



The Prognostic Importance of Pathologic Fracture in Limb Salvage Surgery for Chondrosarcoma

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INTRODUCTION

Pathologic fracture (PF) is one of the most common complications of chondrosarcoma of the extremity.

PF has long been regarded as a poor prognostic factor in patients with primary bone sarcoma, though literature pertaining specifically to chondrosarcoma is limited.

OBJECTIVE

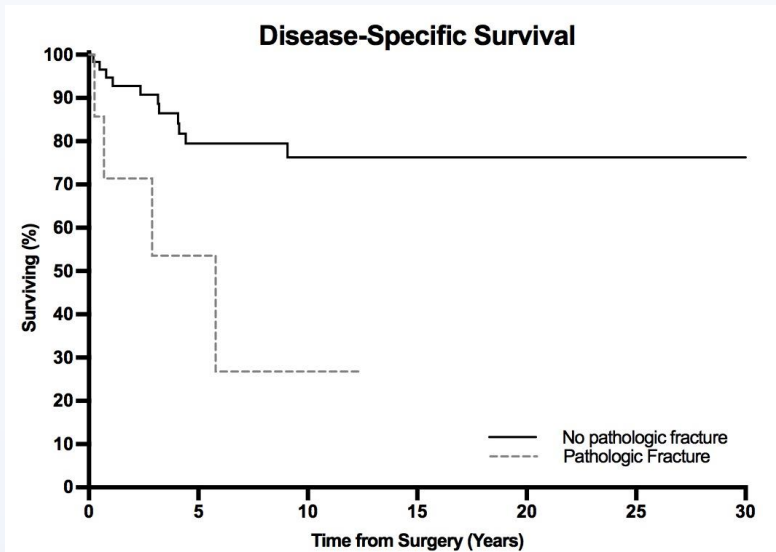
To determine whether the presence of PF impacts overall survival, the development of distant metastases, or local recurrence (LR) in patients who undergo limb salvage surgery with endoprosthetic reconstruction for chondrosarcoma.

METHODS

A retrospective review of 69 consecutive patients who underwent limb salvage surgery with endoprosthetic reconstruction for chondrosarcoma at UCLA between December 1980 and December 2019 was performed.

Patients were stratified by tumor grade (high grade IIA/IIB vs low grade IA/IB), and by a pathologic diagnosis of dedifferentiated chondrosarcoma.

RESULTS



The average follow-up of surviving patients was **10.4 years** (range: 0.2 – 33.1 years).

Figure 1: Disease-specific survival following limb salvage surgery for chondrosarcoma was significantly lower in patients with a pathologic fracture compared to patients without a pathologic fracture ($p=0.004$).

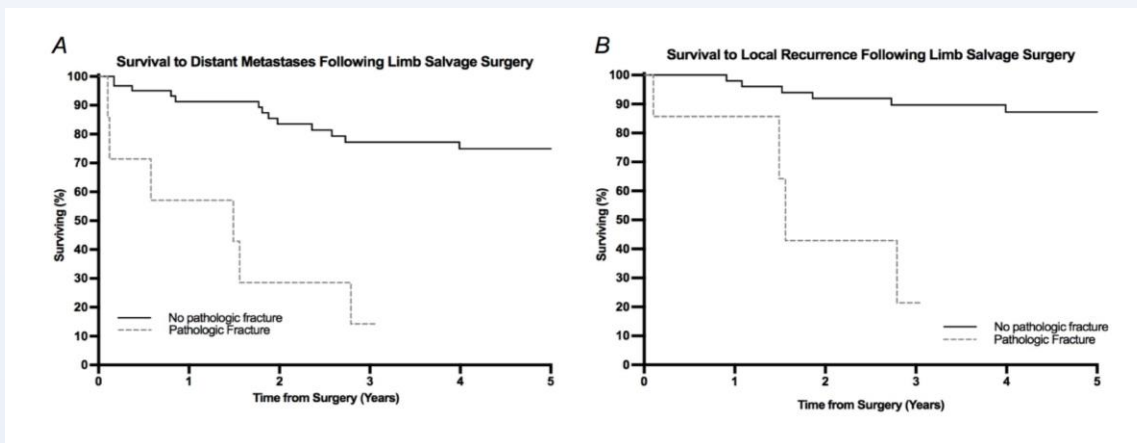


Figure 2A-B: Following limb salvage surgery for chondrosarcoma, patients with a pathologic fracture had decreased survival to distant metastases (**Figure 2A**) and local recurrence (**Figure 2B**) ($p<0.001$ for both).

Table 1: Characteristics Associated with PF

	PF (n=7)	No PF (n=62)	P-Value
Mean Age	65.0 yrs	50.5 yrs	<0.001
Sex (M/F)(%)	57.1/42.9	54.8/45.2	0.91
Low Grade IA/IB	28.6%	53.2%	0.32
High Grade IIA/IIB	71.4%	40.3%	
Metastatic	0.0%	6.5%	0.15
De-diff	71.4% (5)	37.7% (24)	

Table 2: Oncologic Prognosis

	PF (n=7)	No PF (n=62)	P-Value
Incidence of Progression (n)	85.7% (6)	21.0% (13)	<0.001
Incidence of LR (n)	57.1% (4)	12.9% (8)	0.003
Died of disease (n)	57.1% (4)	17.7% (11)	0.02

100% (5/5) of patients with dedifferentiated pathology and PF developed distant metastases.

CONCLUSIONS

- Pathologic fracture is a poor prognostic factor in patients with chondrosarcoma who undergo limb salvage surgery, especially in patients with dedifferentiated chondrosarcoma
- Pathologic fracture is associated with **decreased disease-specific survival**, **increased risk of distant metastases**, and **increased risk of local recurrence**