

# A Hospital Based Clinico-Pathological Assessment of Soft Tissue Tumors

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Conflict of interest: Nil

**Aim:** To study the benign and malignant soft tissue tumors with respect to incidence of age, sex and site distribution and study of pathological features of soft tissue tumors.

**Materials and Methods:** Retrospective study was undertaken for a period of 2 years in Department of Pathology, Sri Krishna Medical college, Muzaffarpur, Bihar, India.

**Results:** Total 120 cases of soft tissue tumors were included in this study. It has slightly male preponderance with a male to female ratio was 1.4:1. Benign soft tissue tumors formed 93.3%(112) of all soft tissue tumors while malignant soft tissue tumors constituted 6.7%(8). The commonest tumor was Benign adipocytic constituting 68.3%(82) of all soft tissue tumors followed by vascular tumors 10%(12), fibrohistiocytic tumors 6.7%(8), peripheral nerve sheath tumors 5%(6), fibroblastic tumors 1.7%(2), Perivascular tumors 1.7%(2) of all soft tissue tumors. The Benign adipocytic tumor accounted for the majority of benign soft tissue tumors 73.2% followed by benign vascular tumors 10.7%, benign fibrohistiocytic tumors 7.1%, benign peripheral nerve sheath tumor 5.3%, benign fibroblastic tumor 1.8% and benign perivascular tumor 1.8%. Benign tumors of smooth muscle and benign tumors of uncertain differentiation are nil encountered in our study. In our study total 8 cases were malignant soft tissue tumor. 3 cases were of malignant fibroblastic group. 2 cases were of malignant skeletal muscle group. 3 cases were of malignant tumors of uncertain differentiation. 52.7%(59) of benign soft tissue tumors were in extremities, 23.2%(26) tumors were in head and neck, 13.4%(15) were in back and shoulder, 10.7%(12) were in trunk and abdomen. Most common site for malignant soft tissue lesions is lower extrimities followed by head and neck.

**Conclusion:** The diagnosis and management of soft tissue tumors require a team perspective. Even though soft tissue sarcomas are rare and usually present just as painless mass, the clinician must be able to diagnose it early for better management. A careful gross examination of the specimen and adequate sampling of the tumor is essential.

**Keywords:** Tumors, Benign, Malignant.

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## Introduction

Soft tissue tumors are a heterogenous group of tumors and defined as mesenchymal proliferations that occur in non-epithelial extra skeletal tissue of the

body without reticuloendothelial system, glia, and supporting tissue of various parenchymal organs. It includes smooth muscles, striated muscles, fat and fibrous

tissue, with vessels. It also includes peripheral nervous system because tumors from nerves present as soft tissues masses. Soft tissue is derived embryologically from mesoderm with some contribution from neuroectoderm. [1].

Soft tissue tumors are usually divided into benign, intermediate and malignant forms. They can occur at any age group but histological distribution of soft tissue tumors are for definite age and anatomical site [2,3]. They usually present as a painless mass.

The incidence of benign soft tissue tumors is more when compared to the frequency of malignant ones. The Benign soft tissue tumors are 10 times more common than malignant one. Soft tissue sarcomas compared carcinomas and other neoplasm, are relatively rare and less than 1% of all malignant tumors. Malignant Soft tissue tumors occur more commonly in males than females. [1] They usually occur in adults and present as a large pain less soft tissue mass.

Different techniques like excisional, incisional and core biopsy used for diagnosing soft tissue masses. For diagnosis of an extremity soft tissue mass open biopsy is the gold standard investigation. [3] FNAC also has an important role in diagnosis of soft tissue lesions, especially CT guided FNAC helpful in diagnosis of intraabdominal and retroperitoneal lesions. Different special techniques like special stains, immunohistochemistry, electron

microscopy and cytogenetic, molecular methods are applied to increase diagnostic accuracy of soft tissue tumors. Age, duration, location, size, and pathological examination are helpful to make differential diagnosis of the tumor. [4]

Thus, to study the accurate diagnosis of soft tissue tumors by clinical history of benign and malignant tumors with respect to incidence of age, sex and site distribution and study of pathological features of soft tissue tumors which is helpful to make differential diagnosis of the tumor.

### Material and Methods

This retrospective study was carried out in 2 years in Department of Pathology, Sri Krishna Medical college, Muzaffarpur, Bihar, India, after taking the approval of the protocol review committee and institutional ethics committee.

### Methodology

Total 120 patients of all the soft tissue tumors, both benign and malignant were included in this study. Detailed clinical data including history, clinical features, USG, Radiological findings and gross findings was taken from histopathology record section. The tissue was fixed in 10% formalin and processed through standard paraffin embedding technique. The blocks were recut and stained by routine H&E stain. They were further examined microscopically and grading was done accordingly.

### Results

**Table 1: Relative incidence of benign & malignant soft tissue tumors**

Type	Benign n=112		Malignant n=8	
	Male	Female	Male	Female
Below 10	7	3	1	1
10-20	5	2	1	0
20-30	17	16	1	0
30-40	19	16	0	0
40-50	9	5	1	0
50-60	5	4	1	0
Above 61	2	2	1	1

Total		64	48	6	2
Category	Type		Male	Female	Total
	Benign		64	48	112
	Malignant		6	2	8
	Total		70	50	120

Total 120 cases of soft tissue tumors were included in this study. It has slightly male preponderance with a male to female ratio was 1.4:1. Most of the patients were in age group 30-40 in benign soft tissue tumors.

**Table 2: Incidence of Benign & Malignant Soft Tissue Tumors**

TYPE	Benign n=112	Malignant n=8
Adipocyte	82	0
Vascular tumors	12	0
Fibrohistiocytic tumors	8	0
Peripheral nerve sheath tumors	6	0
Fibroblastic tumor	2	3
Perivascular	2	0
Tumor of uncertain differentiation	0	3
Skeletal tumor	0	2
Total =120	112	8

The commonest benign tumor was adipocytic constituting 68.3% (82) of all soft tissue tumors followed by vascular tumors 10% (12). fibrohistiocytic tumors 6.7% (8). peripheral nerve sheath tumors 5% (6) fibroblastic tumors 1.7% (2)

Perivascular tumors 1.7% (2) of all soft tissue tumors. In the malignant, 3 each were in Fibroblastic tumor and Tumor of uncertain differentiation group. Rest of the 2 were Malignant skeletal tumor.

**Table 3: Site distribution of Benign and Malignant Soft Tissue tumors**

Site	Benign	Malignant
Extremities	59	4
Head and Neck	26	2
Trunk and Abdomen	12	2
Back and Shoulder	15	0
Total n=120	112	8

52.7% (59) of benign soft tissue tumors were in extremities, 23.2% (26) tumors were in head and neck, 13.4% (15) were in back and shoulder, 10.7% (12) were in trunk and abdomen.

### Discussion

Soft tissue is a non-epithelial extra skeletal tissue of the body exclusive of reticuloendothelial system, glia and supporting tissue of the various parenchymal organs. It is represented by the voluntary muscles, adipose tissue and

fibrous tissue and vessels serving these tissues.

They are classified according to the tissue they recapitulate (muscle fat, fibrous tissue, vessels and nerves). Some soft tissue tumors have no normal tissue counterpart but have consistent clinicopathologic features warranting their designation as distinct entities.

In present study the frequency of benign tumor was 93.3% and malignant tumors was 6.7% which is in between study of

Myher Jensen et al. [5] and Lazxim et al. [6] whereas M.J. Kransdorf et al. [7], reported 60.2% benign and 39.8% malignant soft tissue tumor in their study. In other study of soft tissue tumors of head and neck by Makino [8] stated 96% tumors as benign and 4% as malignant. In all these studies benign tumors predominated over malignant tumors. The relative frequency of benign to malignant soft tissue tumors is difficult to estimate accurately since many of the benign tumors cause not much problems and patients do not report to the clinicians and also most benign lesions are not removed.

Mandong et al. [9] done ten years retrospective study of soft tissue sarcomas and reported male to female ratio 1.4: 1., which is very close to study of Abudu et al. where male to female ratio was 1.9:1. Agravat et al. [10] studied 100 cases of soft tissue tumors. Of these 86% were benign, 6% malignant, 2% borderline and 6% were tumor like lesions. In our study the commonest tumor was Adipocytic constituting 68.3 of all tumors of soft tissue followed by vascular tumors 10%, Fibrohistiocytic tumors 6.7%, peripheral nerve sheath tumors 5%, fibroblastic tumors 1.7% and perivascular tumor 1.7% in the decreasing order of frequency. There is a highly significant association between the type of tumors and the category of tumors. The benign adipocytic tumors accounted for the majority of benign soft tissue tumors 73.2% followed by vascular tumors 10.7%. Benign tumors of smooth muscle and benign tumors of uncertain differentiation are nil encountered. Myhre-Jensen [5] reported most common benign soft tissue tumors were of adipocytic (45.8%) constitute majority of lipoma followed by benign fibrohistiocytic tumors (17.5%). Regarding the site of soft tissue tumors in fair number of studies commonest site was extremities. Soft tissue tumors may arise in any location although approximately 34.6% occur in extremities.

In present study 52.7% benign soft tissue tumors were seen in extremities followed by head and neck 23.2% which is comparable with Beg et al. studies. [11] The studies by Lazxim, Beg and Zhi et al. [6,11,12] State commonest site was extremities for the malignant soft tissue tumors mainly lower extremities followed by trunk and abdomen. Whereas in case of Madong et al. 9 extremities followed by head and neck. Meis-Kindblom et al. [13] studied eighty cases of angiosarcoma and found most common site was extremities. A study of MPNST from 200 soft tissue sarcomas by Kar et al. [14] reported extremities as most common site followed by chest wall and trunk, pelvis and head and neck.

The malignant soft tissue tumors were observed to have a strong predilection for extremities 30% specifically lower extremities, followed by trunk and abdomen 20%. The predilection is confirmed by the studies of Kransdorf [7], Gebhard et al. [15] studied clinicopathologic and immuno histochemical features of pleomorphic liposarcomas and found lower extremities as most common site of occurrence. Studies by Olivera AM et al. [16] and Weiss SW et al. [17] on extra skeletal myxoid chondrosarcoma and MFH respectively also reported extremities as most common site that too lower extremities more than upper extremities. Accurate histologic classification contributes significantly to establishing the prognosis of sarcoma. Important diagnostic features are cell morphology and architectural arrangement; often these features are not sufficient to distinguish one sarcoma from another, particularly with poorly differentiated aggressive tumors. Whatever the type, the grade of a soft tissue sarcoma is important in predicting its behavior. Grading is largely based on degree of differentiation, average number of mitosis per high power field, cellular pleomorphism and extent of

necrosis. In general tumors arising in superficial locations have better prognosis than deep seated lesions. [18]

### Conclusion

The diagnosis and management of soft tissue tumors require a team perspective. Even though soft tissue sarcomas are rare and usually present just as painless mass, the clinician must be able to diagnose it early for better management. A careful gross examination of the specimen and adequate sampling of the tumor is essential.

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