## Unplanned Resection of Soft Tissue Sarcoma: the Impact of Residual Disease in Re-Resection Specimen

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INTRODUCTION: Unplanned resection is common in soft tissue sarcoma due to misdiagnosis of these for a benign process. Various studies have demonstrated worse oncologic outcomes in unplanned resection despite subsequent reresection procedures. The purpose of this study is to assess the oncologic outcomes of unplanned versus planned resection in the setting of high-grade soft tissue sarcoma. This study assesses the impact of various tumor characteristics on the oncologic outcomes, as well as the impact of residual disease present in the setting of a previous unplanned resection. A multivariate analysis will control for various factors that may influence the oncologic outcomes, to more accurately assess the impact of a previous unplanned resection on the risk of local recurrence, distant metastasis, and disease-specific survival.

## METHODS:

This is a retrospective cohort study of 147 patients treated surgically for soft tissue sarcoma at the same institution from 2010 to 2021. All patients treated for a grade 2 or 3 soft tissue sarcoma were included. Patients with metastatic disease at presentation, low-grade sarcoma, and patients managed nonoperatively were excluded from this study. The study was approved by the local ethics board. Data were analyzed using STATA version 18.0 and R version 3.5.1 Statistical significance was defined as a p<0.05.

RESULTS: The cohort was comprised of 53 individuals undergoing re-resection for unplanned surgeries and 94 individuals undergoing planned wide resection, with no difference in demographic variables between groups. Unplanned resections are associated with worse local recurrence in both univariate analysis (p<.001), and in multivariate analysis controlling for grade, size, surgical margins, utilization of chemotherapy or radiation therapy (p<.001). Unplanned resections were also associated with a higher rate of metastasis when controlling for the same covariates through multivariate analysis (p=.05) and an increased risk of disease specific mortality (p=.04). Residual disease in re-resection specimens of unplanned surgeries was microscopic in 22.6% of cases, and 67.9% with macroscopic disease. Patients with microscopically involved margins at the initial procedure had a 42% LR and the same risk was 44% when macroscopic disease was identified in re-resected specimen, while no patients with no evidence of residual disease had a local recurrence. The effect of adjuvant radiation in reducing local recurrence approached but did not achieve significance (p=.07).

## DISCUSSION AND CONCLUSION:

This study highlights the importance of a proper primary resection by an orthopedic oncologist in high-grade soft tissue sarcoma. When resected in an unplanned procedure, the sites of these sarcomas are often left with residual disease and have a significantly worse risk of local recurrence, risk of distant metastasis, and overall survival.







