

The Influence of Diabetes, Obesity & Anatomic Location on the Development of Post-operative Wound Infections Following Soft Tissue Sarcoma Resection: A Multi-Institutional Study

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Background:

Postoperative wound complications are a common and serious event following the wide resection of soft tissue sarcomas. These events result in significant morbidity and often require additional surgical procedures and extended periods of intravenous antibiotics. This results in longer hospital stays and significant increase in cost. Neoadjuvant radiation therapy and location (i.e. lower vs. upper extremity) have been identified as risk factors for developing a wound infection after soft tissue sarcoma resection. Obesity and diabetes have been identified as risk factors for wound complications after other surgical procedures including hip and knee arthroplasty, orthopedic trauma, and spine procedures. The factors that influence infection rates for obese patients for these procedures may also have an effect on the infection rate following soft tissue sarcoma resection.

Questions/Purposes:

The goal of the current study is to determine, in a multi-institutional study, whether obesity, specific medical comorbidities, and anatomic location are risk factors for the development of a postoperative wound complication among patients who have undergone resection of a soft tissue sarcoma.

Methods/Patients:

Surgical logs from individual investigators from 9 separate institutions from August 1st, 2009 to December 31st, 2013 were reviewed to identify patients who had undergone a soft tissue sarcoma resection. Patients with a diagnosis of a well-differentiated liposarcoma or those with less than 3 months of follow up were excluded. Pertinent patient information was gathered from review of clinic notes, operative notes, pathology reports, and radiology reports. Patient demographics, height and weight, medical comorbidities, tumor and resection details, and infectious and oncologic outcome information were recorded. Data capture, quality assurance, management, and processing were consolidated by the use of the Research Electronic Data Capture (REDCap) system.

Results:

270 patients were identified that met the inclusion criteria with a median follow-up time of 22 months. There was an aggregate major wound complication rate of 24% with virtually all of these patients requiring one or more additional surgical procedures for this issue. Pre-operative radiation, current smoking status, history of MRSA colonization or infection, and male gender were associated with a significant increased probability of developing a major post-operative wound complication by univariate analysis. Patients with a BMI > 40 and those with lower extremity tumors demonstrated increased probability for wound complications, but not at a level that reached statistical significance. Other medical comorbidities such as type 2 diabetes mellitus were not found to be associated with increase probability for wound complications. 3 of the patients in this study died as a result of a major wound complication.

Conclusions:

To our knowledge, this is the first multi-institutional study to focus on identifying risk factors for the development of a wound complication following soft tissue sarcoma resection. Current tobacco use and a history of MRSA colonization or infection were identified as significant risk factors in this study and we believe this is the first time that this association has been made. Pre-operative radiation was also confirmed as a significant risk factor with an increased probability that is consistent with previous published studies. There is a trend towards increased BMI and lower extremity location being a risk factor, but this did not reach statistical significance. Further patients are being enrolled to try and help provide the power to answer these questions. Identifying the risk factors for the development of postoperative wound complications after soft tissue sarcoma resection will allow more informed patient counseling and, in certain cases, may stimulate different treatment approaches.

	Probability of Major complication	p value
All Patients	24%	
Gender		
Male	30%	.021*
Female	15%	
Location		
Upper Extremity	15%	.35*
Trunk	22%	
Lower Extremity	27%	
MRSA status		
MRSA history	83%	.016*
No MRSA history	30%	
Smoking status		
Current	45%	.039*
Former	18%	
Never	23%	
BMI (kg/m²)		
Underweight (<18.5)	13%	.12**
Normal (18.5 – 24.9)	23%	
Overweight (25 – 29.9)	20%	
Obese (30 – 39.9)	23%	
Extremely obese (>40)	55%	
Radiation		
Preoperative	34%	.002*
Postoperative	9%	
Diabetes		
Diabetic	17%	.57***
Not diabetic	32%	

*comparison made using Chi-square test

** comparison made using Cochran-Armitage Test for trend

*** comparison made using Fisher's exact test