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Case Report

Fibro-Osseous Pseudotumor of the Digit: A Rare Benign Lesion Mimicking a Periungual Tumor in a 46-Year-Old Woman

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Abstract

Background: Fibro-osseous pseudotumor of the digit (FOPD) is a rare benign ossifying lesion of the soft tissues of fingers or toes. It may mimic other periungual tumors or malignant lesions, leading to diagnostic confusion. ***Case presentation:*** We report a case of a 46-year-old woman with a 6-month history of a painless, progressively enlarging nodule of the right index finger. The lesion was excised for cosmetic concern. Histopathological examination revealed a well-circumscribed spindle-cell proliferation with osteoid and trabecular bone formation, overlaid by hyperplastic and orthokeratotic epidermis. No cytologic atypia or mitotic activity was noted. ***Conclusion:*** Recognition of FOPD is essential to avoid misdiagnosis and overtreatment. Molecular studies may show USP6 rearrangements, supporting its classification as a benign transient neoplasm. Complete local excision is curative with excellent prognosis.

Keywords: Fibro-osseous pseudotumor, Digit, USP6 rearrangement, Periungual nodule, Benign soft tissue lesion.

INTRODUCTION

Fibro-osseous pseudotumor of the digit (FOPD) is an uncommon benign ossifying lesion involving the soft tissues of the fingers or, less frequently, the toes. It typically presents as a rapidly growing subcutaneous nodule, often raising suspicion for more aggressive lesions, including extraskeletal osteosarcoma or soft-tissue sarcoma [1]. FOPD predominantly affects young adults but has been reported across a broad age range [2].

Historically considered a reactive process, recent studies have demonstrated USP6 gene rearrangements, suggesting a transient neoplastic proliferation similar to nodular fasciitis [3]. Clinically, FOPD may mimic other periungual or subungual tumors such as fibrokeratoma, glomus tumor, myxoid cyst, or even giant cell tumor of the tendon sheath, making histopathological evaluation essential for accurate diagnosis [4].

We report a case of fibro-osseous pseudotumor of the digit in a 46-year-old woman presenting with a 6-month history of a slowly enlarging, painless nodule of the index finger, clinically suspected to be a periungual fibrokeratoma.

CASE REPORT

A 46-year-old woman with no significant medical or traumatic history presented with a firm nodule of the right index finger. The lesion had appeared approximately six months earlier and had progressively increased in size. It was painless but caused significant cosmetic concern, prompting surgical removal.

Physical examination revealed a well-circumscribed dermal-subdermal nodule located near the periungual region of the right index finger. The overlying skin was intact, and finger mobility was preserved. No warmth, erythema, or tenderness was noted.

The lesion was completely excised under local anesthesia.

Grossly, the specimen consisted of a well-defined, whitish-tan nodule measuring 0.8 cm in greatest dimension. Microscopically, the lesion was situated in the dermis and subcutis. It showed a well-circumscribed spindle-cell proliferation arranged in fascicles and embedded within a fibro-collagenous stroma, featuring scattered areas of osteoid deposition and trabecular bone formation. Osteoblastic rimming was evident in some

foci. The overlying epidermis was ulcerated in the central region and orthokeratotic and hyperplastic at the periphery. A superficial granulation-tissue cap was present above part of the lesion. No cytologic atypia, no mitotic activity, and no necrosis were observed. These features supported the diagnosis of fibro-osseous pseudotumor of the digit. Postoperative recovery was uneventful, and no recurrence was observed at follow-up.

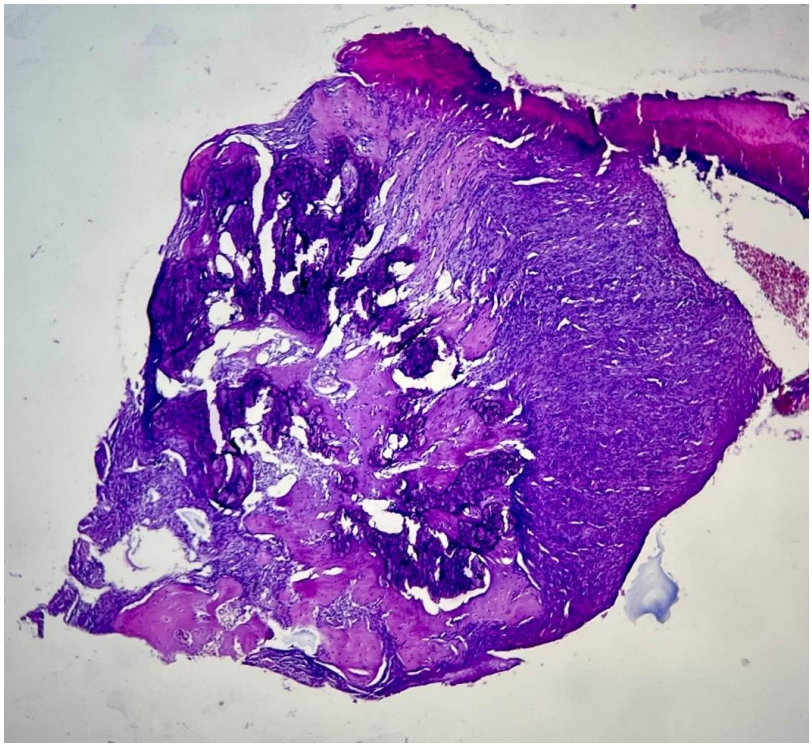

Figure 1: Low-power view (×5) showing a well-circumscribed dermal lesion with superficial ulceration of the overlying epidermis

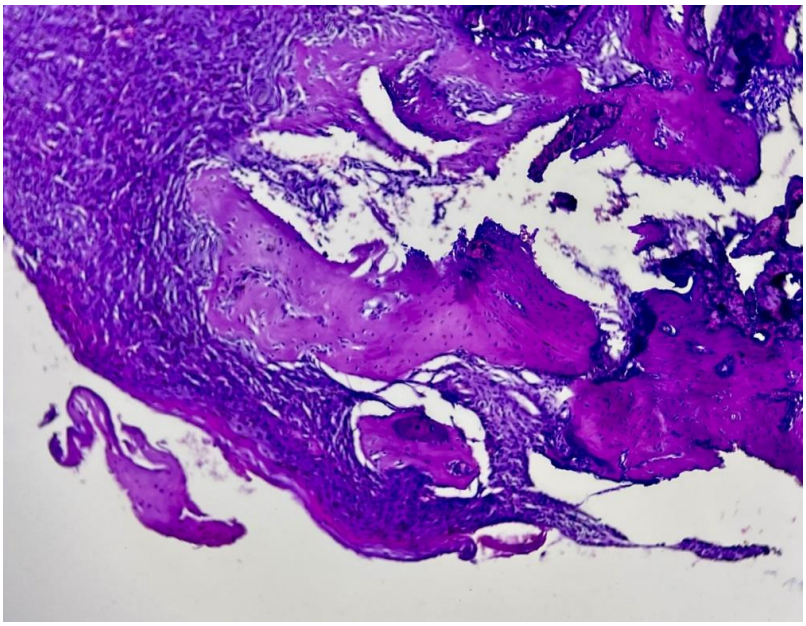

Figure 2: Intermediate magnification (×10) showing the dermal proliferation surmounted by granulation tissue, with adjacent orthokeratotic and hyperplastic epidermis

DISCUSSION

Fibro-osseous pseudotumor of the digit represents a benign, self-limited soft-tissue lesion that may clinically mimic malignant neoplasms due to its relatively rapid growth and ossifying nature [1]. It typically affects young adults with slight female

predominance, and lesions most commonly arise in the subcutaneous tissues of the fingers [2].

Etiopathogenesis and Molecular Findings

Traditionally considered a reactive process possibly triggered by trauma, FOPD has recently been linked to USP6 gene rearrangements similar to those seen in nodular fasciitis [3]. This molecular finding suggests a transient neoplastic proliferation rather than a purely reactive lesion. Although the presence of USP6 rearrangements is not mandatory for diagnosis, its identification may help distinguish FOPD from mimickers such as myositis ossificans or extraskeletal osteosarcoma [3].

Differential Diagnosis

The main differential diagnoses include:

- Periungual fibrokeratoma, often considered clinically in periungual nodules, as in our case [4]. It lacks ossification and shows a characteristic digitiform architecture.
- Myositis ossificans, particularly early lesions. Unlike FOPD, it exhibits a zonal pattern with peripheral mature bone and central immature fibroblasts [5].
- Extraskeletal osteosarcoma, extremely rare in the digits, presents with significant atypia, pleomorphism, and high mitotic activity, none of which were present here [6].
- Giant cell tumor of tendon sheath, which lacks osteoid and shows characteristic multinucleated giant cells [4].
- Subungual exostosis, which arises from underlying bone and involves a bony stalk continuous with the phalanx [7].

Clinicopathologic correlation is essential given the rarity of FOPD and the broad spectrum of differential diagnoses.

Prognosis

FOPD is cured by simple local excision, with recurrence being exceedingly rare [1]. No malignant transformation has been reported.

CONCLUSION

Fibro-osseous pseudotumor of the digit is a rare benign lesion that can clinically mimic more common periungual tumors such as fibrokeratoma, or, more concerningly, malignant lesions. Awareness of this entity and its characteristic histopathological features is essential to avoid misdiagnosis and overtreatment. The presence of USP6 rearrangements in some cases reinforces its distinction from other ossifying soft-tissue lesions. Complete local excision remains curative with an excellent prognosis.

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