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# Original Article

## Assessment of Efficacy of Fine Needle Aspiration Cytology for the initial diagnosis of Superficial Soft Tissue Lesions

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***ABSTRACT*:**
**Background:** Malignant soft tissue tumors i.e. soft tissue sarcomas (STSs) are rare and account for less than 1% of total malignancies. However, diagnosis of these tumors is a challenging job for histopathologists because of extreme histological diversity. **Aim of the study:** To assess the efficacy of fine needle aspiration cytology for the initial diagnosis of superficial soft tissue lesions. **Materials and methods:** The study was conducted in the Department of Pathology. The study was conducted on subjects who presented to the department OPD section with superficial soft tissue masses for the study period. A total of 74 patients reported to the department for the FNAC of soft tissue lesions. We excluded the subjects with lesions of breast, lymph nodes, salivary glands and thyroid. A total of 65 patients were selected for the study. We used Franzen's type aspiration handle, 20cc syringes for aspiration of the sample from the soft tissue lesion. **Results:** A total of 65 cases were studies. The results showed that number of benign lesions were 55 and number of malignant cases were 10. Of the benign lesions, lipoma was the most common benign lesion (n=38), followed by hemangioma (n=6) and neurofibroma (n=4). **Conclusion:** FNAC is a highly reliable procure for initial diagnosis of superficial soft tissue lesions.
**Key words:** Benign, FNAC, malignant, cytology.

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### INTRODUCTION:

Various types of diseases are encountered in the skin and superficial soft tissues of the subcutis, ranging from nonspecific dermatoses and inflammatory processes to neoplastic conditions.[1] Though cytopathology is an excellent diagnostic tool in routine dermatologic practice, studies relating to histopathological and cytological correlation are sparse.[2] Among its various diagnostic aids, lately, FNAC has been gaining importance as a result of its cheap cost, easy performance, safety, along with fair specificity and specificity, especially in terms of sorting out malignant cases.[3] Apart from its use in recurrent and metastatic cases, FNAC has been identified as a useful diagnostic technique in the initial diagnosis of soft tissue tumors.[4] Malignant soft tissue tumors i.e. soft tissue sarcomas (STSs) are rare and account for less than 1% of total malignancies. However, diagnosis of these tumors is a challenging job for histopathologists because of extreme histological diversity.[5] Interpretation from a small biopsy sample is particularly difficult as there may be variability in appearances in different parts of a single tumor.[6]Hence, we planned the study to assess the efficacy of fine needle aspiration cytology for the initial diagnosis of superficial soft tissue lesions.

### MATERIALS AND METHODS:

The study was conducted in the Department of Pathology. The ethical clearance for the study was obtained from the ethical board of the institute prior to commencement of the study. The study was conducted on subjects who presented to the department OPD section with superficial soft tissue masses for the study period. A total of 74 patients reported to the department for the FNAC of soft tissue lesions. We excluded the subjects with lesions of breast, lymph nodes, salivary glands and thyroid. A total of 65 patients were selected for the study. We used Franzen's type aspiration

handle, 20cc syringes for aspiration of the sample from the soft tissue lesion. For the staining of slides, we used MGG and PAP stains. The fixation of the biopsies was done with 10% formalin and processed as per standard histopathological technical guidelines. The diagnosis was arrived after studying the fine needle aspiration smears. Subsequently confirmation of the diagnosis was done by histopathological examination of all the malignant lesions. The results of the histological examination were tabulated and subjected to further evaluation.

The statistical analysis of the data was done using SPSS version 20.0 for windows. The Student's t-test and Chi-square test were used to check the significance of the data. The p-value less than 0.05 was predetermined as statistically significant.

**RESULTS:**

A total of 65 cases were studies. The FNAC samples were obtained and underwent cytological and histological studies. The results showed that number of benign lesions were 55 and number of malignant cases were 10. **[Fig 1 and Table 1]**. Of the benign lesions, lipoma was the most commonbenign lesion (n=38), followed by hemangioma(n=6) and neurofibroma (n=4). **[Fig 2 and Table 2]**. Of the malignant lesions, malignant fibrous histiocytoma was the most common malignant lesion (n=6). **[Fig 3 and Table 3]**.

**Table 1:** Nature of superficial skin tumors

| Nature of lesion | Number of cases | p-value |
|---|---|---|
| Benign | 55 | 0.005 |
| Malignant | 10 | |
| Total | 65 | |

**Fig 1:** Prevalence of benign and malignant cases

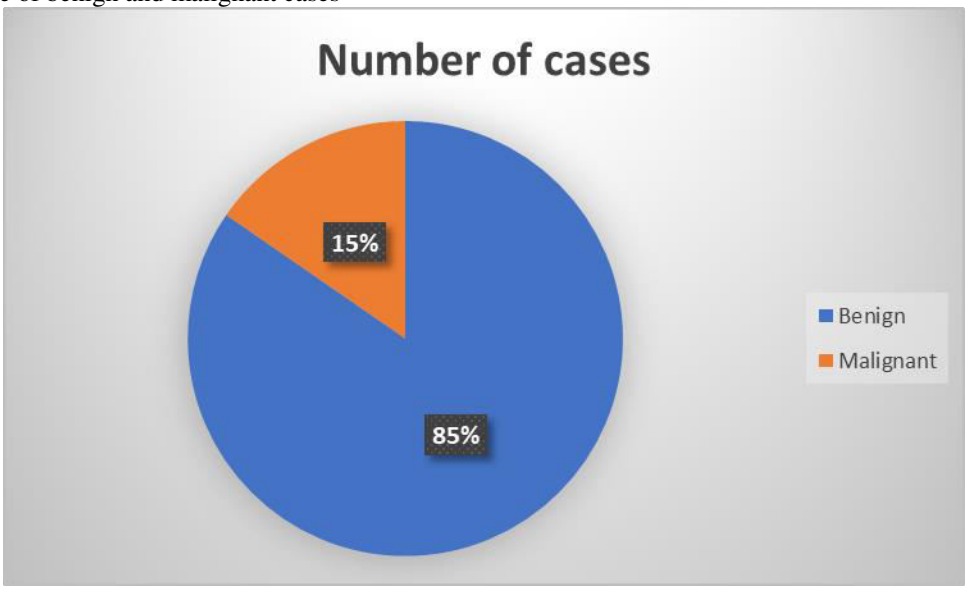



**Table 2:** Various benign lesions and their frequency

| Benign lesions | No. of cases | p-value |
|---|---|---|
| Total cases | 55 | 0.221 |
| Lipoma | 38 | |
| Hemangioma | 6 | |
| Neurofibroma | 4 | |
| Giant Cell Tumour of Tendon Sheath | 3 | |
| Nodular fascitis | 1 | |
| Neurilemmoma | 1 | |
| Ganglion cyst | 2 | |

**Fig 2:** Benign cases

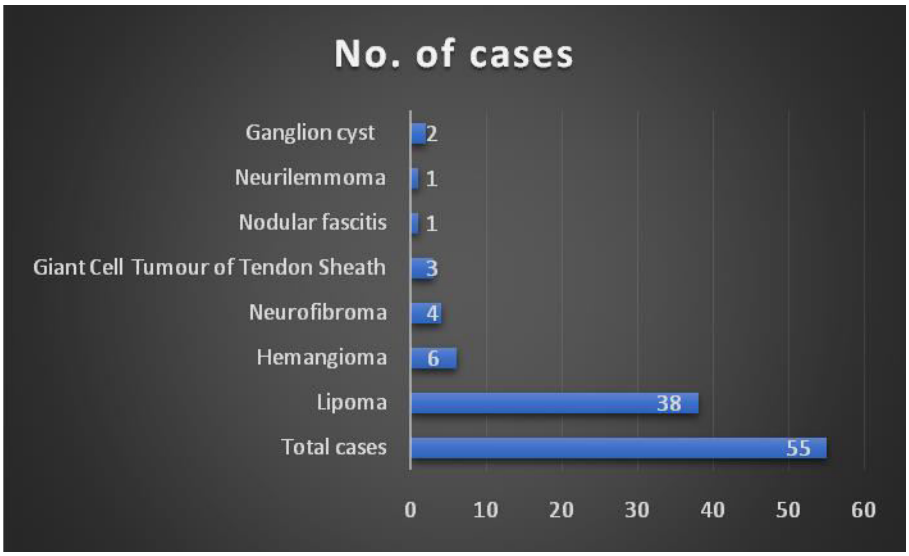
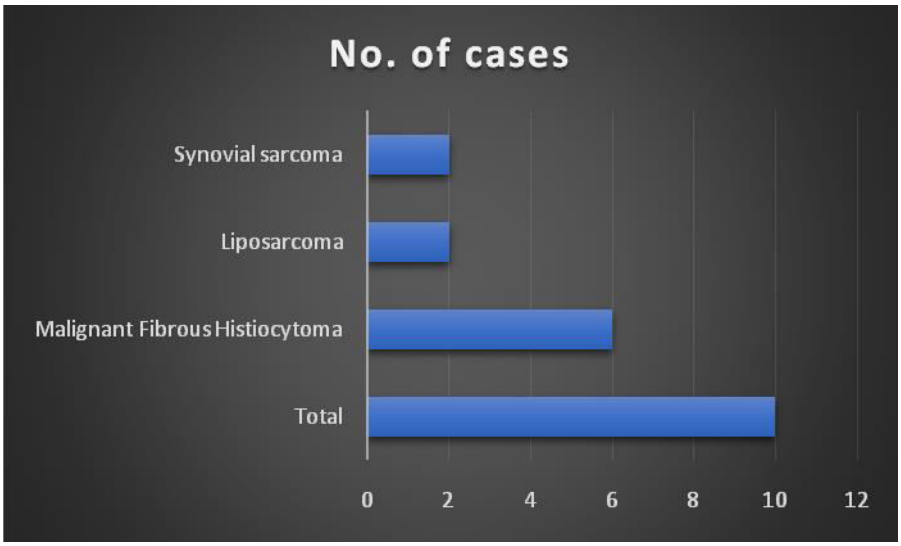



**Table 3:** Various malignant lesions and their frequency

| Malignant lesions | No. of cases | p-value |
|---|---|---|
| Total | 10 | 0.39 |
| Malignant Fibrous Histiocytoma | 6 | |
| Liposarcoma | 2 | |
| Synovial sarcoma | 2 | |

**Fig 3:** Malignant lesions




**DISCUSSION:**

In the present study we assessed the efficacy of fine needle aspiration cytology for the initial diagnosis of superficial soft tissue lesions.We observed that 85% cases reported were benign in nature and 15% cases were malignant in nature. Of the benign lesions, lipoma was most prevalent and in malignnat cases, malignant fibrous histiocytoma was most common. But the results were statistically non-significant. The results were compared with previous studies and results were consistent with previous studies.Dey P et al evaluated the usefulness of fine needle aspiration cytology (FNAC) in the diagnosis of soft tissue tumours. They also assessed the various pitfalls of FNAC of soft tissue tumours. This was a retrospective study and they analysed 82 histopathology proven cases of FNAC of soft tissue tumours diagnosed in a five and half year period. On histopathological examination, 55 of these cases were malignant and 27 were benign. There was a total of 15

recurrences and histopathology was available prior to FNAC in only eight of these cases. Therefore, excluding these eight cases, malignant tumours were primarily diagnosed by FNAC in 47 cases. The sensitivity, specificity and positive predictive value of FNAC in diagnosis of soft tissue tumours were 91.5%, 92.5% and 95.5%, respectively. Only 22 of 47 cases (46.8%) were correctly categorized. There were two false-positive and four false-negative cases. One case each of fibromatosis and schwannoma were reported as sarcoma. False-negative cases were fibrosarcoma (1), malignant nerve sheath tumour (2) and haemangiopericytoma (1). FNAC was very useful in distinguishing benign from malignant soft tissue tumours. However, it was not so effective in exact categorization of tumours. Kumar S et al measured the accuracy of FNAC in diagnosing soft tissue tumors. All the cases of FNAC with cyto-histological correlation between January 2003 and August 2005 (a total of 72 cases) were collected and sensitivity, specificity, positive and negative predictive values measured. The sensitivity and positive predictive value for differentiating between benign and malignant lesions was 0.8421, while the specificity and negative predictive value was 0.9412 for the same. The main problem was false negatives due to a borderline or low-grade spindle cell sarcoma being classified as benign. However, only 18 cases could be typed precisely. Therefore, FNAC has a role in the initial diagnosis of soft tissue sarcomas, but it should be used as a complement rather than a competitor to histopathology.[7, 8]

Bhowmik A et al analyzed the concordance rate between cytological and histopathological diagnosis of skin and superficial soft tissue lesions. They retrospectively studied 510 consecutive fine needle aspiration cytology findings of cases from North Bengal Medical College and Hospital and correlated their diagnoses based upon cytological and histopathological grounds. Out of the 510 cases studied, 253 were non neoplastic lesions and 257 were neoplastic. A high degree of concordance was observed (100% for malignant and 96.15% for benign lesions) when these two diagnostic modalities were compared. Histopathological correlation was possible in all malignant, 52/189 (27.51%) of benign and 27/253 (10.67%) of non-neoplastic lesions. Sensitivity and specificity of diagnoses were 95.31% and 97.6%, respectively. They concluded that fine needle aspiration cytology is a rapid, reliable and fairly accurate tool for initial triage and treatment of skin and superficial soft tissue lesions. Miralles TG et al reviewed use of fine needle aspiration (FNA) cytology in 117 cases of soft-tissue lesions: 23 non-neoplastic lesions, 34 benign mesenchymal tumors and 60 histologically proven soft-tissue sarcomas. The soft-tissue sarcoma aspirates were classified according to their cytomorphology into five groups of possible histologic diagnoses. Difficulties were experienced in the correct diagnoses. Difficulties were experienced in the correct assessment of aspirates from low-grade malignancies. On the other hand, in high-grade malignant sarcomas and in recurrent or metastatic soft-tissue sarcoma, FNA cytology was useful in both the initial diagnosis of a new lesion (22 patients) and in the confirmation or exclusion of a suspected treatment failure (38 patients with recurrence or metastases). In the latter, FNA cytology supported the clinical data and reduced the number of repeat open biopsies. [9, 10]

## CONCLUSION:

Within the limitations of the study we conclude thatFNAC is a highly reliable procure for initial diagnosis of superficial soft tissue lesions.

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