effective at diagnosing than radiological methods, but high-end radiological investigations like MRI aids in correctly diagnosing the tumor, ruling out other soft tissue and bony pathologies. Complete surgical excision by transungual approach is a treatment of choice for subungual tumors. Replacement of nails in their original place prevents nail deformity.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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Figures:

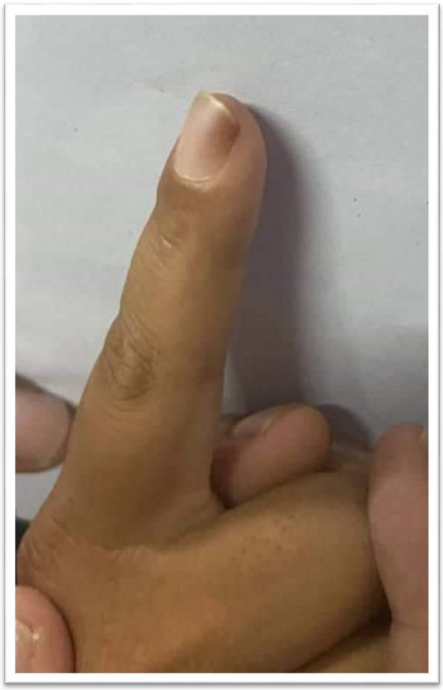

Figure 1: Pre-operative clinical image at presentation with no clinical finding on inspection

Figure 2: Plain radiograph showing normal bone and soft tissue shadow on the affected area

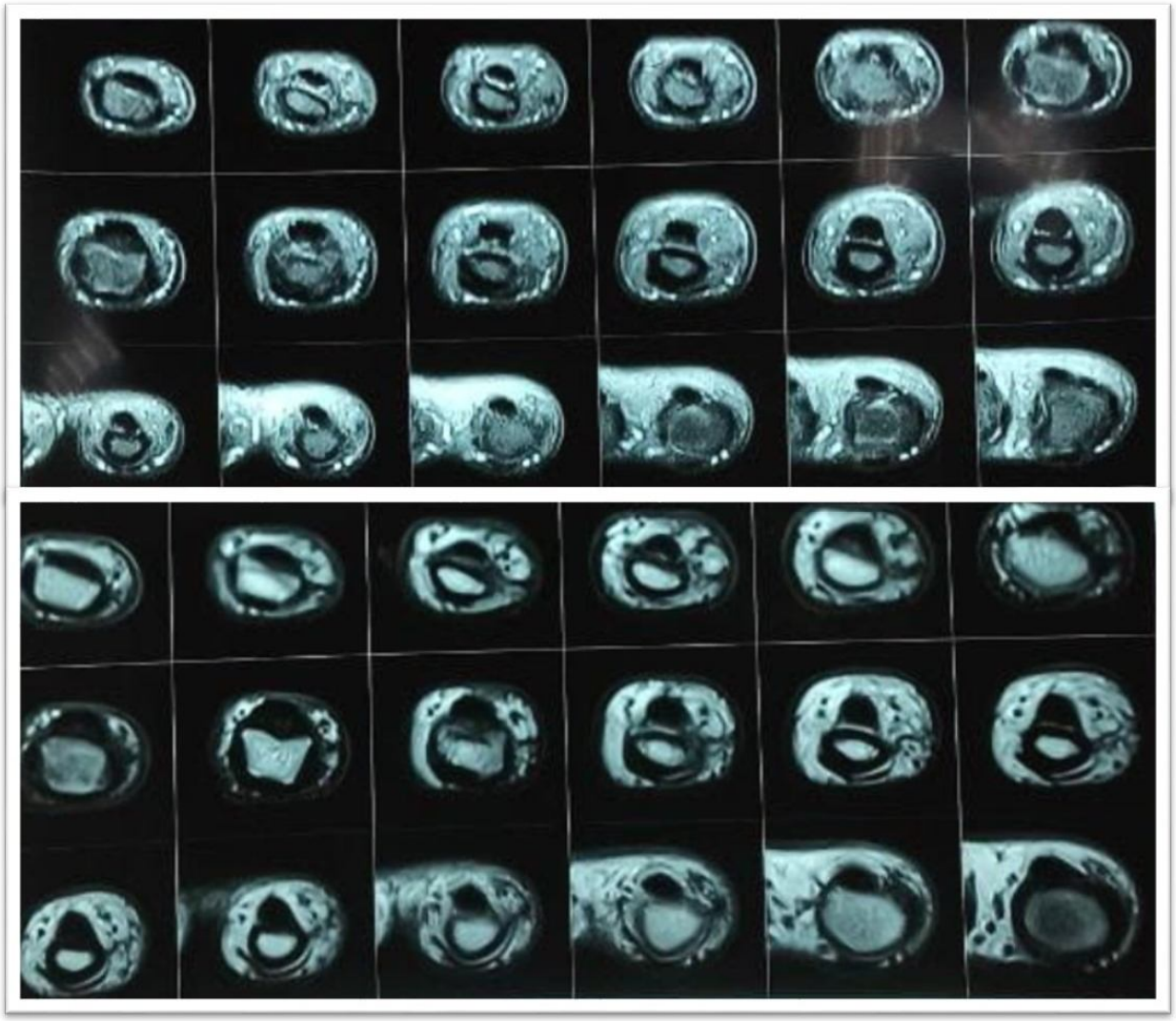

Figure 3: MRI suggestive of a small subungual mass of size 2x2 mm on the right index finger overlying nail matrix with hypo-intensity on T1-weighted images and hyperintensity on T2-weighted images, with vascular enhancement characteristic of Gloums tumor.

Figure 4: Surgically excised subungal mass of glomus tumor through a transungual approach

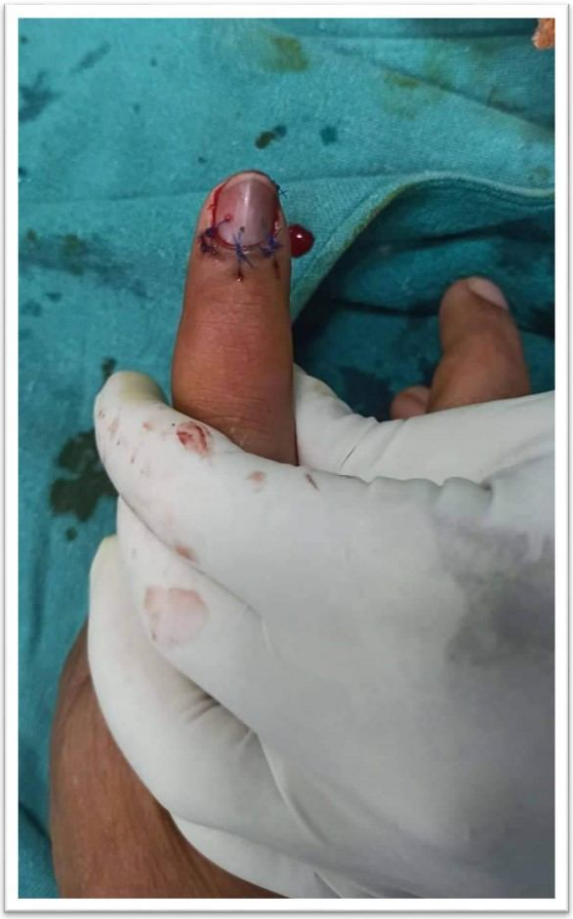

Figure 5: Transungual approach incision closure done by replacing the nail and stitches applied over it

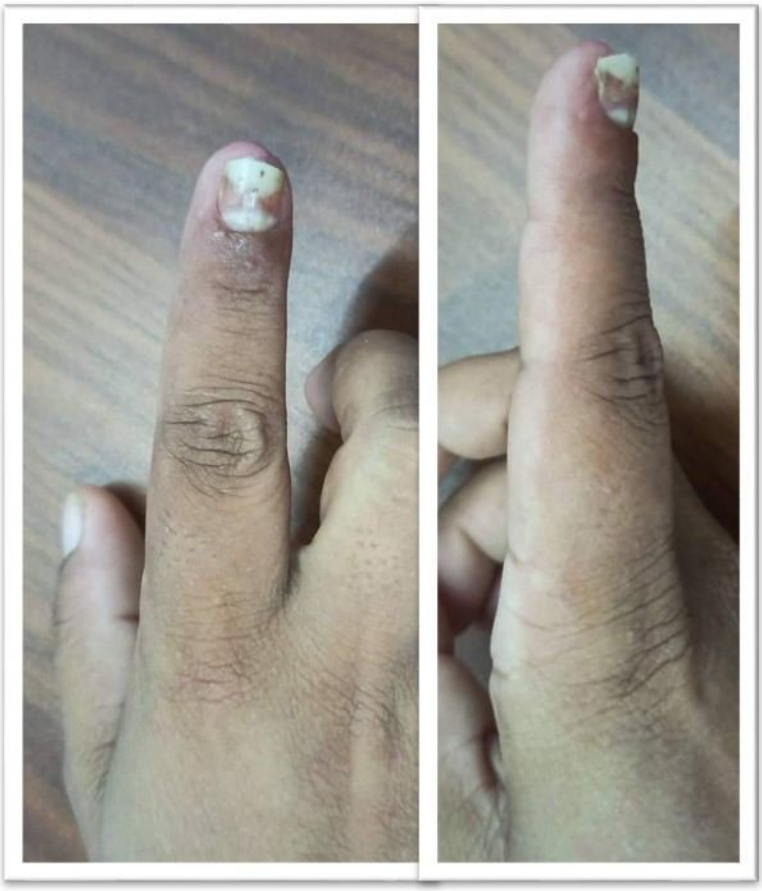

Figure 6: 2-months post operative follow up of the patient showing no any nail deformity