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Management Outcome of Glomus Tumors of the Hand in Misurata

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Abstract
Glomus tumors are rare neoplasms arising from the subcutaneous glomus apparatus. They account for 1 – 5% of all soft tissue tumors of the upper extremity (1), occurring in the hand in 75% 2 and in the nail bed in 50 – 90% of cases. The aim of the study to document the clinical presentation of glomus tumors of fingers and evaluate the outcome of surgical excision in terms of relief of symptoms, any postoperative nail deformities and tumor recurrence over a period of one year. The study was conducted at Ghadour Medical Centre. Ethical committee approval and informed consent were obtained prior to the start of the study. Period of study was from June 2020 to October 2023. Total number of cases is 6, including 6 females and, 1 case is male. The VAS score for pain was recorded postoperatively at 2 weeks and 4 weeks and 6 weeks. All the patients were followed up for 6 months postoperatively to rule out any recurrence at that point. There was a total of 6 patients with 5 (83.33 %) females and 1 (16.16 %) male. The age ranged from 27-62 years with a mean age of 41.17±13.7 years. There was involvement of the dominant hand in 4 (66.66%) patients, whereas the non-dominant hand was involved among 2 (33.33%) patients. At presentation, the mean VAS score was 9.33±0.65 (range of 8-10). At 2 weeks, it improved to 4.45±0.66 (range of 3-5), whereas at 4weeks it was further reduced to 2.59±1.90 (range of 2-4) and finally at 6 weeks and starting physiotherapy 0.59±0.87 (range of 0-3) . All the patients (n=17,100%) experienced complete symptomatic relief within 2-4 weeks. There was no recurrence over a period of 6 months. There were small postoperative nail deformities. As a small crack in 2 cases, otherwise normal. Diagnosis of glomus tumors of the fingers is generally easy when manifested with the classical clinical features and X-ray and ultrasonography is employed. Small tumors, asymptomatic or poorly symptomatic, and recurrent tumors can be difficult to diagnose. In these cases, advanced diagnostic examinations, as MRI should be used if it is available. Surgical excision of the tumor is curative, providing early relief of symptoms and eventual psychological or professional discomfort caused by the inability to use the hand freely.
Keywords. Management Outcome: Glomus Tumors, Misurata.

Background

Glomus Tumors are benign, painful, and vascular tumors originating from glomus bodies (1, 2)., and their main responsibility is to control temperature and blood pressure through controlling blood flow (1, 3-5). The basis of the formation of these tumors, which can occur in all parts of the body, is glomus hyperplasia (6). The hand is the most frequent site for these tumors in the body, especially in the subungual region, and they account for 1 to 5% of all hand tumors in terms of prevalence (6-9). The tyFigal triad of pinpoint tenderness, cold hypersensitivity, and paroxysmal pain identifies the clinical diagnosis. Usually, there is no need for imaging, but a magnetic resonance imaging (MRI) may be helpful
Glomus tumors are rare neoplasms arising from the subcutaneous glomus apparatus. They account for 1 – 5% of all soft tissue tumors of the upper extremity 1, occurring in the hand in 75% 2 and in the nail bed in 50 – 90% of cases 2,3. This favourite anatomical location and the intense pain proper of these tumors, constrict the patient to limit the use of the affected hand, causing practical, professional and often emotional discomfort. The tyFigal clinical presentation with paroxysmal point pain and hypersensitivity to cold and the benign nature makes generally easy their diagnosis and treatment
The aim of study to document the clinical presentation of glomus tumors of fingers and evaluate the outcome of surgical excision in terms of relief of symptoms, any postoperative nail deformities and tumor recurrence over a period of one year.

Materials and Methods

The study was conducted at Misurata Medical Centre. prospective study Ethical committee approval and informed consent was taken prior to the start of the study. Period of study was from June 2020 to October 2023 .
Total number of cases is 6 cases is included in our study , 6 of cases are femles , 1 cases is male
mean of 38 years (range 44–29) with glomus tumours localized in the fingers
all of patients with glomus tumor of the fingers were treated in our institution in the last 3 years. We retrospectively graphic, clinical, diagnostic and therapeutic data were collected.
all of them presented a single tumor. four patients had a right-hand involvement (1st, 3rd and 4th finger) and 1 patient a left-hand tumor (2nd finger). five tumors were placed in a subungual location and one in the fingertip. One patient with tip of finger location
Diagnostic procedures employed to achieve diagnosis and preoperative planning included radiography, ultrasonography. No magnetic resonance imaging (MRI) was employed. Plain radiography was employed in all cases preoperatively and in the 3 patients wrew performed a ultrasonography study of the hand Surgical technique
All the patients were operated upon as day care surgery cases. beirs nerve blocks with Xylocaine were performed among all patients(Fig1). Loupe magnification was routinely employed during surgery. For subungual lesions, the transungual approach (Fig 2) was employed. The nail plate was removed in a standard fashion. For

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raising the nail plate, a fine artery forceps was gently advanced progressively between the nail plate and the nail bed (Fig 3). The eponychium was separated with sharp dissection from the proximal part of nail plate using a size 15 surgical blade. The nail was thus carefully lifted off without damaging the nail bed(Fig 4) . In cases where the tumor was located more proximally in the nail bed, one or two 1-cm long skin incisions were made at the junction of the lateral nail folds and eponychium. An eponychial skin flap was elevated to facilitate direct visualization and excision of the entire tumor.

Fig1 glomus tumor after anasthesia

Fig 2 glomus tumor transungual approach

Fig 3 glomus tumor operative sharp dissection

Fig 4 glomus tumor operative nail lift off

Fig 5 glomus tumor surgery in aspitar hospital

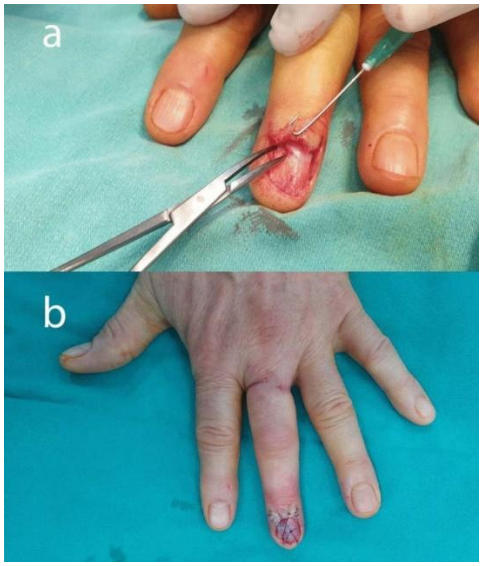

Fig 6 A Intra operative and – b post operative glomus tomor surgery

A longitudinal incision was made in the nail bed directly over the tumor. The nail bed flaps were delicately elevated by sharply separating them from the tumor. The tumorwas excisedcompletely. Following tumor excision, the nail bed was meticulously repaired with 6/0 vicryl sutures. The eponychial skin flap was sutured with prolene 5/0 sutures. The nail plate was replaced to protect the nail bed and secured temporarily with prolene 4/0 suture. In case of tumors on the volar pulp, a direct incision was made through the volar pulp skin and tumor excision undertaken. The skin was closed with prolene 4/0 sutures.(fig 5- fig 6). All the resected tumor specimens were subjected to histopathological confirmation. Postoperatively hand elevation was advised to prevent edema and swelling. The first wound dressing was changed on 5th postoperative day. Skin stitches were removed on 15th postoperative day. The VAS score for pain was recorded postoperatively at 2 weeks and 4 weeks and 6 weeks . All the patients were followed up for at 6mounths postoperatively to rule out any recurrence at that point (fig 7)

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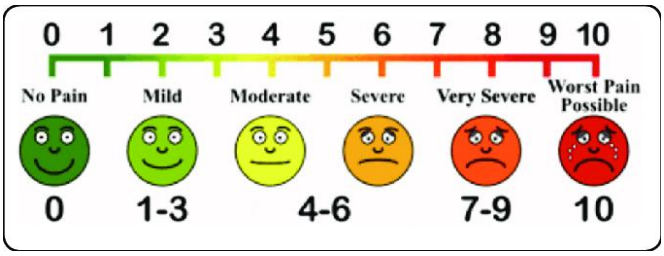


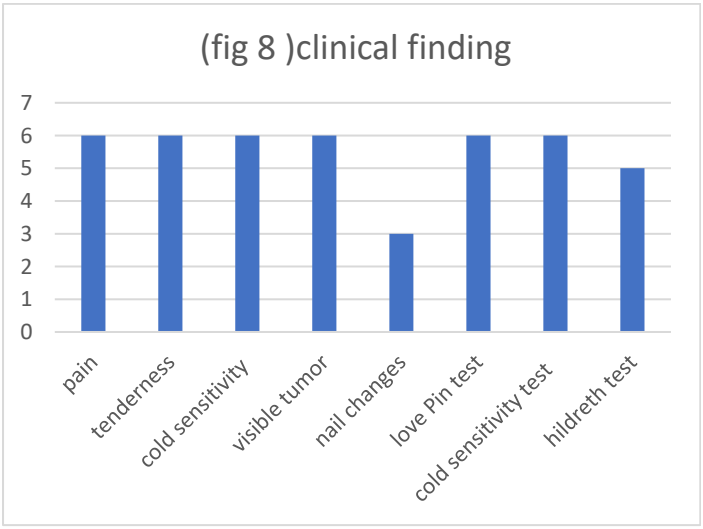
Fig 7 vas score

Results

Results There were a total of 6 patients with 5 (83.33 %) females and 1 (16.16 %) males. The age ranged from 27-62 years with a mean age of 41.17±13.7 years. There was involvement of dominant hand in 4 (66.66%) patients whereas the non-dominant hand was involved among 2 (33.33%) patients. The digits affected included the index finger (n=2; 33%), ring finger (n=1; 16%), little finger (n=2; 33%), thumb (n=0; 0%) and the middle finger (n=1; 16 %). There were 5 patients (83%) with subungual glomus tumors whereas 1 (16%) patients has tumors were found in relation to the distal phalanx (tip of finger .

The duration between the first time appearance of symptoms and the correct diagnosis ranged between three months to 12 years. The mean was (73) months.

The frequency of various presenting clinical findings was as follows: Pain (n=6; 100%), tenderness (n=6; 100%), cold sensitivity (n=4; 66%), visible tumor (n=4; 66%), nail changes (n=3; 50%), Love's pin test (n=6; 100%), Cold sensitivity test (n=6; 100%) Hildreth's test (n=5; 83%),The tumor size ranged from 2 mm to 1.1cm with a meand volar pulp glomus tumors. Among all patients (n=6; 100%), (tab1) (fig 8)



(Fig 8) clinical finding

Table 1. glomus tests

Test	Description	Reference
Love's pin test	compressing the digit above the tumor with the round head of a pin elicits severe pain and the patient would withdraw his or her hand	[6]
Hildreth's test	applying a tourniquet at the base of the painful digit reduces the pain	[6]
Cold sensitivity test	placing the extremity into cold water causes severe pain of the lesion	[6]

At presentation the mean VAS score was 9.33±0.65 (range of 8-10). At 2 weeks it improved to 4.45±0.66 (range of 3-5) whereas at 4weeks it was further reduced to 2.59±1.90 (range of 2-4) and finally at 6 weeks and starting physiotherapy 0.59±0.87 (range of 0-3) . All the patients (n=17,100%) experienced complete symptomatic relief within 2-4 weeks. Among all patients (n=14,100%) with transungual approach, the new nail regrown over 12 weeks. There was no recurrence over a period of 6 mounths . There were small postoperative nail deformities. As small crack in 2 cases otherwise normal (fig 10)

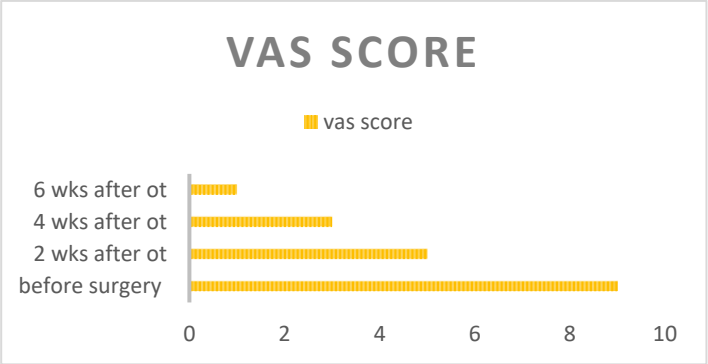


Fig 9. vas score

DISCUSSION

Glomus bodies are neuromyoarterial structures within the reticular dermis composed of an afferent arteriole and efferent venules with multiple communications (1-2) The arterial end or Sucquet-Hoyer canal is surrounded by glomus cells containing actins that contract and regulate blood flow (2-3-4). Glomus bodies are found throughout the body, but are concentrated in the fingers and the sole of the foot. Glomus tumours account for 1 to 5% of soft tissue tumours of the hand and 75% are subungual (5)

They are more common in women, especially in middle age (3-5-6) The tumours are usually 3–5 mm in diameter and can present as a slightly raised, red, painful nodule, and when subungual can deform and discolor the nail (4) Clinical tests, such as Love's test (6) ,, cold sensitivity test (5-6), and transillumination (5-7), may aid diagnosis. Clinical presentation generally occurs with intense pain, sensitivity to cold and point tenderness and is presumed to enable diagnosis in 90% of cases (8). Pain is the most frequent symptom, arises spontaneously in general, without any apparent cause and worsens as the tumor grows. Palpation is often impossible due to exacerbation of pain and sometimes patients complain irradiation at

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the ipsilateral arm and shoulder. Pain may be present for long time as patients often defer seeking medical evaluation or have had erroneous diagnosis and treatment. The mean duration from onset of pain to surgery it has been estimated to be approximately 7-8 years 12,13; in our experience was 8.6 years. From a pathophysiological point of view, it is believed that tactile or thermal stimuli excite the contractile activity of glomus cells triggering pain. Hypersensitivity to cold has been reported to be referred in 42-100% of cases1

Table 2. Cases profile

Case Number	Age	Sex	Method Of Diagnosis	Location	Symptom Duration	Pain	Clod Sensitivity	Nail Or Skin Changes
1	42	f	Clinically and by ultrasound	Subingual of ring finger (Rt Hand)	12 yrs	yes	yes	yes
2	39	f	clinically	Subinginal of little finger (Rt Hand)	2yrs	yes	yes	yes
3	37	f	clinically	Tip of middle finger (Rt Hand)	3 months	yes	yes	yes
4	29	m	Clinically and by ultrasound	Subinginal of little finger (LT Hand)	2 yrs	yes	no	yes
5	44	f	clinically	Subinginal of index finger (Rt Hand)	7 mounths	yes	yes	yes
6	39	f	clinICALLY	Subinginal of Index finger (LT Hand)	14 mounths	yes	no	yes

In this study majority of the patients were in their fourth and fifth decades of life. All the patients were adults and none belonged to the pediatric age group. The published studies have variably reported on the age of affliction among patients with glomus tumors. (9) from India reported 38 years as the mean age at presentation with a range of 16-55 years. (10) reported a mean age of 39 years with a range between 26-51 years. (12) observed a mean age of 48.4 years with a range between 36-78 years. (13) al reported the mean age of 49 years with a range of 20-86 years. (14) observed a mean age of 36.66 with a range of 22-53 years. (15) from the US reported majority of their patients in the fourth to seventh decades of life. In the published literature cases of glomus tumors among children have been reported and unlike adult subjects, these tend to be more commonly multiple rather than solitary (6-12). In this study females outnumbered the male patients. Several published papers conform to our observation. (9) reported 21 females versus 16 males. (16) had 17 females and 4 males in their study. (13) had 9 females and 6 males. (15) found 64% females and 36% males in their study. (16) reported a male to female ratio of 7:1, whereas (17) reported 2 males and 2 females. (18) in their series of 87 patients reported almost equal affliction of either gender with 45 males while 42 were females (6, 7, 9, 10, 12, 13). In this series more frequent involvement of the dominant hand was observed. Jawalkar H et al also reported similar observation with involvement of right hand among 7 patients and left hand in 5. Santoshi JA et al had 21 patients with left-hand involvement whereas 16 with right hand (6, 14). In this study index fingers were found to be the most commonly affected fingers. Most of the published studies conform to this observation. (8) observed involvement of the index finger in 3 cases, middle finger in 2, little finger in 2 and thumb in one case. (9) reported index finger as the most common digit involved in 5 patients, followed by the middle finger and the thumb 3 each and the ring finger in one case. (7) reported ring finger among 14 cases, thumb in 8, index, middle and little fingers each 5 cases surgical excision is the treatment method for glomus tumors. Although several surgical techniques have been described to date, we used a longitudinal excision of the bed or matrix following the resection of the nail through lifting the nail phleb in the subungual tumors. Following the repair of the bed and matrix, the nail was relocated to its original placement and the bed recovered without any deterioration.. [11] proposed opening a window over the nail in case of subungual tumors. [12] also reported that location of the resected nail piece to its original place following excision was critical for the prevention of further nail deformities with the window technique. However, it is not possible to perform this technique when the window is extended. In another study, [6] observed that lateral intervention provided a wide area for tumors of the nail bed and submatrix in subungual cases; through this approach, tumors with multiple localizations could be easily detected. Although lateral intervention is appropriate to prevent deformities of the nail bed, the removal of the nail ensures an improved vi As well, recurrence should be considered in the case of persistent pain following excision. Recurrence can be because of an inadequate excision or multiple tumor localization. In this study, recurrence was not observed in any patient. Moreover, none of the patients had multiple lesions.

Conclusions

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Diagnosis of glomus tumors of the fingers is generally easy when manifested with the classical clinical Figture and x ray and ultrasonography is employed. Small tumors, asymptomatic or poorly symptomatic, and recurrent tumors can be difficult to diagnose. In these cases advanced diagnostic examinations, as MRI should be used if it is available . Surgical excision of the tumor is curative, providing early relief of symptoms and eventual psychological or professional discomfort caused by the inability to use the hand freely

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