Patients with Metastatic Disease are at Highest Risk for Anxiety and Depression in an Orthopaedic Oncology Patient Population

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INTRODUCTION: Prior studies have shown that cancer patients are at risk for anxiety and depression. Recognizing and addressing these issues is important for optimizing patient outcomes; however, the patterns and predictors of anxiety and depression in an orthopaedic oncology population have not been studied. The primary goal of this study was to compare the prevalence of clinically relevant pre- and postoperative anxiety and depression in patients undergoing 1) primary resection of a localized tumor, 2) palliative surgery for metastatic cancer, and 3) non-oncologic total joint arthroplasty (TJA) as a control. Second, we determined the proportion of patients that report clinically relevant changes in anxiety and depression in each cohort over the perioperative time course. Third, while controlling for diagnosis, we evaluated potential patient- or disease-related risk factors (age, gender, race, marital status, procedure location, adjuvant therapy) for developing pre- and postoperative anxiety and depression in our population.

METHODS:
We retrospectively reviewed all patients aged 18-90 years that underwent resection of a primary malignancy, palliative surgery for metastatic cancer, or TJA by the orthopaedic oncology service at a single institution from 2015-2020. Eighty-seven patients were excluded for incomplete scores, leaving 276 available for study. We collected demographic data, as well as PROMIS scores (anxiety, depression, pain interference, and physical function) preoperatively and at the initial postoperative visit. Clinically relevant anxiety and depression were defined as PROMIS scores above 60. Clinically relevant changes in anxiety and depression were defined as differences in perioperative PROMIS scores of at least 4 points, according to previously-established minimal clinically important differences (MCID). Backwards stepwise linear regression was used to determine risk factors for perioperative anxiety and depression within this population while controlling for patient cohort (i.e., diagnosis).

RESULTS:
Pre- and postoperative anxiety were more prevalent in patients undergoing palliative surgery for metastatic disease (53.8%, 42%) than patients undergoing resection of primary sarcomas (29.9%, 15.5%) or TJA (36.8%, 11.9%) (p = .003, p < .001). Pre- and postoperative depression were also more prevalent in patients undergoing palliative surgery for metastatic disease (28.8%, 27.3%) than patients undergoing resection of primary sarcomas (16.9%, 11.3%) or TJA (16.8%, 2.4%) (p = .063, p < .001).

The proportions of patients that experienced clinically relevant improvement in anxiety and depression were higher in the TJA cohort (56.0%, 47.6%) than in patients undergoing primary resection (38.0%, 28.2%) or palliative surgery (43.2%, 30.7%) (p = 0.130, p = 0.078).

When controlling for diagnosis, increased pain interference and decreased physical function were associated with higher preoperative anxiety (p = 0.001, p = 0.012) and depression (p = 0.009, p = 0.003). Increased preoperative anxiety also predicted higher postoperative anxiety (p = 0.012).

DISCUSSION AND CONCLUSION: The prevalence of anxiety and depression was increased in patients undergoing palliative surgery for metastatic disease, but similar between patients undergoing resection of a primary malignancy and the control, non-oncologic TJA cohort. TJA patients more frequently experienced clinically relevant improvements in anxiety and depression, compared to patients undergoing surgery for cancer diagnoses. Finally, increased pain interference and decreased physical function were independently associated with greater anxiety and depression. Providers should maintain awareness of mental health issues and refer patients for appropriate support to optimize physical and psychological outcomes in this population.