

## POSTER 90

### Clinical Outcomes after Definitive Treatment of Soft Tissue Sarcoma of the Hand: A Cohort Study of 109 Patients

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Background: Soft tissue sarcoma (STS) of the hand is rare and definitive treatment is wide surgical excision sometimes necessitating ray or partial hand amputation. These soft tissue sarcomas are a heterogeneous group originating from different cell types. Wide en bloc excision achieving negative margins is the preferred treatment for soft-tissue sarcomas of the hand, however this is complicated by the large number of vital structures in proximity to the tumor. These complex resections often require bone and soft tissue reconstruction and occasionally require adjuvant or neoadjuvant treatment. The importance of negative margins after definitive surgical resection has been well defined. Because of the relatively small number of cases, diversity in anatomic location within the hand, histological type, and biologic behavior, analysis of factors associated with survival and functional data in patients with soft tissue sarcoma of the hand is difficult. The majority of survival and biologic studies in patients with extremity soft tissue sarcoma focus on early recurrence and mortality, and there are few studies addressing long-term oncologic and orthopedic outcomes.

Questions/ Purposes: Postoperative survival rates and functional outcomes must be better defined in this cohort. We hypothesize that histologic type and positive surgical margins are risk factors for recurrent disease. Additionally, tumor size, grade, and age may be risk factors for worse functional outcome in this population.

Methods: 109 consecutive patients undergoing definitive surgical treatment for STS of the hand from 1995-2019 by a single surgeon at a sarcoma center were evaluated. Patient demographic and surgical data were reviewed. Primary outcomes included disease free survival (DFS), overall survival (OS), and functional outcome, as assessed by the Musculoskeletal Tumor Society (MSTS) system. Patients who underwent hand amputation were excluded from the MSTS analysis (n = 2). OS was calculated from the date of definitive surgery until death. DFS was calculated from the date of no evidence of disease to the date of recurrence or death. Patients were censored at their last known alive date. Kaplan-Meier methods were used to estimate 5 and 10-year survival. Low event rates precluded statistical evaluation of risk factors for survival. For functional outcomes, univariable associations between patient and clinical characteristics were assessed; features statistically significant at a p-value threshold of 0.2 were included in a multivariable linear model.

Results: Patient and tumor characteristics are summarized in Table 1. Patients without an event had a median follow up of 6 years (IQR 3, 10). Among 107 patients who became disease-free there were 10 events: 4 local recurrences, 5 distant recurrences and 1 death without recurrence. The 4 local recurrences were all deep tumors; two were myxofibrosarcoma and two were myxoinflammatory fibrosarcoma. 5- and 10-year DFS was 91% (95% CI: 85%-97%) and 89% (95% CI: 82%-96%). There were 7 deaths overall; 5 and 10-year overall survival was 95% (95% CI: 90%-100%), and 92% (95% CI: 84%-100%). There was no disease recurrence seen after six years. Median MSTS score was 28 (IQR: 27, 30). Multivariable linear regression identified having a complication and higher grade as risk factors for worse functional outcome.

Conclusions: The 5- and 10-year DFS were 91% and 89%. All local recurrences were deep tumors and either myxofibrosarcoma or myxoinflammatory fibroblastic sarcoma. No local or distant recurrences were seen after 6 years. The median MSTS score in this cohort was 28. The independent risk factors for worse functional outcome were having a complication and having a high-grade tumor.

Characteristic	N = 109; Median (IQR); n (%)
Age at presentation	36 (26, 49)
Sex (Male)	55 (50%)
High Grade	70 (64%)
Size	2.10 (1.30, 4.00)

Depth: Deep (to fascia)	96 (88%)
Stage I	39 (36%)
Stage II	59 (54%)
Stage III	7 (6.4%)
Stage IV	4 (3.7%)
Wide Excision	59 (54%)
Partial Amputation	4 (3.7%)
Single Ray Amputation	32 (29%)
Double Ray Amputation	6 (5.5%)
Triple Ray Amputation	1 (0.9%)
Thumb Amputation	5 (4.6%)
Below Elbow Amputation	1 (0.9%)
Above Elbow Amputation	1 (0.9%)
Negative Margins	103 (94%)
MSTS Score	28 (27, 30)
Chemotherapy	13 (12%)
Radiation Therapy	36 (33%)

Table 1. Patient and tumor characteristics