

Primary Tumor Resection May Improve Overall and Progression-Free Survival in Patients who Present with Metastatic Soft Tissue Sarcomas of the Extremity and Chest-wall.

Abstract Number: 10750

Meena Bedi, MD¹; David M. King, MD²; John C. Neilson, MD²; Donald A. Hackbarth, MD²; John A. Charlson, MD³

Department of Radiation Oncology¹ and Orthopaedic Surgery² and Medical Oncology³ at the Medical College of Wisconsin

Email Addresses:

Meena Bedi: mbedi@mcw.edu

David M. King: dking@mcw.edu

John C. Neilson: jneilson@mcw.edu

Donald A. Hackbarth: hackbarth@mcw.edu

John A. Charlson: jcharlson@mcw.edu

Background: Resection of the primary tumor in patients who present with synchronous metastasis has been shown to improve outcomes in certain malignancies such as renal cell carcinoma. Despite the fact that approximately 10-15% of patients with soft tissue sarcomas (STS) of the extremity present with metastasis, there is limited data on the benefit of surgical management of the primary disease site. The purpose of this study was to determine whether patients who present with stage IV STS have improved outcomes with surgical resection of their primary tumor.

Methods: Patients treated for STS of the extremity and chest-wall were retrospectively reviewed between 2000 and 2015. The cohort of patients who presented with metastatic disease on initial staging was included in this study. Patient, tumor and treatment characteristics were determined (Table 1). Clinical outcomes including progression-free survival (PFS) and overall survival (OS) were evaluated using the Kaplan-Meier estimate of the survival function. The log-rank test was used to compare two survival curves. Univariate (UVA) and multivariate (MVA) analyses were performed to determine prognostic variables in correlation with the above survivals. For MVA, the Cox proportional hazards model was used.

Results: 355 patients were diagnosed with STS of the extremity and chest-wall between 2000 and 2015, and 50 (14%) patients presented with stage IV disease. Median follow-up for all patients was 8.8 months. Median follow-up for patients who were alive at the time of last follow-up was 22.3 months. Disease and treatment characteristics are located in Table 2. Of note, 19 (38%) patients underwent limb-sparing resection of their primary disease.

Median OS and 2-year OS for the entire cohort was 9.7 months and 34%, respectively. Median PFS and 2-year PFS for the entire cohort was 5.3 months and 14%, respectively. Local control for patients who underwent resection of their primary tumor was 100%. OS for patients undergoing resection was 29 months vs 7 months in those that did not undergo resection ($p<0.0001$) (Figure 1). PFS for patients undergoing resection of their primary disease was 12.8 months vs 3.6 months in those that did not have resection ($p<0.0001$) (Figure 2). Median OS for patients who did not undergo any therapy for their primary or metastatic disease was 2.6 months.

Significant variables on UVA for OS and PFS are listed in Table 3. On MVA for OS, KPS ≥ 80 ($p=0.005$), ≤ 5 metastatic deposits ($p=0.03$), multimodality therapy of metastatic disease ($p=0.005$) and resection of the primary tumor ($p=0.006$) all were associated with improved OS. On MVA for PFS, multimodality therapy for metastatic disease ($p=0.02$), resection of the primary tumor ($p=0.0007$), and female gender ($p=0.0007$) all were associated with improved PFS.

Patient, disease and treatment features of those that underwent resection of their primary disease vs no resection are located in Table 4. Patients who underwent resection were typically younger, had radiation to their primary site of disease and low burden disease (≤ 5 metastatic deposits).

Conclusions: Improved OS and PFS were seen in patients who presented with metastatic disease and underwent resection of their primary tumor. In addition, patients who had a low burden of disease (≤ 5 metastatic deposits) and underwent multimodality therapy to their metastatic disease also had improved OS and PFS. This study highlights the role of resection of the primary tumor in a well-selected subset of patients with stage IV extremity and chest-wall STS on presentation.

Patient Variables	Tumor Variables	Treatment Variables
Age	Size	Chemotherapy
Karnofsky Performance Status (KPS)	Location	Radiation (RT) to Primary Tumor
Gender	Grade	Surgery for Primary Tumor
Cardiovascular	Histology	Number of therapies directed toward metastatic disease
Diabetes	Disease Burden (≤ 5 or >5 metastasis)	
Smoking History	Location of Metastasis (Pulmonary-only vs other)	

Table 1: Patient, Tumor and Treatment Variables

>5 metastatic deposits	37% (35/50)
Pulmonary-Only Metastasis	44% (22/50)
Chemotherapy	52% (26/50)
Radiation Therapy to Primary Tumor	54% (27/50)
Resection of Primary Tumor	38% (19/50)
≥ 2 Therapies for Metastatic Disease	54% (27/50)

Table 2: Univariate Analysis for Overall and Progression-Free Survival (NS: Not significant)

Variables	Overall Survival	Progression-Free Survival
Karnofsky Performance Status ≥ 80	p=0.0006	p=0.0007
Female Gender	NS	p=0.003
Cardiovascular Disease	NS	NS
Diabetes	NS	NS
Non-Smokers	p=0.02	NS
Disease Location	NS	NS
Tumor Grade	NS	NS
Size <10 cm	p=0.04	NS
Histology	NS	NS
Disease Burden ≤ 5 metastasis	p=0.03	p=0.03
Pulmonary-only metastasis	NS	NS
Chemotherapy	p=0.01	NS
Radiation to Primary Tumor	p=0.02	NS
Resection of Primary Tumor	P<0.0001	p<0.0001
Multiple therapies directed toward metastatic disease	p=0.005	p=0.0001

Table 3: Univariate Analysis for Overall and Progression-Free Survival (NS: Not significant)

Variable	No Resection of Primary Tumor	Resection to Primary Tumor	P-value
Age (Median)	62	52	0.02
Female Gender	39%	42%	NS
Cardiovascular Disease	13%	11%	NS
Diabetes	17%	21%	NS
Smoking Status	52%	33.3%	NS
Size (Median)	12 cm	12.5 cm	NS
≥ 2 Metastatic Therapies	35%	84%	0.001
≤ 5 Metastatic Deposits	19%	47%	0.05
Pulmonary-only metastasis	35%	58%	NS
Chemotherapy	45%	67%	NS
RT to Primary Tumor	39%	79%	0.008

Table 4: Patient, Disease and Treatment Characteristics between Patients who Underwent Resection of Primary vs No Resection of Primary (NS: Not significant)

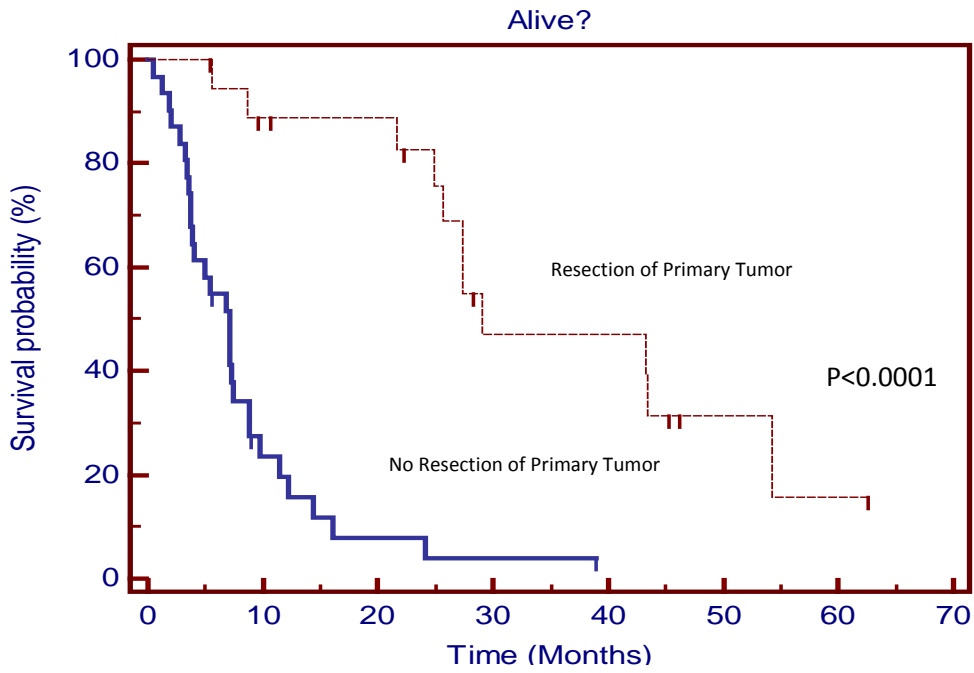


Figure 1: Overall Survival and Resection of Primary Disease

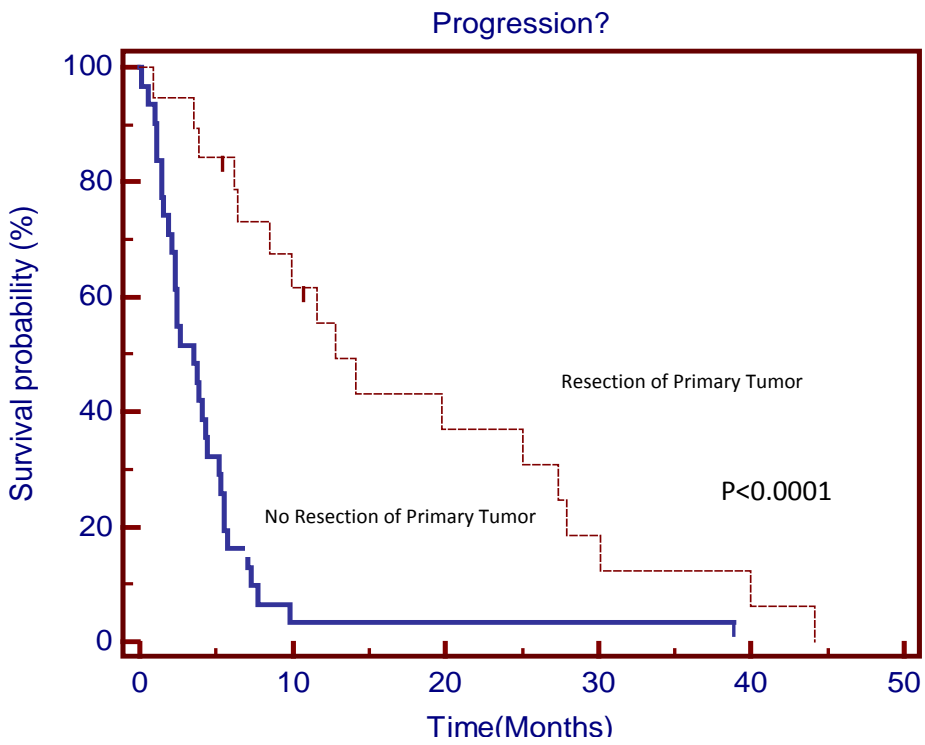


Figure 2: Progression-Free Survival and Resection of Primary Disease

