

## **Risk Factors Affecting Length of Hospital Stay After Surgery for Fragility Fractures of the Pelvis: Retrospective Analysis Using the Japanese Diagnosis Procedure Combination Database**

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**Purpose:** The incidence of fragility fractures of the pelvis (FFPs) caused by low-energy injuries due to osteoporosis has been increasing. FFPs have been usually treated conservatively with good results; however, conservative treatment sometimes fails and some patients develop fracture progression. As a result, it has been reported that hospital length of stay (LOS) was prolonged due to persistent pain and dysfunction of activities of daily living, and the mortality rate after FFPs was comparable to that of hip fractures. Thus, more aggressive surgical indications at an early stage may be considered depending on the patient's background and conditions in recent years. The purpose of this study was to estimate the hospital mortality rate and identify and characterize the risk factors associated with a LOS in patients surgically treated for FFPs in Japan.

**Methods:** Using the Japanese Diagnosis Procedure Combination (DPC) database from 2014 to 2020, we retrospectively identified 7256 patients who underwent surgery for pelvic fractures. Exclusion criteria were: age <65 years, patients with acetabular fractures, multiple fractures, open fractures, pathological fractures, high-energy trauma, incomplete data, deceased patients, and patients admitted to recovery rehabilitation units or the integrated community care units. The evaluation items were age, sex, body mass index (BMI), hospital case volume, comorbidities at admission, Charlson Comorbidity Index (CCI), postoperative complications, and an LOS. Patients with an LOS  $\geq 47$  days, which corresponded to the top 25%, were considered to have a longer LOS. Multivariable logistic regression analysis was performed to determine the risk factors for having a longer LOS as a primary outcome. The hospital mortality rate was calculated as a secondary outcome.  $P < 0.05$  was considered statistically significant.

**Results:** A total of 1471 patients underwent surgery for FFPs during this period, and the overall hospital mortality rate was 2.0% (30/1471 patients). A total of 1206 patients were included in the analysis regarding the LOS, and the mean LOS was  $34.8 \pm 25.6$  days. Multivariate analysis revealed that only lower hospital case volumes and the presence of postoperative complications were associated with having a longer LOS among surgically treated FFP patients.

**Conclusions:** This study is the first report on the factors associated with a LOS among patients surgically treated for FFPs using the Japanese DPC database. This study has shown that only lower hospital case volumes and the presence of postoperative complications were associated with having a longer LOS.