# **Osteopathic Palpation in the Discovery of A Femoral** Lesion in a Pediatric Patient **Family Medicine Residency** Sara Modlin-Tucker D.O. PGY4, Mark Sutherland D.O., Anna Veach D.O.

#### Introduction

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Primary bone tumors are the 6<sup>th</sup> most common neoplasm in pediatrics, and are primarily identified with plain X-ray<sup>1,2,3</sup>. Bone tumors are classified by the proliferating cell type and each element of bone including; cartilage, osteoid, fibrous tissues and marrow. Each of these can give rise to benign or malignant tumors. Of malignant bone tumors Osteosarcoma and Ewings Sarcoma Family of Tumors make up the majority of cases (400 and 250 cases per year)<sup>6</sup>. Frequently, diagnosis is delayed due to the rarity of these tumors in otherwise healthy adolescents<sup>6</sup>. There are a number of factors to consider when deciding on initial and further imaging including history, location, and red flag symptoms<sup>4,5</sup>. The size of an Ewings tumor is significant for prognosticating patient outcome as smaller tumors have improved disease free survival<sup>6</sup>. This argues that earlier detection can improve survival rates. Multiple studies have suggested that osteopathically trained physicians have improved palpation detection compared to non-osteopathically trained physicians<sup>7,8,9,10</sup>. During the physical examination of a patient, osteopathic palpation provides additional information that can aid in the decision making process and diagnosis of otherwise undetected disease processes.

#### **Case Presentation**

An 11 year old female without significant past medical history was referred to our osteopathic neuromusculoskeletal medicine specialty clinic for evaluation of her right thigh pain on going for the past two years.

HPI: She reported chronic mid-thigh aching at baseline. During pain exacerbations she described having nausea and sharp pain in the mid-thigh area. Pain was persistent over two years without inciting trauma. Mother believed pain to be worsening over time. Patient used one finger to point to anterior mid-thigh to describe her pain. Reported pain being so severe that she cannot attend school when flare is present. ROS: She denied weight loss, night sweats, fatigue, or family history of childhood cancers.

Imaging: None prior to presentation.

PE: VITALS: WNL Gen: WNWD Female PSYCH: Shy with examiner, slightly depressed affect RESP: Breathing Easily and Quietly ABD: Soft NTND. CV: Well perfused, RRR. EXT: No pedal edema SKIN: No ecchymosis or rashes noted. Osteopathic Structural Exam: Right lower extremity revealed abnormal tissue density in the mid-shaft of the femur. Tissue

texture change felt at the level of the bone with minor soft tissue involvement. Plan:

-Osteopathic Manipulation was performed with gentle soft tissue and balanced ligamentous and membranous tension without improvement of somatic dysfunction.

-An X-ray was ordered that was read as within normal limits. (Image 1, 2, 3)

#### Follow up:

HPI: Reporting worsening pain and currenting having an acute pain flare. Patient vomited in the office secondary to the pain. Stated being awoken by the pain.

Osteopathic Structural Exam: New muscular contraction and persistent abnormal tissue density at the level of bone. Plan:

-Osteopathic manipulative treatment was postponed and Magnetic Resonance Imaging (MRI) was ordered.

## Initial Radiographs





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Image 1

Image 2



Image 3

#### Results

MRI Femur displayed heterogeneous enhancing lesion within the mid femoral diaphysis with periosteal reaction that was highly suggestive of a primary bone malignancy. Ewings sarcoma being high on the differential (Image 4).



She was referred for Pediatric Hematology/Oncology consultation and subsequent bone biopsy which revealed reactive cell tissue thought to be benign pathology.

MRI follow up was ordered for 6 weeks after original MRI to ensure resolution.

The follow up imaging found interval increase in size of the mass and increased periosteal reaction within the known femoral diaphyseal lesion (Image 5).





Repeat biopsy is being planned to ensure there was not a sampling error in the initial biopsy.

Image 4

#### Discussion

A bone lesion was identified in a pediatric patient, despite a negative X-Ray, due to the osteopathic exam which provided clinical indication for further imaging. This highlights the clinical relevance of the osteopathic exam and the value in advancement of osteopathic medicine. Osteopathic training allows for development of palpatory skills that can be utilized for diagnosis and treatment of somatic dysfunction, but can also be useful for identification of subtle physical exam findings.

This case demonstrates a potentially life saving identification as a result of seeing osteopathically trained physicians. Further testing prompted by the results of the osteopathic exam facilitated the detection of the femoral lesion that was otherwise undetected by plain radiographs. The biopsy did show reactive pathologic changes thought to be a benign finding, however sampling error is possible. The patient is still followed by oncology and is having on going workup for malignancy with a repeat biopsy as the follow up MRI showed worsening findings.

Osteopathic examination provides further information for medical decision making and can allow for earlier detection of disease process. As this study is limited to a single case, further studies would be required to draw statistically relevant conclusions in regards to identification of complex disease processes from osteopathic palpation.

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## Acknowledgments

This poster was only made possible by the contributions from my wonderful colleagues.

Thank you to Mark Sutherland D.O., Anna Veach D.O., Josie Conte D.O., John Diefenderfer D.O., Shawn Higgins D.O., and Nancy Fischer.



