

# Frequency of Painful Benign Tumors of the Hand in Patients presenting to the Hand and Upper Limb Surgery Combined Military Hospital Lahore.

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## Authorship and contribution Declaration:

Each author of this article fulfilled ALL 04 Criteria of Authorship:

1. Conception and design of or acquisition of data or analysis and interpretation of data.
2. Drafting the manuscript or revising it critically for important intellectual content.
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## ABSTRACT

**Objective:** To determine the frequency of painful benign soft tissue and bony tumors of the hand in patients presenting to the Hand And Upper Limb Surgery (HULS) Combined Military Hospital Lahore.

**Methods:** This descriptive study was conducted in the department of Hand and Upper Limb Surgery (HULS) Combined Military Hospital Lahore from 27<sup>th</sup> May 2017 to 27<sup>th</sup> May 2022. All adults patients of both gender with pain and or swelling of fingers and palm and fulfilling the inclusion criteria were investigated for soft tissue and osseous tumors. The receiver operative characteristics (ROV) curve was used to look at continuous factors like age and tumor size. Fisher's exact test was used to determine the likelihood of malignancy.

**Results:** The total number of patients with benign tumors of the hand were 49. Male patients were 29(59.1% ) and females were 20(40.8%). The mean age was 39±3.1 years. Soft tissue tumors were diagnosed in 30 (61.2%) patients and bone tumors in 19 (38.7%) patients. Glomus tumor was the most common soft tissue detected in 12 (40%) patients. Enchondroma was the most common bone tumor noted in 9 (56.2%) patients. Majority (46.6%, n=14) soft tissue tumors predominantly involved palm of the hand while bony tumors were located on phalanges in 16(84%,) patients.

**Conclusion:** The frequency of painful benign soft tissue tumors of the hand were more than bony tumors. Soft tissue tumors were located on palms and bony tumors on phalanges in majority of our patients.

**Keywords:** Benign, Hand, Phalanges, Soft tissue, Tumor

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## INTRODUCTION

Hand tumors are a challenging entity both for primary healthcare and specialist clinical practice.<sup>1</sup> Soft tissue tumors of the hand accounts for 15% of all the soft tissue tumors while bony tumors constitute 6% of the tumors of the hand.<sup>2,3</sup> In Japan 63,172 cases of soft tissue tumors and 47,307 cases of bone tumors were reported from 2006 to 2017 out of which 5175 (8.2%) cases were soft tissue tumors of the hand and 3129 (6.6%) cases were bony tumors of the hand.<sup>4</sup> The diagnostic criteria and treatment of hand tumors are different from other tumors of the body.<sup>5-8</sup>

The objective of our study was to determine the frequency of painful benign soft tissue and bony tumors of the hand in patients presenting to the Hand And Upper Limb Surgery(HULS) Combined Military Hospital Lahore.

## METHODS

We conducted this descriptive study in department of Hand And Upper Limb Surgery(HULS) Combined Military Hospital Lahore from 27<sup>th</sup> May 2017 to 27<sup>th</sup> May 2022. All adults patients with both gender with painful swelling of the hand presented to Out Patient department of HULS were included in this study. Patients with malignant bone tumors of the hand,

metastatic tumors, Rheumatoid arthritis, infection, skin pathologies and those treated surgically in other hospitals were excluded. The study was approved by the Ethical Committee of our hospital. Informed written consent was obtained from all study participants. Complete history was taken. General and local physical examination was performed. All relevant investigations (laboratory investigations, Radiographs/MRI/CT) were taken. Incision/excision biopsy was taken in doubtful cases to confirm the diagnosis. Standard uniform treatment protocol was adopted as per individual tumor. We classified bone lesions as the tumors located on the bones of the hand including carpals, metacarpals, and phalanges while lesions of fingers, palm, or at the back of the hand were classified as soft tissue lesions. The receiver operative characteristics (ROV) curve was used to look at continuous factors like age and tumor size. Fisher's exact test was used to determine the likelihood of malignancy. ( $p < 0.05$  was considered significant). We analyzed our data with SPSS version 23. Quantitative data was represented as mean and standard deviation. Qualitative data was presented as frequency and percentage. Data was presented in table where necessary.

## RESULTS

In this study 49 patients with painful benign tumors of the hand were included. Male patients were 29 (59.1%) and females were 20 (40.8%). The mean age was  $39 \pm 3.1$  years. Soft tissue tumors were diagnosed in 30 (61.2%) patients and bone tumors in 19 (38.7%) patients. Glomus tumor was the most common soft tissue tumor diagnosed in 12 (40%) patients followed by Neuromas (30%,  $n=9$ ), Hemangiomas (16.6%,  $n=5$ ) and Neurofibromas (13.3%,  $n=4$ ). Among the bony tumors Enchondroma was diagnosed in 9 (56.2%), Osteochondroma in 7 (36.8%) and Aneurysmal bone cyst in 3 (15.7%) patients. Majority (46.6%,  $n=14$ ) soft tissue tumors predominantly involved palm of the hand while bony tumors were located on phalanges in 16 (84%,) patients. Proximal phalanx was most commonly involved by bony tumors noted in 11 (68.75%) patients. Ring finger was the predominant area affected by bony tumors in 5 (45.5%) patients. We observed a significant association between age ( $p = 0.014$ ) and maximum size of the tumor ( $p = 0.031$ ) as shown in table I.

**Table I:** Comparison of frequency and tumor size after data stratification.

Variables	Benign soft tissue tumors (n,%)	Benign bone tumors (n,%)	Fisher exact test (P value)
<b>Age</b>			
≤ 39 years	23(46.9%)	3(6.1%)	0.014
> 39 years	9(18.3%)	14(28.5%)	
<b>Diameter of the Tumor</b>			
≤ 9 mm	28(57.1%)	18(36.7%)	0.031
> 9 mm	2(4.0%)	1(2.0%)	

## DISCUSSION

In our study soft tissue tumors were diagnosed in 30 (61.2%) patients and bone tumors in 19 (38.7%) patients. Variable frequency of tumors of the hand have been reported in the literature. Unni KK noted 290 (2.9%) cases of hand bone tumors out of total 9973 tumors.<sup>8</sup> Others reported 15% soft tissue tumors of the hand.<sup>9,10</sup> We had documented a relatively high frequency of Enchondroma bone tumors whereas Glomus was the most frequently diagnosed soft tissue hand tumor. These results are comparable with previous studies.<sup>4-7</sup> Some studies however reported a higher frequency of tenosynovial giant cell tumors.<sup>11,12</sup> Pain was the most predominant

early feature in our series. This was in accordance with previous studies.<sup>13</sup> In our study majority of the bony tumors were located in the proximal phalanges and we only detected a single case of tumor of carpal bone. Carpal bone tumors are rare as reported in literature.<sup>7,14</sup>

We adopted standard treatment protocols mainly focusing on preservation of hand and its function while ensuring complete resection or curettage of the tumor. However, the therapeutic outcomes of our cases were similar to the previous studies.<sup>15,16</sup> Bray<sup>17</sup> was the opinion that limb salvation surgery is a viable alternative to amputation. Contrary to Bray, others<sup>18,19</sup> suggested single ray amputation for benign/malignant tumors.

The older age population is more vulnerable to malignant hand tumors rather than benign tumors.<sup>20-23</sup> Hemangiomas was reported in 5(16.6%) patients in our series and all were treated surgically. Smolinski<sup>24</sup> however pointed out that 50 percent of hemangiomas usually involuted by the age of five years and 70 percent by the age of seven.

Our study had few limitations. The design of our study was descriptive. Our sample size was small. We could not document outcome of each and every tumor. We recommend further studies to confirm our results.

## CONCLUSION

The frequency of painful benign soft tissue tumors of the hand were more than bony tumors. Soft tissue tumors were located on palms and bony tumors on phalanges in majority of our patients.

**Conflict of Interest:** None

**Grants/Funding:** None

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