

# Cytological Diagnosis of Nodular Fasciitis - A Rare Case with Variable Presentation

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DOI: <https://doi.org/10.52403/ijhsr.20240326>

## ABSTRACT

Nodular fasciitis is a self-limited neoplasm involving upper extremities, trunk, back and hand. The duration of onset is short with rapid progression pointing towards soft tissue malignancy. Fine needle aspiration cytology plays an important role in early diagnosis of nodular fasciitis by correlating it with clinicoradiological presentations. Histological evidence after excision and using immunostains proves the lesion.

**Keywords:** Nodular fasciitis, fine needle aspiration cytology, sarcoma, excision

## INTRODUCTION

Nodular fasciitis (NF) is a benign, self-limited neoplasm which arises from proliferation of fibroblastic/myofibroblastic cells.<sup>1</sup> It commonly includes upper extremities, trunk, back and rarely affects hand. Male and female are equally affected and occurs more in young adults. Nodular fasciitis in hand is very rare and poses dilemmas in diagnosis and management.<sup>2</sup> In most cases patient present with a history of a painful swelling with a short duration of onset with rapid progression in growth pointing towards soft tissue malignancy.<sup>3</sup> Although the clinical course of Nodular fasciitis is completely benign and it may regress within a few months without

surgery or treatment of any kind but diagnostically it is very challenging as it mimicks malignancy due to its rapid growth and its high cellularity, mitotic activity, and variable/nonspecific cytomorphologic findings. Here we made an effort to determine whether fine needle aspiration cytology can be used in the diagnosis of nodular fasciitis correlating with clinical presentations.<sup>1</sup> Fine needle aspiration is a rapid and accurate method for diagnosis with minimal invasiveness.<sup>4</sup>

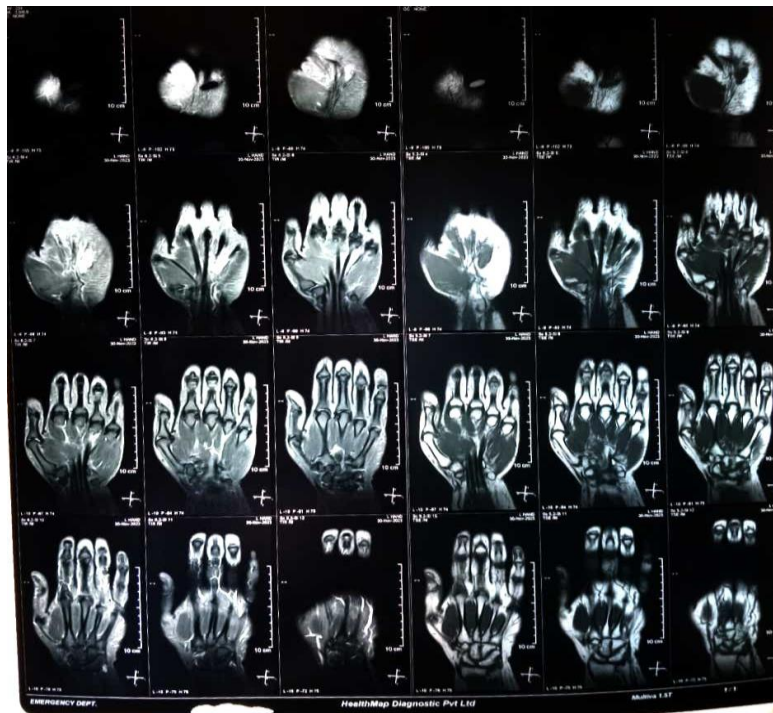
## CASE PRESENTATION

### CASE 1

A 40-year-old female patient presented to Ortho OPD with complaints of swelling and pain on left palmar surface since 6 to 7 months. The swelling was painful and progressive in nature with no history of trauma, fever, diabetes mellitus and hypertension. On physical examination, a firm to hard swelling noted on palmar surface of left hand measuring 1 x 1 cm, tender and non mobile. Patient was subjected to FNA as first line of investigation which yielded blood mixed aspirate. On radiology, MRI revealed

multi loculated T2 iso to slightly hyperintense and iso to hypointense on T1 lesion noted along palmer surface of medial flexor tendon distal to flexor retinaculum at the level of 4<sup>th</sup> and 5<sup>th</sup> metacarpal level. The lesion is in close approximation to adjacent tendon sheath. Impression – findings are raising possibility of benign etiology, d/d mesenchymal tumor tendon sheath tumor.

On physical examination, a firm to hard swelling noted on palmar surface of left hand measuring 1 x 1 cm, tender and non-mobile



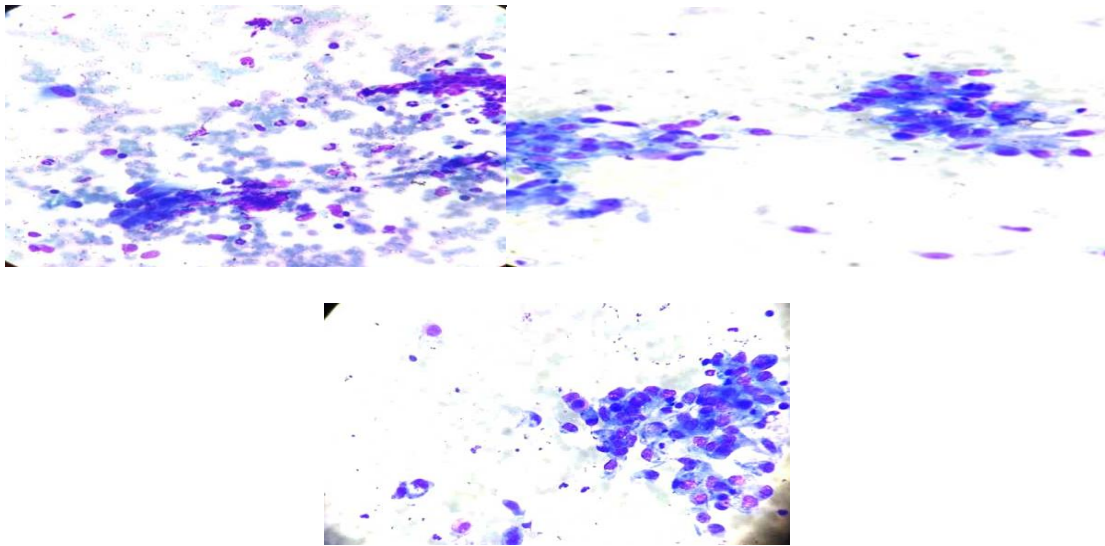
MRI revealed multi loculated T2 iso to slightly hyperintense and iso to hypointense on T1 lesion noted along palmer surface of medial flexor tendon distal to flexor retinaculum at the level of 4<sup>th</sup> and 5<sup>th</sup> metacarpal level

**Cytological findings:**

Fine needle aspiration smears were cellular revealing singly scattered and few groups of round to oval plump cells with mild nuclear

pleomorphism, bland nuclear chromatin, inconspicuous nucleoli and scant to moderate amount of cytoplasm admixed with eosinophilic stromal fragments. Few synovial cells, ganglion cells and occasional lymphocytes were also seen in a hemorrhagic background.

Cytological features were suggestive of benign spindle cell neoplasm; favouring nodular fasciitis. Excision was advised for confirmation.

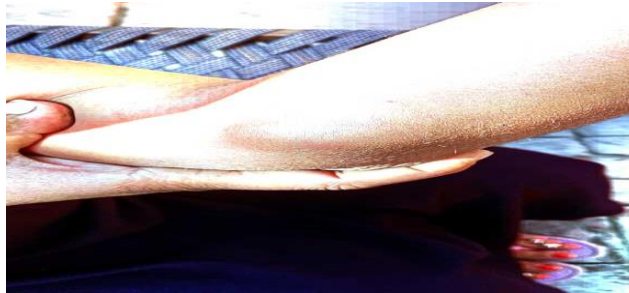


Figures showing cellular smears showing round to oval plump cells with bland nuclear chromatin, inconspicuous nucleoli and scant to moderate amount of cytoplasm admixed with eosinophilic stromal fragments (40x).

**CASE 2**

A 28 yrs old female presented with complaints of swelling in left forearm since 20 yrs. The swelling was painful and progressive with no history of fever, trauma, diabetes mellitus and hypertension. On physical examination a soft swelling measuring 3x2 cm present in left inner aspect of forearm tender and non mobile. Fine needle aspiration was conducted at our centre

which yielded blood mixed aspirate. On radiology, USG revealed a well defined hypoechoic encapsulated soft tissue lesion measuring approx. 35.5 x 16.1 mm is seen in subcutaneous aspect of left medial aspect of forearm. It shows internal whorled appearance. Impression – findings suggest possibility of benign neoplastic etiology? epidermoid cyst.



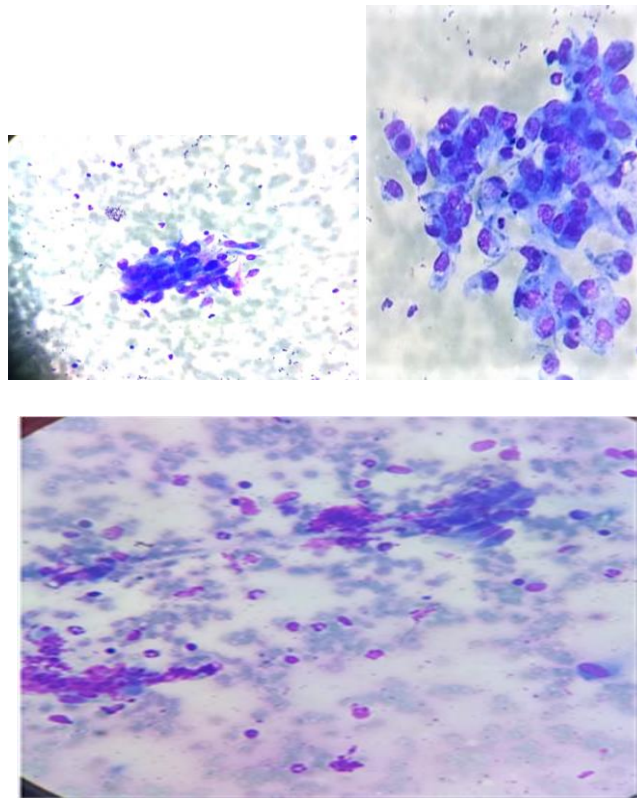
On physical examination a soft swelling measuring 3x2 cm present in left inner aspect of forearm tender and non mobile



USG revealed a well-defined hypoechoic encapsulated soft tissue lesion measuring approx. 35.5 x 16.1 mm is seen in subcutaneous aspect of left medial aspect of forearm. It shows internal whorled appearance. Impression – findings suggest possibility of benign neoplastic etiology? epidermoid cyst.

Cytological findings : Smears prepared show moderate cellularity comprising of groups and singly scattered round to oval plump spindle cells with mild nuclear pleomorphism, bland

nuclear chromatin , inconspicuous nucleoli and scant to moderate amount of cytoplasm admixed with few macrophage and occasional stromal fragments in a hemorrhagic background. Cytological features were suggestive of spindle cell lesion favouring fibroblastic/ myofibroblastic proliferative lesion with closest resemblance to nodular fasciitis. Clinicoradiological correlation and excision was advised to know biological behaviour. The patient was followed up for 3 months and the lesion regressed.



Figures showing cellular smears showing round to oval plump cells with bland nuclear chromatin, inconspicuous nucleoli and scant to moderate amount of cytoplasm admixed with eosinophilic stromal fragments (40x).

## DISCUSSION

Cases of nodular fasciitis on histopathology are many but on FNA the reported cases are few.<sup>7</sup> Nodular fasciitis is a rapidly growing lesion of fibroblastic tissue which can be misdiagnosed as malignant neoplasm due to its high cellularity and high mitotic activity.<sup>5</sup> Usually it affects people in age group of 30 to 40 years of life and may occur anywhere in the body but is more common in upper extremities, chest wall, head and neck region and is very rare in hand. The exact etiology of it is not known but association with history of trauma is seen in few cases.<sup>6</sup> Sometimes cases of nodular fasciitis may resolve within 16 weeks on its own. MRI is helpful in assessing the extension of the lesion but for diagnosing nodular fasciitis it is not useful as features of it are non-specific.<sup>5</sup>

Microscopically, in nodular fasciitis with low to moderate cellularity showing plump cells with large nuclei, prominent nucleoli which make these cells having pseudosarcomaous

appearance, moderate amount of cytoplasm is seen. Mitotic figures are seen but atypical mitosis is not seen. These cells are arranged in bundles with dense reticulin meshwork.<sup>6</sup> The histologic features of nodular fasciitis that aid in its diagnosis are spindle shaped fibroblasts, extravasated erythrocytes, interstitial mucoid material, loosely textured feathery pattern. Immunostains like SMA and vimentin are positive.<sup>3</sup>

Differential diagnosis of nodular fasciitis can be fibrosarcoma because of its rapid growth, cellularity and mitotic activity.<sup>6</sup> Most lesions are treated by excision, however recurrence is seen in cases having incomplete excision. As there are similarities in cytologic features of nodular fasciitis and malignant sarcomas accurate diagnosis with FNA is challenging.<sup>2</sup>

## CONCLUSION

FNA is important in early diagnosis of nodular fasciitis before excision when interpretation with clinicoradiological

findings is done. Sometimes diagnosis is difficult if the lesion is present at unusual location so careful evaluation of smears is required to prevent misdiagnosis. The mainstay of treatment is excision, which helps in ruling out malignancy.

**Declaration by Authors**

**Acknowledgement:** None

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

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How to cite this article: Renuka Verma, Rajnish Kalra, Palak Bansal, Anjali Ahalawat, Navneet, Geetika. Cytological diagnosis of nodular fasciitis - a rare case with variable presentation. *Int J Health Sci Res.* 2024; 14(3):178-183. DOI: <https://doi.org/10.52403/ijhsr.20240326>

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