

POSTER 9

Complications after Definitive Treatment for Soft Tissue Sarcoma of the Hand

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Background: Previous work has established that although radiation can improve local tumor control for soft tissue sarcoma, it may result in complications in the hand. This has been established for patients receiving either brachytherapy, external beam radiation therapy or a combination of the two. Complications included wound healing issues, tendon adhesions, joint contracture, osteitis and pathologic fracture. Other complications and risk factors for developing them have not been defined. Identifying variables that lead to complications will help guide decision making within complex treatment paradigms.

Questions/Purposes: We aim to define risk factors for complications arising after definitive treatment of STS of the hand. We hypothesize that significant factors include tumor size, radiation treatment, margin status, and soft tissue coverage at the time of definitive excision. The secondary goal of the study was to characterize the profile of treatment related complications in this rare condition.

Patients and Methods: 109 consecutive patients treated with definitive surgical excision of soft tissue sarcoma of the hand from 1995 through 2019 by a single surgeon at a sarcoma center were retrospectively evaluated. Demographic, treatment, and surgical data were collected. The outcomes were post-operative treatment related complications and treatment related additional surgeries. Univariable associations between potential risk factors and outcomes were assessed. Factors evaluated for inclusion in the model included age at presentation, sex, smoking status, lesion side, grade, size, radiation, chemo, and stage. Variables significant in univariable analyses with a p-value of 0.2 were included in a multivariable logistic regression model. Odds ratios (OR) and 95% confidence intervals (CI) are presented.

Results: After a median follow up of 6 years (interquartile range 3, 10), there were 45 complications seen in 36 (33%) patients. Among those with a complication, there were 12 with neuroma/phantom pain (27%), 10 with stiffness (22%), and 7 with tendon adhesions (16%) (Table 1). In the multivariable model, only size was significantly associated with having a complication (OR 1.33, 95% CI 1.04, 1.73 for each additional mm). Twenty-seven (25%) patients underwent a second procedure. Six patients in our cohort had a positive margin. Five of these 6 patients underwent second surgery for re-resection. In a multivariable model, radiation remained significantly associated with risk for second surgery. Type and extent of resection, stage, and chemotherapy were not found to be risk factors for developing complications or second surgeries.

Conclusions: Overall, 33% of patients had a complication and 25% had a second surgery. Common complications included neuroma, contracture and tendon adhesions. Tumor size was a risk factor for post-operative complications and radiation was a risk factor for undergoing second surgery. Five out of 6 patients with positive margins underwent second surgery for re-resection.

Figure 1: Postoperative Complications

Complication Type	N = 45; n (%)
Neuroma/ Phantom Pain	12 (26.7%)
Stiffness	10 (22.2%)
Tendon Adhesions	7 (15.6%)
Bony Failure	3 (6.7%)

Flap Complication	3 (6.7%)
Infection	3 (6.7%)
Delayed Wound Healing	2 (4.4%)
Hematoma	2 (4.4%)
Osteitis	2 (4.4%)
Lymphedema	1 (2.2%)