

Characteristics and Long-term Outcomes of Surgically Managed High-Grade Extremity Osteosarcoma

Mary K. Skalitzky BA¹, Ryan M. Wendt BS¹, Qiang An MBBS, PhD¹, Trevor R. Gulbrandsen MD¹, Obada Hasan MD, MSc¹, Benjamin J. Miller, MD, MS¹



¹University of Iowa Hospitals and Clinics Dept. of Orthopedics & Rehabilitation

Introduction

Chondrosarcoma is 3rd most common primary malignancy of bone, with most cases representing conventional chondrosarcoma (CS)

Dedifferentiated chondrosarcoma (DCS) is a highly malignant variant, accounting for 10% of chondrosarcomas and 2% of primary bone tumors

Management of DCS is mainly operative, as it tends to be resistant to chemotherapy and radiation therapy

Debate continues about the significance of prognostic indicators, with need to further characterize short-term and long-term outcomes

Objective

To delineate the characteristics, long-term outcomes, local recurrence and survival of patients with intermediate (IGCS), high (HGCS), and dedifferentiated (DCS) chondrosarcoma (appendicular) from both detailed cases from one institution and a larger cohort from the SEER database

Materials and Methods

Detailed case series of surgically managed patients from an ongoing prospective sarcoma cohort

- One tertiary referral hospital: 2010-2019

Large cohort study from Surveillance, Research, Epidemiology and End Results (SEER) Database

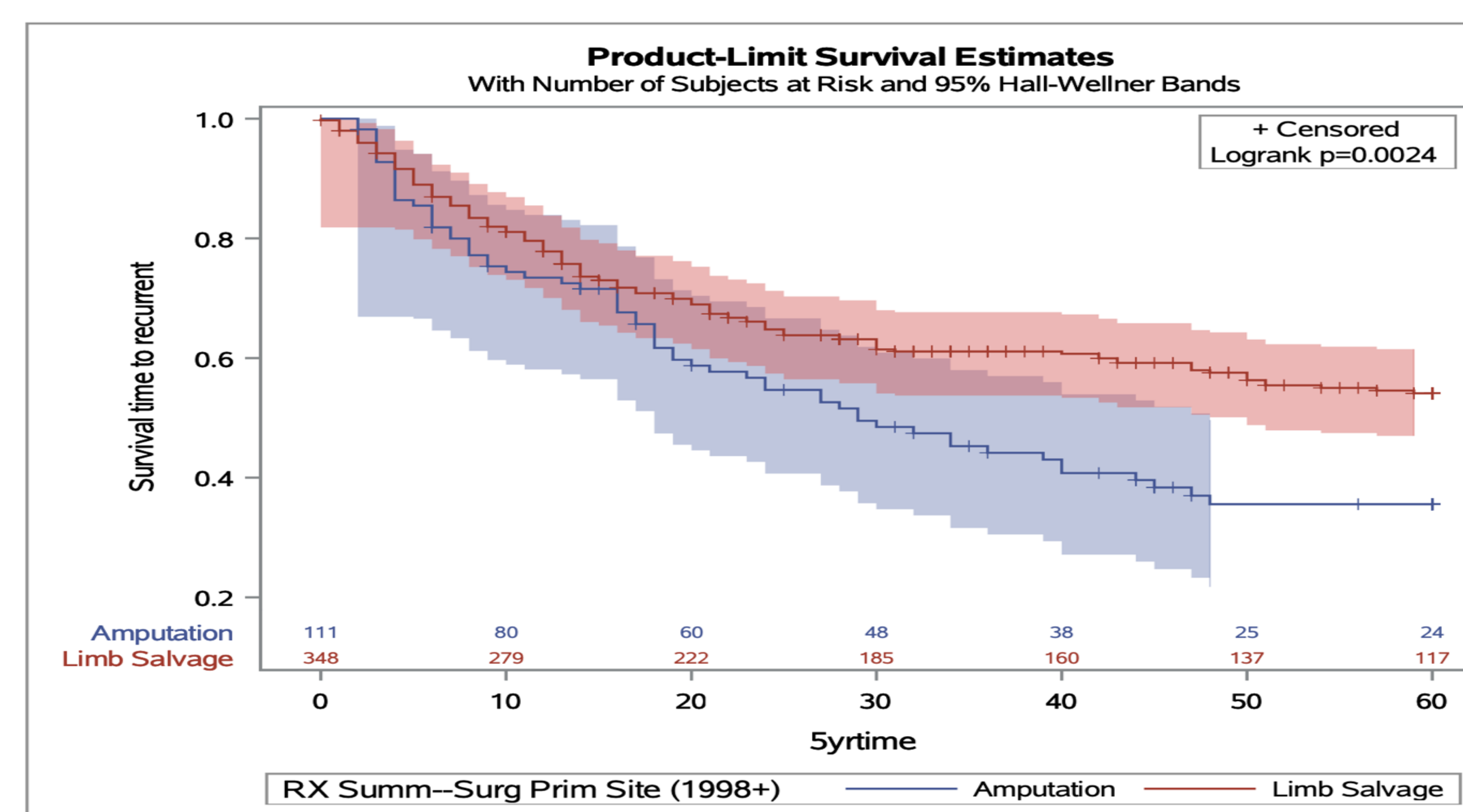
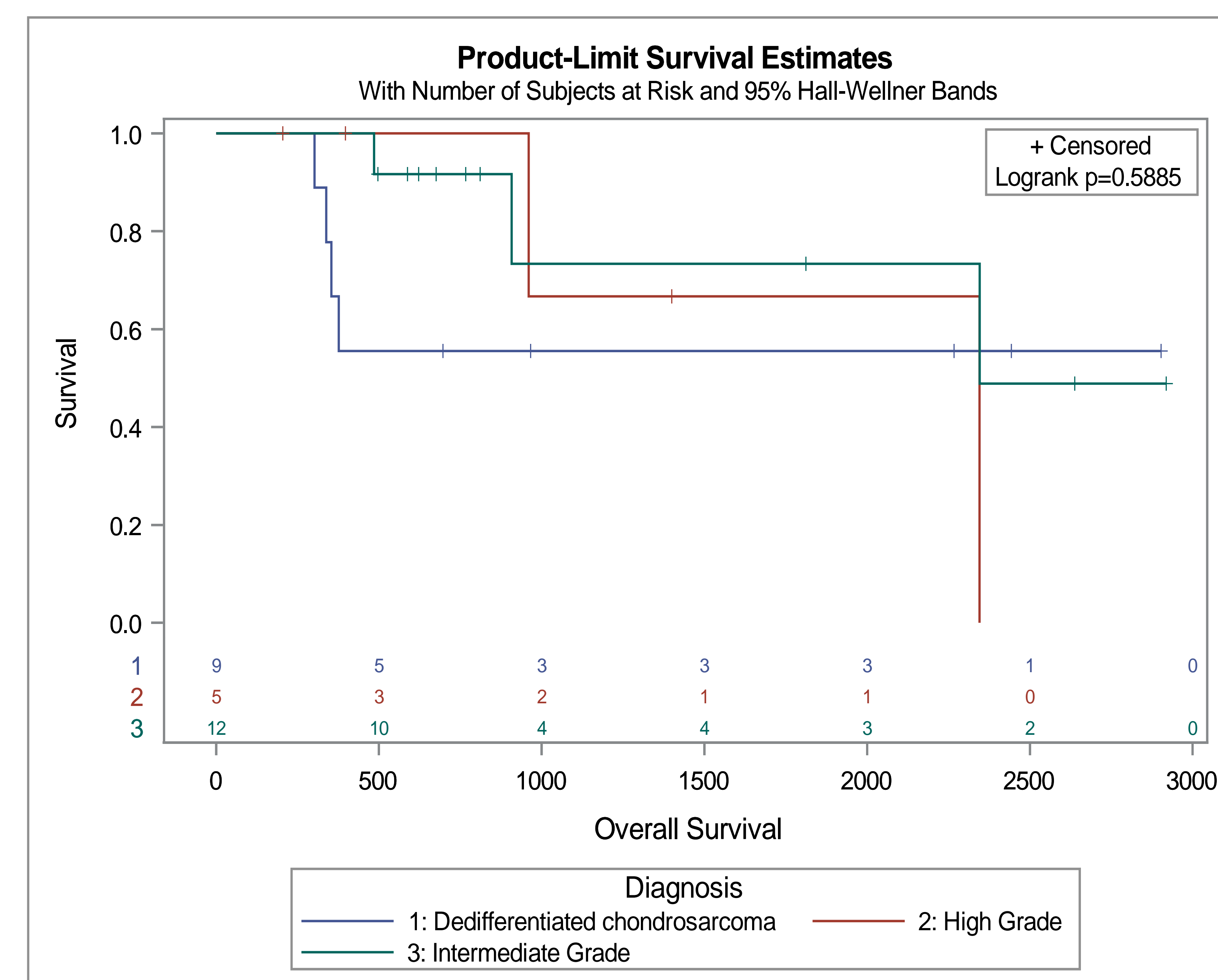
Patient charts reviewed to identify

- Demographics
- Tumor characteristics
- Surgical procedure
- Systemic therapy
- Survival data
- Descriptive analysis, results reported in line with PROCESS guidelines

Results

Case series: n= 26

- 12 (42%) IGCS
- 5 (19.2%) HGCS
- 9 (34.6%) DCS
- No difference in demographics or location of primary between the three grades
- Median follow-up: 26.0 months (IQR 16.1-70.8)
- DCS was more likely to present with a higher AJCC 7th/8th edition stage (p=0.04)
- No difference in time to recurrence (p=0.24) or time to metastasis (p=0.66) between the grades
- No difference in 1-year survival between grades (p=0.71)
- No correlation between systemic therapy (p=0.63), radiation therapy (p=0.52), or margin (p=0.74) and overall survival



SEER cohort: n=516

- 367 (71.1%) HGCS
- 149 (29.8%) DCS

HGCS higher overall survival at 1-year (p<0.001), 2-years (p<0.001), and 5-years (p<0.001)

No difference in survival limb salvage vs. amputation at 1-year (p=0.1) and 2-year (p=0.13)

Limb salvage associated with better survival at 5 year (HR=1.49 (1.11-1.99), p=0.02)

Discussion and Conclusions

- High Grade Chondrosarcoma (HGCS) had smallest surgical margin and longest time interval to both local recurrence and death
- DCS that did not receive systemic therapy had local recurrence
- Systemic therapy did not increase survival
- Earlier identification of higher-grade chondrosarcoma may improve management options
- SEER Data: amputation and DCS had worse prognosis at 5-year survival time