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# Histopathological Spectrum of Soft tissue tumors in a rural Tertiary Care teaching hospital

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## Introduction

Soft tissue can be defined as non epithelial extra skeletal tissue of the body exclusive of the reticuloendothelial system, glia and supporting tissue of various parenchymal organs. It is represented by the voluntary muscles, fat and fibrous tissue along with the vessels serving these tissues and it also includes the peripheral nervous system.

Soft tissue tumors are a highly heterogeneous group of tumors that are classified by the line of differentiation, according to the adult tissue they resemble. Soft tissue tumors are classified into benign and malignant forms. Some tumors are classified as being of intermediate (borderline or low malignant potential) malignancy, implying a high rate of local recurrence and small risk of metastasis.[1]

Soft tissue tumors can occur at any age. Both benign and malignant soft tissue tumors usually present as painless mass. The most common location of these tumors are the extremities followed by the trunk, abdominal cavity and head and neck region.[2]

The diagnosis of a soft tissue lesion requires clinical information and adequate, well processed tissue. At a minimum, the pathologist should be provided with the age of the patient, the location of the tumor and its growth characteristics. Imaging studies help in understanding the clinical extent of the lesion and its relationship to normal structures.[1]

Soft tissue tumors pose great diagnostic challenges with constantly evolving histopatho-logical criteria, particularly concerning ancillary investigations such as immunohistochemistry and molecular genetics.

## Aims and Objectives

1. To study the spectrum of soft tissue tumors
2. To study the relative frequency of benign and malignant soft tissue tumors
3. To estimate the age, sex and location of benign and malignant soft tissue tumors
4. To study the gross and histopathological features of soft tissue tumors

## Materials and Methods

This is a retrospective study carried out in the Department of Pathology of a tertiary care teaching institute in rural Maharashtra. All soft tissue specimens sent for histopathological examination for a period of 3 years (Jan 14- Dec 16) were included in the study. A total of 159 cases were studied. Detailed clinical data including history, clinical features, USG and

radiological findings were obtained. Gross findings were noted. The sections were stained by H&E and examined microscopically and categorized. Ancillary techniques were used wherever feasible.

## Results

**Table 1:** Distribution of soft tissue tumors

| Soft tissue tumors | No. of cases | Percentage |
|---|---|---|
| Lipomatous tumor | 93 | 58.49 |
| Vascular tumor | 31 | 19.49 |
| Tumors of Peripheral nerve | 19 | 11.94 |
| Fibroblastic tumors | 8 | 5.09 |
| Tumors of Lymphatic vessel | 2 | 1.25 |
| Gastrointestinal Stromal Tumor | 2 | 1.25 |
| Perivascular tumors | 2 | 1.25 |
| Fibrohisiocytic tumors | 1 | 0.62 |
| Tumors of Smooth muscle | 1 | 0.62 |
| Total | 159 | 100.0 |

A total of 159 soft tissue tumors were received during the period of 3 years. Lipomatous tumors were the commonest (92 cases) and constituted 58.49%, followed by vascular tumors (19.49%) and tumors of Peripheral nerves (11.94%). (Table 1)

**Table 2:** Incidence of Benign and Malignant tumors

| Soft tissue tumor | Benign | Malignant | Borderline |
|---|---|---|---|
| Lipomatous tumor | 92 | 1 | 0 |
| Vascular tumor | 31 | 0 | 0 |
| Tumors of Peripheral nerve | 19 | 0 | 0 |
| Fibroblastic tumors | 7 | 0 | 1 |
| Tumors of Lymphatic vessel | 2 | 0 | 0 |
| GIST | 0 | 2 | 0 |
| Perivascular tumors | 2 | 0 | 0 |
| Fibrohisiocytic tumors | 1 | 0 | 0 |
| Tumors of Smooth muscle | 1 | 0 | 0 |
| Total | 155(97.48%) | 3(1.88%) | 1(0.64%) |

Benign soft tissue tumors constituted 155 cases (97.48%) and greatly outnumbered malignant tumors (1.88%). There was a single case of borderline tumor (0.64%). (Table 2)

**Table 3:** Sex Incidence of Soft Tissue Tumors Tumors

| Soft Tissue Tumor | Male | Female |
|---|---|---|
| Benign | 78 | 77 |
| Borderline | 1 | 0 |
| Malignant | 1 | 2 |

The male: female ratio for benign tumors was 1.01:1. The borderline case of Dermatofibro-sarcoma protuberans studied was of a male patient, while of the 3 malignant tumors studied, 2 occurred in females and one in a male patient. (Table 3)

**Table 4:** Distribution of Benign Tumors

| Benign Tumors | No. of cases |
|---|---|
| Lipomatous tumor | |
| Lipoma | 84 |
| Fibrolipoma | 4 |
| Myxolipoma | 1 |
| Myolipoma | 1 |
| Intramuscular Lipoma | 1 |
| Angiolipoma | 1 |
| Vascular tumor | |
| Cavernous Haemangioma | 6 |
| Capillary Haemangioma | 13 |
| Pyogenic Granuloma | 11 |
| Masson's Haemangioma | 1 |
| Tumors of Peripheral nerves | |
| Neurofibroma | 11 |
| Schwannoma | 8 |
| Fibroblastic tumors | |
| Fibroma | 7 |
| Tumors of lymphatic vessels | |
| Lymphangioma | 2 |
| Perivascular tumors | |
| Glomus tumor | 2 |
| Fibrohistiocytic tumors | |
| Benign fibrous histiocytoma | 1 |
| Tumors of Smooth muscle | |
| Leiomyoma | 1 |

Ordinary Lipomas were the commonest benign tumors (84 cases). Variants of lipoma studied included 4 cases of fibrolipoma and one case each of myxolipoma, myolipoma, intramuscular lipoma and angiolipoma. Capillary haemangiomas were the commonest vascular tumors (13 cases) followed by pyogenic granuloma, cavernous

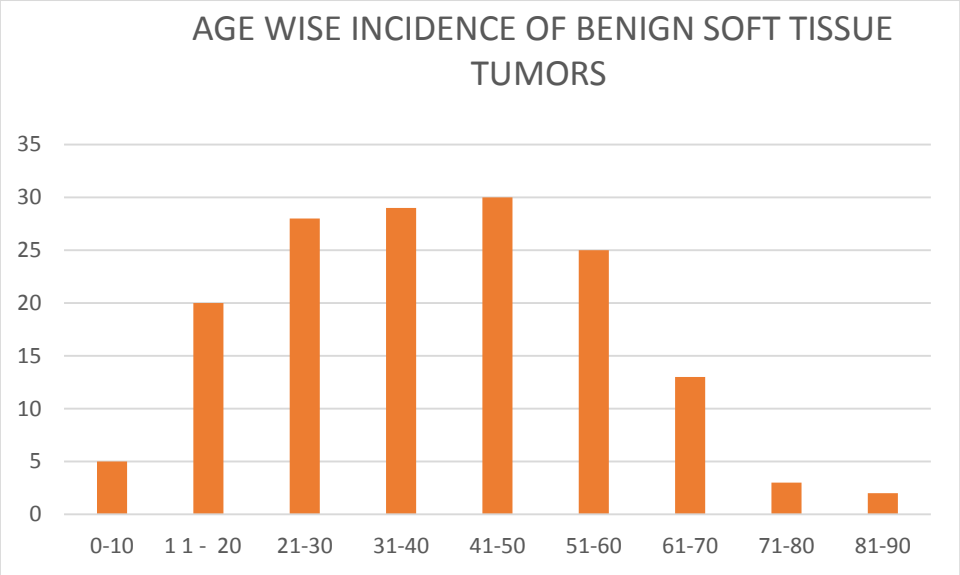
haemangioma and one case of Masson's haemangioma/Papillary endothelial hyperplasia. Neurofibromas and Schwannomas were the Tumors of peripheral nerves encountered. The other benign tumors studied consisted of 7cases of fibroma, 2 cases each of lymphangioma and glomus tumor and one case each of leiomyoma and benign fibrous histiocytoma. (Table 4)

**Table 5:** Site Wise Distribution of Benign Soft Tissue Tumors

| Soft Tissue Tumors | Head, Neck, Face | Upper Extremity | Lower Extremity | Thorax | Back | Abdominal Wall | Total |
|---|---|---|---|---|---|---|---|
| Lipomatous tumor | 12 | 26 | 18 | 0 | 36 | 0 | 92 |
| Vascular tumor | 24 | 3 | 1 | 2 | 0 | 1 | 31 |
| Tumors of Peripheral nerve | 8 | 11 | 0 | 0 | 0 | 0 | 19 |
| Fibroblastic tumors | 0 | 5 | 2 | 0 | 0 | 0 | 7 |
| Tumors of Lymphatic vessel | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| Tumors of Smooth muscle | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Fibrohisiocytic tumors | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Perivascular tumors | 0 | 2 | 0 | 0 | 0 | 0 | 2 |

Lipomatous tumors were commonest on the back (39.13 %) followed by the upper extremity (28.26 %). Vascular tumors were most common in the head, neck and face region, while Tumors of peripheral nerve, Fibroblastic tumors, Smooth muscle Tumors, Fibrohistiocytic and Perivascular tumors were common on the upper extremity. 2 cases of Tumors of lymphatic vessel were located on the lower extremity. (Table 5)

**Fig 1:** Age Wise Incidence of Benign Soft Tissue Tumors




The commonest age group in which benign tumors occurred was 2nd to 5th decade (70.44 %) (FIG 1)

**Discussion**

Soft tissue tumors are relatively rare and constitute less than 1% of all the cancers.[3] Benign soft tissue tumors outnumber malignant tumors by a margin of about 100:1 in hospital population.[2,3,4,5]

In our study, benign tumors constituted 97.48% and greatly outnumbered malignant tumors constituting 1.88%, while borderline tumors constituted 0.6% of all cases. This is in accordance with studies carried out by Umarani M K et al, who found 92.2% of benign soft tissue tumors and 5% malignant. Rest were of intermediate category.[2, 4]

Benign tumors were commonly seen in the 2nd to 5th decade in our study (70.44%) and this correlated with the findings of Batra et al (61.80%).[5]

Male preponderance was observed in all soft tissue tumors as also in our study (Male to female ratio 1.01:1).[2,4,5]

In the present study, the most common location for soft tissue tumors was the extremities (46.45%) followed by head, neck and face region(28.38%).These findings co-relate with the studies of Batra et al(40.0%) and Jain et al (33.13%).[5,6]

The most common histological type of soft tissue tumor studied was Lipomatous tumor.[2,3,5] Similar findings were found in our study. However, in a study carried out by Swagata et al, adipose tissue tumors were the second most common group after vascular tumors.[4]

Lipoma was the commonest benign soft tissue tumor in studies carried out by Umarani et al (60.29%), Batra et al(65.7%) and Jain et al (50.27%).[2,5,6] This is in accordance with the present study (57.56%).

**Conclusion**

Most patients with soft tissue tumors present with painless mass. The benign soft tissue tumors are more common than malignant soft tissue tumors. They constituted 97.48% of all soft tissue tumors in our study. The peak incidence of soft tissue tumors was 2nd to 5th decade. In our study males were more commonly affected than females, and the extremities were the commonest site followed by head, neck and face region. Careful gross examination and adequate sampling of tumors is essential. Light microscopic evaluation of H& E stained sections is sufficient in majority of cases.

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