

Benign Tumors of the Hand: A Single Institutional Experience

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Cite this paper as: Dr. Dinesh Kumar T, Dr. Leo J Manavalan, Prof Dr. Senthil Kumar K, Dr. Jayasuriya V, (2025) Benign Tumors of the Hand: A Single Institutional Experience. *Journal of Neonatal Surgery*, 14 (10s), 923-928.

ABSTRACT

Tumors involving the hand is a commonly encountered problem, in hand surgery. While most of these pathological diagnoses are benign, rarely malignant lesions are also noted. This study encompasses benign hand tumors encountered by an individual surgeon, and studies their clinical presentations, and histopathological aspects of the disease. This is a retrospective cross-sectional observational study carried out over a period of 1 year conducted at Chettinad Hospital and Research Institute, Chennai. The total samples obtained were 36 and the specimens were chosen randomly until the gathered samples were adequate as per sample size in the study. Histopathological data and clinical data were collected in this study. Of the 36 cases, that were examined and the most common diagnosis was found to be ganglion cyst in 44.44% (n=16) of instances, followed by 22.22% (n=8) cases of Fibroma, Giant cell tumors in 16.66% (n=6) and myxoma in 11.11% (n=4). Schwannoma incidence were noted among 5.55% (n=2) of the study population. There were no incidence of any malignancy among the selected samples. To conclude, Ganglion cysts were the most common benign tumors, but if left untreated these cystic lesions will increase in size causing pain and affect the movement of the region. Complete excision of the lesion should be meticulously be carried out to prevent recurrence...

Keywords: Benign tumor, Ganglion cyst, Soft tissue tumor, Schwannoma, Myxoma

1. INTRODUCTION

Giant cell tumor is a locally aggressive benign musculoskeletal tumor with a high recurrence rate. It occurs in soft tissues (e.g., synovial membrane of joints, tendon sheaths) and, less commonly, in bone.¹ This yellow-brown multi-lobular tumor is composed of multinucleated giant cells. Although usually benign, the tumor pushes deeply into the soft tissues of the digits and extends along tendon sheaths and around neurovascular structures. It is frequently asymptomatic and is often larger than suspected clinically. In larger soft tissue giant cell tumors, radiographic notching of the bone may be evident. Complete surgical excision is the treatment of choice. Ganglion cysts are formed by an outpouching of the synovial membrane from a joint or tendon sheath.² They contain thick, jellylike, mucinous material similar in composition to synovial fluid. Amidst ganglion cysts, 60% occur on the dorsal aspect of the wrist, arising in the region of the scapholunate ligament.³ Other sites for ganglions in the hand are at the volar wrist, arising from one of the scaphoid articulations; at the flexor tendon sheath at the area of the A1 pulley; and at the dorsum of the DIP joint, where they are often associated with osteoarthritis of that DIP joint.⁴ At the dorsum of the DIP joint, the ganglion cyst can exert pressure on the germinal matrix of the nail bed, resulting

in a deformed or grooved nail. Ganglion cysts are most common in women in the third decade of life. They are innocuous and can often be left alone.⁵ However, treatment may be required for cosmetic purposes or to relieve pressure effects on adjacent structures. The dorsal wrist ganglion can sometimes be painful as a result of pressure on the posterior interosseous nerve at that location.⁶ The ganglion cysts must be surgically excised. Care must be taken to trace and to resect the pedicle of the ganglion all the way down to the joint or tendon sheath from which it arises.⁷ The palmar carpal ganglion is usually closely associated with the radial artery.⁸ Fibromas of the tendon sheath are benign soft tissue masses adjacent to the tendon sheath that occur due to reactive fibrosis in adults between the second and fifth decades. Histologically, the mass is composed of tightly packed spindle cells surrounded by collagen fibers. Approximately 82% of the fibromas of the tendon sheath occur in the hand and wrist region.^{9,10} The patient often presents with a slow-growing mass and mild tenderness on examination. Schwannoma is a benign neoplasm of Schwann cells. It is often seen along the course of the nerve.¹¹ It commonly presents in middle-aged adults without symptoms or with pain or paraesthesia.

A positive Tinel's sign can be elicited; i.e. percussion of the mass will result in tingling and pain along the course of the nerve.¹² It is well encapsulated and does not intertwine with the nerve fascicles; thus, complete surgical excision is easy without injuring the corresponding nerve.¹³ Spindle cell tumor is a rare benign tumor that's made up of mature fat cells and spindle cells. It's usually found in the upper neck, back, and shoulders, but also occurs in the wrist.¹⁴ Dermatofibromas arise from the fibrous dermis and are firm, erythematous plaques that sometimes have a central umbilicus.¹⁵ It is often adherent to the overlying epidermis. Surgery is required primarily for diagnosis. Myxomas are soft-tissue tumors of mesenchymal origin. They are benign but may exhibit locally aggressive behavior and recur locally after resection. The most common presentation of a juxta articular myxoma is a swelling or mass that may be painful.¹⁶ Juxta Articular Myxoma is a specific variant of myxoma associated with cyst formation often found in the vicinity of large joints, especially the knee. Although the pathogenesis is not yet completely understood, Juxta Articular Myxoma is most commonly associated with joint trauma and osteoarthritis.¹⁷ It is not currently thought to be associated with any specific syndromes and is more common in men in their third to fifth decades. It has been reported around the shoulder, elbow, foot, ankle, knee, and rarely in the hand/wrist.⁵

Aim: The aim of the study is to evaluate the clinicopathological data among patients with benign tumors of hand.



Figure 03: Ganglion cyst of the left thumb.

(Source: Dept.Of General Surgery,CHRI)

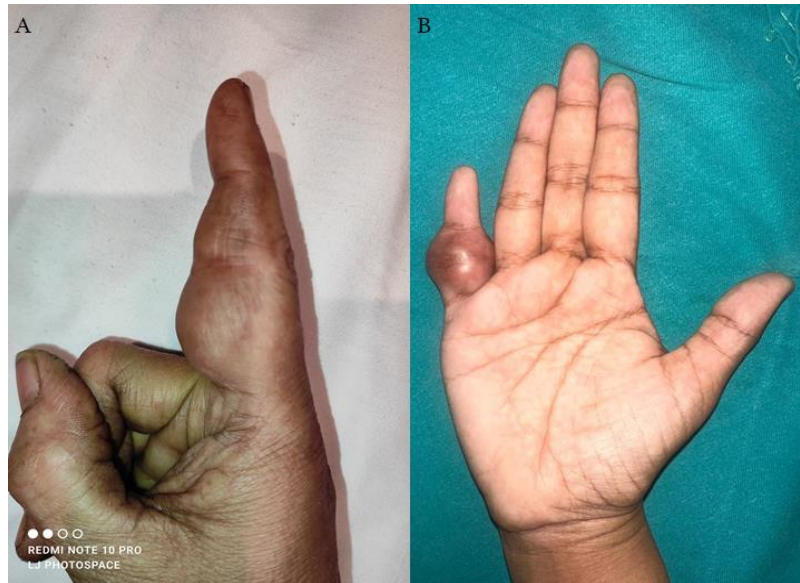


Figure 04: Giant cell tumor involving A: Right index finger; B: Left little finger.

(Source: Dept.Of General Surgery,CHRI)

2. MATERIALS AND METHOD

This study is a retrospective, cross-sectional observational study, that was conducted on patients with tumors of the hand, that were sent for histopathological evaluation from the Department of General Surgery, CHRI over the past 1 year. After obtaining approval from the Intra Hospital Ethics Committee (Chettinad Hospital and Research Institute) and conducted according to the principles and ethical standards. The relevant patient data was collected pertaining to demography, history of presentation, and details of surgical intervention undergone were collected from the medical records department and the histopathological details collected from the department of pathology. All the patients were explained in detail regarding the study. The total samples that were marked for benign tumors of hand for the duration of the study was found to be 36. Informed consents were obtained from the patients whose specimens were identified. Those specimens labelled under benign tumors of hand were considered and included into the study. The specimens to be included in the study were chosen randomly until the gathered samples was adequate as per sample size from patients who are willing to consent for taking part in the study. For Histopathological evaluation, Hematoxylin and Eosin was used to stain the block sections that have been paraffin embedded and treated with formalin. When necessary, special stains applied. The findings of the study is collectively summarised. We use IBM SPSS v.20 for the statistical analysis of this study due to its ease of use for analysis of data and gives us a well put study outcome. Compared to all the other study tools possible this tool is noted to be of better purpose for our study.

3. RESULTS

Among the 36 patients identified, the presenting complaint in almost all of the cases is the presence of swelling. In 55.55% (n=20) of cases, pain corresponding to the region of the swelling were noted, among which 8 patients (22.22%). 5 patients (13.88%) had disappearing swellings, that become visible only on specific movements of the hand. 66.66% (n=24) individuals gave history of tenderness. 33.33% (n=12) cases had restriction of movement of the hand. The clinical characteristics and its association with different benign tumors of the hand are tabulated in table 01.

TABLE 01: Clinical Presentations of Different Benign Lesions of the Hand.

TUMOR TYPE I CLINICAL PRESENTATION	PAIN		TENDERNESS		RESTRICTION OF MOVEMENTS		DISSAPPEARIN G SWELLING	
	YES (n)	%	YES (n)	%	YES (n)	%	YES (n)	%
GANGLION CYST (16)	8	50	10	62.5	4	25	5	13.88
FIBROMA (8)	6	75	6	75	2	25	0	0
GIANT CELL TUMOR (6)	2	33	4	67	4	67	0	0
MYXOMA (4)	2	50	2	50	0	0	0	0
SCHWANNOMA (2)	2	100	2	100	2	100	0	0

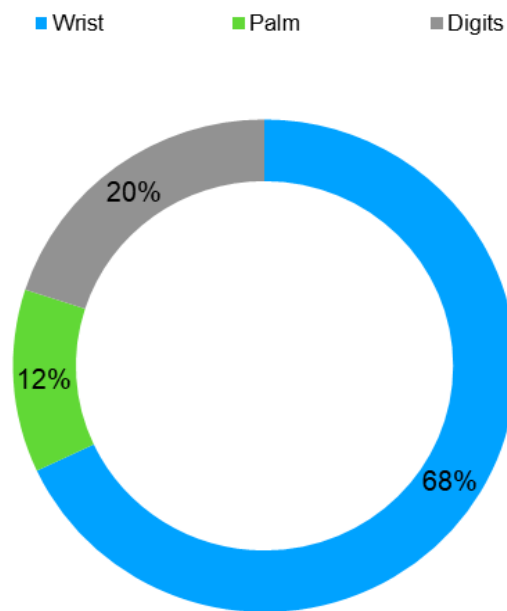
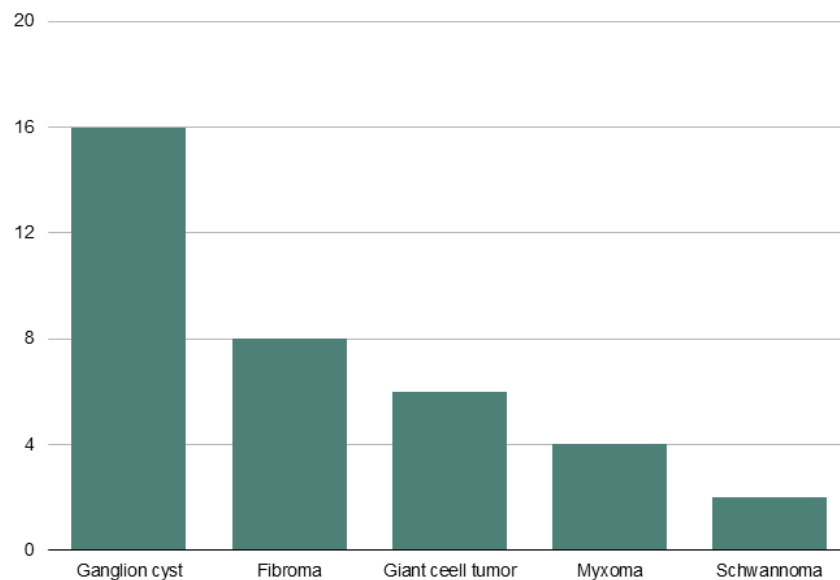
**Figure 01: Site of involvement of benign tumors of the hand.**

Figure 01 depicts the distribution of sites of occurrence of benign hand tumors. In our study only swellings in the region of the fingers, palm and wrist were included. The most common site involved was found to be the wrist (68%), over the extensor aspect. Females had a slightly higher incidence of being diagnosed with soft benign tumors of hand as compared to males. In our study we came across 10 male participants and 26 female participants, this is about the ratio of 5:13. Age distribution of the samples showed a maximum occurrence of benign tumors in the young adults aged group (15 - 30 years) followed by predominance in the middle age (31 - 50 years). Age distribution is depicted in table 2. The mean age was found to be 34 years which lies in the group of early middle age group. The maximum age of the patient in our study was 80 years and the youngest included in our study was found to be of 17 years.

TABLE 02: Distribution of Different Benign Lesions of the Hand To Age.

TUMOR TYPE	AGE RANGE (years)						
	10 - 20	21 - 30	31 - 40	41 - 50	51 - 60	61 - 70	71 - 80
GANGLION CYST (16)	0	10	2	2	2	0	0
FIBROMA (8)	2	0	4	0	2	0	0
GIANT CELL TUMOR (6)	0	2	2	0	0	1	1
MYXOMA (4)	0	2	0	0	2	0	0
SCHWANNOMA (2)	0	2	0	0	0	0	0

Of the 36 cases, that were examined and the most common diagnosis was ganglion cyst in 44.44% (n=16) of instances, followed by 22.22% (n=8) cases of Fibroma, Giant cell tumors in 16.66% (n=6) and myxoma in 11.11% (n=4). Schwannoma incidence were noted among 5.55% (n=2) of the study population. There were no incidence of any malignancy among the selected samples.

**Figure 02: Types of benign tumors of the hand.**

4. DISCUSSION

The findings of this study reveal important insights into the incidence of different benign tumors affecting the hand, in the region of Chennai. The results indicate that majority of the lesions are ganglion cysts, followed by fibroma and giant cell tumor, which aligns with previous research by Gregush and Habusta et al. in 2023 who also observed similar trend in distribution of the disease with respect to age. In our study the distribution of ganglion cyst among other benign tumors were considerably less as compared to the previous literatures, which can be attributed to the small sample size of our study. The Male:Female ratio of ganglion cysts in our study was 5:13 which is consistent with previous literature. One of the most notable findings was the incidence of fibroma among adults, which could be attributed to repeated trauma. Previous studies have shows very less reported evidence on the occurrence of fibroma among adult population. The discrepancy might be due to differences in population characteristics. A potential limitation of this study is the small sample size, and short period of the study, due to which the possibility of recurrence over longer duration could not be followed up effectively. Future studies could address these limitations by including larger datasets, or alternative methodologies including meta-analysis.

5. CONCLUSION

We conclude that Ganglion cysts were the most common benign tumors of hand and wrist. Ganglion cysts are disregarded by patients as well as physicians alike due to the lack of pain during its onset, but if left untreated these cystic lesions will increase in size causing pain and affect the movement of the region. Complete excision of the lesion should be meticulously be carried out to prevent recurrence. Histopathological evaluation to be carried out so as to prevent missing out on other

lesions especially giant cell tumors which usually have a tendency to recur, in which instance the patients is to be advised for radiation therapy after considering other parameters.

CONFLICT OF INTEREST

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this article.

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