

## **Risk Factors for 30-day Mortality in Patients Treated with Joint Replacement Surgery Due to Metastatic Bone Disease.**

**Michala Skovlund Sørensen, Klaus Hindsø, Michael Mørk Petersen**

***Musculo-skeletal section, orthopedic department, University hospital Rigshospitalet, Copenhagen, Denmark***

**Background:** Patients with metastatic bone disease (MBD) in the appendicular skeleton may benefit from surgery due to pain or pathologic fractures. Surgeons must carefully estimate each patient's postoperative survival in order to deliver the most appropriate type of intervention. Previous studies demonstrated that short-term survival estimates could be generated using demographics, laboratory information and functional status.

However, the degree by which intraoperative factors are associated with survival remains unknown.

**Question/Purpose:** We asked whether intraoperative variables such as ASA, tumor location, and extent of surgery (surgical time/blood loss) were associated with 30-day mortality in patients undergoing joint replacement surgery for MBD?

**Patients and Methods:** We identified 130 consecutive patients who underwent joint replacement surgery for skeletal metastases in the appendicular skeleton from 1 January 2003 to 31 December 2008. We collected intraoperative, demographic, disease-specific and functional data (see table 1). Associations with 30 day mortality were evaluated by Cox regression analysis.

**Results:** 30-day overall survival was 12.3% (figure 1). ASA score ( $p=0.03$ , Hazard Ratio [HR] 9.68 (95% C.I. 2.18 – 42.73)), surgery time ( $p=0.03$  HR 0.19 (95% C.I. 0.04 – 0.82)), and Karnofsky performance status ( $p=0.01$ , HR 0.16 (95% C.I. 0.05-0.58)) were associated with 30-day mortality in univariate analysis. Only ASA ( $p=0.02$ , HR 6.36 (95% C.I. 1.39 – 29.24)) was found to be independently associated with 30-day mortality.

**Conclusions:** We were unable to demonstrate an association between intraoperative factors and 30-day mortality in patients undergoing joint replacement surgery due to MBD. 30-day mortality seems only to be influenced by ASA group.

**Table 1:**

Patient demographics and surgical parameters.

<b>Number of patients</b>	130
<b>Female/male</b>	76/54
<b>Age at surgery (years)</b>	
Mean (range)	64 (30-85)
Missing (nb)	0
<b>ASA (n=126)</b>	
Group 1	6
Group 2	66
Group 3	48
Group 4	6
Missing (nb)	4
<b>Primary Tumor Site</b>	
Breast	31
Lung	20
Kidney	16
Prostate	15
Myeloma	12
Unknown	9
Lymphoma	5
Malignant melanoma	4
Bladder	4
Sarcoma	4
Other	10
Missing (nb)	0
<b>Major Bone Resection</b>	
(yes/no)	103/37
Missing (nb)	0
<b>Surgery Time (minutes)</b>	
Mean (range)	164 (60-360)
Missing (nb)	6
<b>Blood loss (ml)</b>	
Mean (range)	1273 (100-7000)
Missing	4
<b>Karnofsky score</b>	
> 70	73
< 70	53
Missing	4

**Figure 1:**  
Kaplan-Meier estimate for survival.

