

## Introduction

- Soft tissue sarcomas are rare malignancies arising from mesenchymal stem cells.
- Often present with unspecific symptoms, unplanned excisions can commonly occur.
- Orthopaedic education has placed emphasis on being able to recognize a sarcoma and avoid an unplanned resection.
- Unplanned resections continue to happen under the assumption that other medical specialties are performing the majority of those.

## Purpose

- To report on the incidence of unplanned excisions of soft tissue sarcomas in the community.
- To determine if and why orthopaedic surgeons continue to contribute to the unplanned resection burden.



**Figure 1.** Pictures depicting a patient with an unplanned resection of a myxofibrosarcoma and subsequent growth 3 weeks after the initial unplanned procedure. Patient needed an above knee amputation.

## Methods and Materials

- Retrospective chart review.
- Patients who underwent an unplanned soft tissue sarcoma resection between 2013 and 2017.
- Orthopaedic surgeon's cases were identified in order to compare with the group as a whole.
- Incidence of unnecessary procedures was assessed.
- A root cause analysis method was then used to identify orthopaedic surgery errors in workup.
- A value of  $P < 0.05$  was considered statistically significant.

## Results

- 107 patients included.
- Mean age at diagnosis was 59 years old (range 12-87).
- Incidence of unplanned procedures was 23.4%.
- Orthopaedic surgeons performed 17.8% (N=19) of the unplanned resections.
- Mean tumor size: 7.16 cm (range 1-22).
- Seven were <5 cm, 12 were  $\geq 5$  cm, only 25% of the large sarcomas had a biopsy prior to resection.
- Fourteen of the unplanned resections involved a deep tumor.
- Presentation: growing or painless mass (73.8%).
- Initial presumed diagnoses: lipoma (24.5%) and cyst (18.4%).
- Most frequent sarcomas: Myxofibrosarcoma (19.6%), Undifferentiated Pleomorphic Sarcoma (18.7%), Liposarcoma (15.9%), and Leiomyosarcoma (10.3%).
- Over 40% of the patients were taken to the operating room without any prior imaging of the lesion
- Orthopaedic surgeons obtained an MRI with contrast in 47% of cases while only 18% of other surgical services obtained a contrasted MRI which was statistically significant ( $p=0.013$ ).



**Figure 2.** Pictures depicting a patient with an unplanned resection of presumed plantar fasciitis and the subsequent wide resection which was followed by a wound vac and staged flap.

## Discussion

- Incidence of unplanned excisions: 23.4%, similar to other studies found in the literature.
- Large number of patients having to undertake more procedures, potentially unnecessary radiation or even limb amputation.
- Sarcoma treatment is usually an elective procedure, enough time to refer patients.
- Root cause analysis: multiple-step (physician, lack of imaging, incorrect imaging/pathology report, etc.) failure event.

## Conclusions

- Orthopaedic surgeons, despite years of education continue to make the mistake of an unplanned resection.
- Multiple incidents, independently or sequentially, at different stages are responsible for leading the patient to the event, in this case the unplanned resection.
- Those causes or incidents could be improved by increasing education efforts towards the community physicians and referring the patient earlier to a specialized center.

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## References

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