**RED FLAG: UNILATERAL LEG SWELLING WITH NEGATIVE DVT BY ULTRASOUND**

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**Introduction:** Swelling and pain in a lower extremity is a common presenting complaint to the emergency room. Work up often includes radiographs and ultrasound to rule out DVT. Unfortunately, vascular ultrasounds which are negative for DVT may be mistaken as a definitive anatomic study by treating physicians including orthopaedic surgeons. It is imperative to understand that underlying malignancy including soft tissue sarcoma may be the underlying cause. Maintaining an appropriate differential diagnosis when performing a subsequent evaluation is imperative.

**Materials/Methods:**

Case 1: A 25-year-old female presented to emergency room in early 2017, recently pregnant and with left leg pain. Ultrasound (US) at that time was negative for DVT, though a 3 by 4 cm hypervascular mass was noted in area. Lymph node exam upon follow-up was negative. The patient returned to the emergency room twice in the coming months with repeat US being performed showing progressively enlarging mass. Further imaging was deferred as the patient was pregnant. Eventually, a CT scan revealed a solid mass, orthopaedic surgery was consulted. Staging studies revealed disseminated metastatic synovial cell sarcoma. The patient was treated with radiation and chemotherapy and is currently alive with disease.

Case 2: A 70-year-old male with history of renal cell carcinoma s/p nephrectomy, prostate cancer and bilateral arthritis of knees presented to his primary care doctor. Vascular ultrasound was performed and was negative for DVT, with a hypoechoic mass noted measuring 3.1 x 1.6 cm. Vascular surgery evaluated the patient without any intervention. The patient had progressive swelling and plantar surface numbness and was seen by orthopaedic surgery. An MRI revealed a 7.3 x 11.5 x 27.7 cm mass calf mass and a chest x-ray revealed multiple pulmonary metastases. Biopsy and staging work up revealed high grade myxofibrosarcoma with disseminated metastatic disease. Patient currently experiencing progressive disease.

**Discussion:** Painful lower extremity swelling is a common emergency room chief complaint. Ultrasounds are used for evaluation of DVT and frequently the report is interpreted as only negative or positive for DVT. It is imperative to read the full report and to evaluate any potential reported masses with appropriate additional advanced imaging. Doing so can help to eliminate long lag times to diagnosing possible underlying soft tissue sarcomas.

**Conclusion:** Emergency room vascular ultrasound of an extremity for potential DVT is inadequate to eliminate potential underlying malignancy. An appropriate degree of suspicion with directed anatomic imaging of the limb needs to be undertaken to avoid diagnosis delay of potential soft tissue sarcomas should the study be negative for a blood clot.