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Case Report

Angioleiomyoma in a 52-year-old female wrist: A case report ☆☆☆

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ABSTRACT

Angioleiomyoma is a benign soft tissue tumor arising from vascular smooth muscle and most commonly presents in the lower extremities. We report a case of a 52-year-old right-hand dominant woman who presented with a 2-year history of intermittent, nonradiating left wrist pain, which she described as achy in nature without numbness or tingling. A focused physical examination revealed no edema, no obvious skin changes; there was tenderness over the volar-radial aspect of the left wrist, with an underlying firm, mobile, and palpable soft tissue mass. There was no prior history of trauma or surgery to the affected area. Ultrasound (US) examination demonstrated a 0.6 × 0.6 × 0.4 cm well-defined, oval, hypoechoic soft tissue mass within the volar radial soft tissues of the left wrist. The lesion abutted the radial artery without signs of calcification or necrosis. Color Doppler showed little to no vascularity within the mass nor radial artery thrombosis. Histological analysis revealed an angioleiomyoma arising from the radial artery wall. A case presentation like this would most commonly be due to a volar ganglion cyst; however, it is important to consider other soft tissue masses in differential diagnosis, such as angioleiomyoma, as treatment varies significantly.

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Introduction

Angioleiomyoma is a benign soft tissue tumor seen primarily in the lower limb in middle age females [1]. These tumors

arise from vascular smooth muscle, and are typically well circumscribed, usually round or oval in shape [2]. Histologically, angioleiomyomas may present with spindle-shaped smooth cell bundles lacking nuclear atypia arranged in fascicles, arising from the tunica media of a vein or artery [3,4].

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In the case below, the most likely diagnoses with this patient's presentation and mass location would be a ganglion cyst. Although extremely rare, other soft tissue masses, such as an angioleiomyoma, should be included in the differential diagnoses with a painful wrist mass, as misdiagnosis as a ganglion cyst can lead to missteps in treatment. Volar ganglion cysts are often treated with observation, occasionally treated with aspiration, and, when persistent, are definitively treated with surgical excision. Angioleiomyomas may be treated with observation (with risk of growth) or, more prudently, with surgical excision.

Case report

A 52-year-old right-hand dominant woman who presented to clinic with a 2-year history of intermittent, nonradiating left wrist, which she described as achy in nature without numbness or tingling. A focused physical examination revealed no edema, no obvious skin changes; however, there was tenderness over the volar aspect of the left wrist, with an underlying firm, mobile, and palpable soft tissue mass. There was no prior history of trauma or surgery to the affected area. Trans-illumination testing was inconclusive, so an ultrasound was ordered for further investigation.

Ultrasound (US) examination demonstrated a $0.6 \times 0.6 \times 0.4$ cm well-defined, oval hypoechoic soft tissue mass within the volar lateral soft tissues of the left wrist. Color Doppler showed little to no vascularity within the mass nor radial artery thrombosis (Fig. 1C and D). Differential diagnosis included complex ganglion cyst, angioleiomyoma, schwannoma, neurofibroma, thrombosed pseudoaneurysm, nodular fasciitis, and leiomyosarcoma. After surgical excision, which required careful dissection off the radial artery to safely remove the mass, histological analysis revealed the mass to be an angioleiomyoma arising from the radial artery wall (Figs. 2 and 3). The lesion arose from the radial artery and did not demonstrate internal calcification, necrosis, or sarcomatous features (Fig. 1A and B). The patient's preoperative symptoms subsided at follow-up visits.

Discussion

Leiomyoma is a benign tumor derived from smooth muscle cells [5]. Angioleiomyomas are tumors arising from the tunica media of veins and arteries, and have more frequently described in the lower extremities of middle-aged women [6]. There is no established etiology for these lesions, but potential causes include past trauma and chronic venous stasis, and

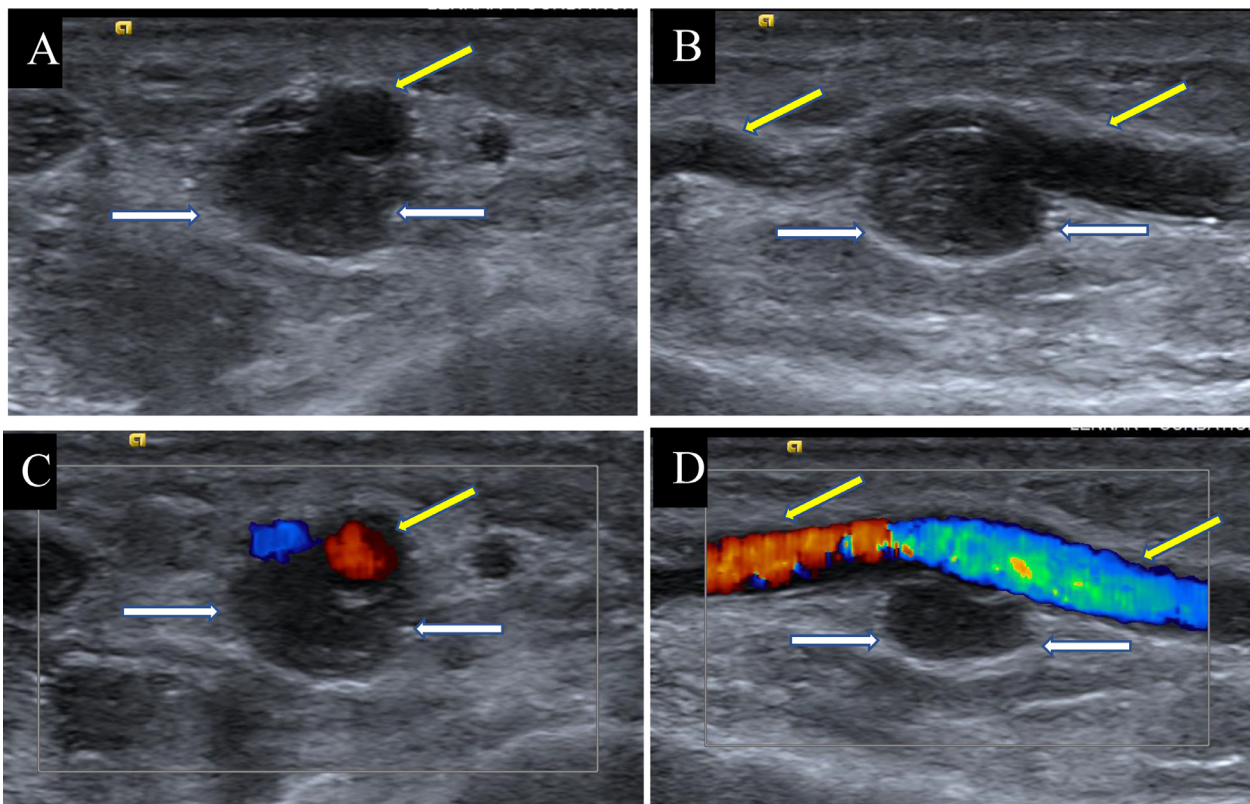


Fig. 1 – (A-D): Ultrasound (US) images of the left volar wrist. (A) Transverse and (B) longitudinal grayscale US shows a $0.6 \times 0.6 \times 0.4$ cm well-defined well defined, solid and soft tissue hypoechoic mass (white arrows). The lesion abuts the radial artery (yellow arrows), without evidence of internal calcification or necrosis. (C) Transverse and (D) longitudinal color Doppler US shows little to no vascularity within the mass and the radial artery and veins were patent.

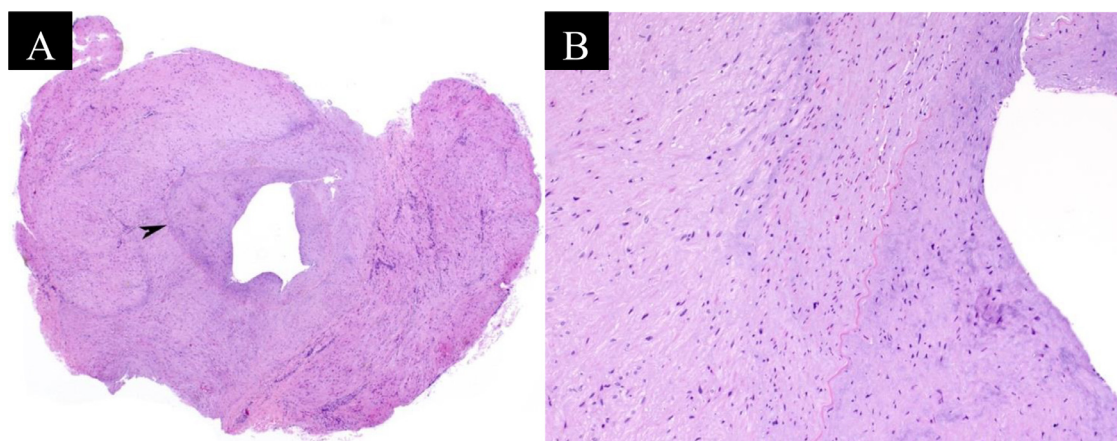


Fig. 2 – (A, B) Arterial leiomyoma histopathology hematoxylin and eosin stain. (A) 40 x magnification showing eccentric expansion of tunica media (arrow head – internal elastic lamina) (B) 100 x magnification showing a well-defined mass with benign, spindle-shaped smooth muscle proliferation lacking nuclear atypia, arranged in orderly intersecting fascicles.

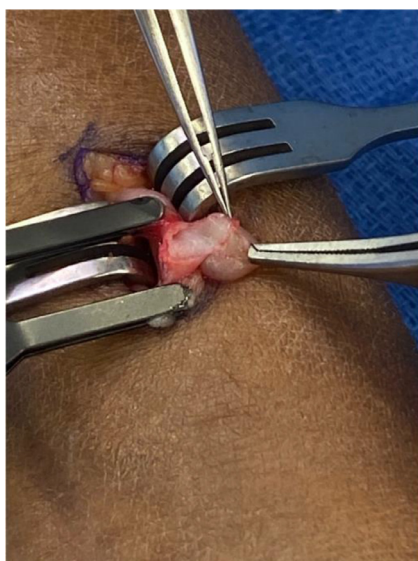


Fig. 3 – Intraoperative photograph. Intraoperative photograph depicts the gross appearance and pathology of the tissue mass arising from the wall of the radial artery.

some have suggested that these lesions are hamartomas or vascular malformations instead of neoplasms [7].

Angioleiomyoma presents as a mobile soft tissue mass that is painful at rest. With pressure on the mass, resting pain worsens. Angioleiomyoma of any origin accounts for 5% of all benign neoplasms of soft tissues [8]. Angioleiomyoma is adequately diagnosed by microscopy with conventional hematoxylin and eosin (H&E) stain [9]. H&E staining of an angioleiomyoma commonly reveals a well-defined mass within the tunica media composed of mature spindle-shaped smooth muscle bundles, lacking nuclear atypia, arranged in a fascicular pattern [9–11]. Pain is mediated by the nerve fibers in the

tumor parenchyma resulting from local ischemia caused by smooth muscle bundle contraction [7].

Typical ultrasound features of angioleiomyoma include a superficial perivascular location, well demarcated borders, small size (<20 mm), oval or round shape, complete solid components, and homogenous or heterogeneous hypoechogenicity with posterior acoustic enhancement [9]. Vascular density of angioleiomyomas is variable, ranging from rich vascularity (covering >50% of the mass area) to little or no detectable vascularity on Doppler ultrasound [12].

An alternate diagnosis of a complex ganglion cyst was considered, which is a benign articular cyst commonly found at the dorsal aspect of the wrist [13]. They account for up to 70% of soft-tissue masses found in the hand and wrist [14]. Histological findings of a ganglion cyst commonly include mucin-filled synovial cell lined sac without a true epithelial lining [14]. Although most ganglion cysts are asymptomatic, a typical symptomatic presentation includes an appearance of a lump in the wrist with aching pain exacerbated by movement [14]. Ultrasound findings may be variable, however the cysts may often appear hypoechoic without posterior acoustic enhancement, have well defined margins, and are avascular, which is a very similar pattern seen in angioleiomyomas [15]. Ganglion cysts present similarly to soft tissue angioleiomyomas; thus, it is important that an angioleiomyoma is included on the differential diagnoses of a painful wrist mass with similar ultrasound findings to this case, especially among middle-aged women. Preoperative diagnoses of angioleiomyomas have proven to be difficult; thus, clinical suspicion along with histological analysis is useful in confirming angioleiomyoma and properly treating the mass.

Statement of human and animal rights

All procedures followed were in accordance with the ethical standards of the responsible committee on human

experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Patient consent

Written, informed consent was obtained from the participant included in the study.

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