

Peer Review File

Article information: <http://dx.doi.org/10.21037/aoj-20-92>

Comment 1: The title should reflect the main findings in pathologic fractures of the femur instead of all pathologic fractures.

Reply 1: We have modified the title as advised to specify that the study exclusively investigated subjects with femur fractures

Changes in the text: Title of paper changed from “Prophylactic Surgical Treatment Using CT-Based Rigidity Analysis vs After the Fact Fracture Treatment” to “Prophylactic Surgical Treatment Using CT-Based Rigidity Analysis vs After the Fact Fracture Treatment of Pathologic Femoral Lesions” (see title page)

Comment 2: In the Methods section, the authors reported that the AF cohort was from 2011-2016, while the PST cohort was selected from 2009-2016. Would the different time periods between these cohorts introduce any selection or exclusion bias into the study? In addition, would the inclusion of patients only from a single surgeon lead to a lack of generalizability of the data?

Reply 2: The time periods for when the patient data was collected within was limited by when the study started to enroll patients and by availability of information within the electronic medical record and when not substantial, access to paper charts. The difference in data collection start point for the AF and PST groups does not represent differences in patient population, but the difference exists in order to increase sample size. We intentionally used data from patients all treated by the same physician in order to minimize intraoperative variability that could have influenced analysis of outcome measures. This choice optimizes consistency, minimizes variables, and better allows us to directly compare the study groups because of that. However, it also could limit generalizability given that methods or techniques used by different surgeons could ultimately produce variability in the outcomes when compared to those of this study.

Changes in text: We have added a statement to address this in the discussion section. (See page 18, lines 9-15)

Comment 3: in the Discussion section, the authors stated that “mortality in elderly patients with osteoporotic hip fractures is notably increased compared to their non-fracture cohorts”. The relevance of comparing pathologic fractures in cancer patients to fragility fractures from elderly patients is unclear at best, due to many inherent physiological differences between these populations.

Reply 3: Comparing patient populations of patients with pathologic fractures to patients with fractures secondary to osteoporosis that undergo surgical fixation can aid in investigating similarities in outcome inherent to undergoing similar surgical procedures. However, these patient populations

have very different risk factors and co-morbidities secondary to the underlying pathogenesis of their femoral lesions. Therefore, it is unfair to directly compare the mortality of these two patient populations.

Changes in text: the direct quote referenced in the reviewer's comment and the associated reference have been removed from the text.

Comment 4: Although statistically significant, can the difference in survival between groups be influenced by the small size of subjects in group I and III?

Reply 4: It is certainly possible that differences in survival between groups could have been influenced by small sample size, particularly in groups I and III. However, given the small sample size, we would not have expected to find a statistically significant difference, which was not the case. That being said, if the patients included in groups I and III were inherently more ill or had a greater number of co-morbidities, this certainly could have influenced the difference in survival when compared to group II. To help account for the baseline differences in patients, we evaluated co-morbidities, survival probability, and disease extent using the scoring system described by Janssen (9). Patients from all 3 groups had average scores placing them in an intermediate range for prognosis and there was no statistically significant differences between the groups.

Changes in text: In order to reinforce what was mentioned above in the reply, additional text has been added to highlight the use of the scoring system by Janssen et al in determining lack of statistically significant differences in co-morbidities of the three groups. (see page 17, lines 2-4).