

Changes in Patellar Fracture Characteristics: A Multicenter Retrospective Analysis of 1596 Patellar Fracture Cases Between 2003 and 2017

Seong-Eun Byun, MD, PhD; Jaeang Sim, MD; Yong Bum Joo; Ji Wan Kim;

Won Chul Choi, MD; Young Gon Na, MD; Oog Jin Shon

CHA Bundang Medical Center, CHA University, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea, Republic of

Purpose: This study aimed to investigate the characteristics of patellar fracture and the changes in these characteristics over time in Korea.

Methods: A total of 1596 patients with patellar fracture who visited 5 university hospitals from 2003 to 2017 were included for the analysis. The demographic characteristics of the patients, including age, gender, and body mass index, and fracture characteristics, including fracture classification, injury mechanism, fixation method, and postoperative complication rate, were analyzed through a review of the medical records.

Results: There were 988 (61.9%) male patients and 608 (38.1%) female patients. The mean age was 51.3 years (range, 3-97) for the study group, 47.6 (range, 8-94) years for male patients, and 57.3 (range, 3-97) years for female patients. An increasing trend in the proportion of patients aged >60 years and female patients was observed during the study period ($P = 0.002$ and $P < 0.001$, respectively). According to the AO/OTA classification, type C1 was the most common type, with 427 (26.8%) cases, followed by type C3, with 418 (26.2%) cases. In male patients, type C3 was the most common, with 291 (29.5%) cases, whereas in female patients, type C1 was the most common type, with 202 (33.2%) cases ($P < 0.001$). The incidence of high-energy injuries was higher in male patients than in female patients ($P < 0.001$). The fixation method showed a significant difference among periods. The percentage of tension-band wiring decreased from 65.5% in 2003-2005 to 35.3% in 2015-2017 ($P < 0.001$). The combined method showed an increasing tendency from 14.9% in 2003-2005 to 40.3% in 2015-2017 ($P < 0.001$). Among 1596 patients, operative treatment was performed in 1095 cases (68.6%). Nonunion including fixation failure was the most common complication, accounting for 35.1% of all complications. Patients aged >60 years with patellar fracture showed a higher percentage of low-energy injuries and higher postoperative complication rates than younger patients ($P < 0.001$ and $P = 0.002$, respectively).

Conclusion: Patellar fractures in the female and elderly populations are increasing. Patellar fractures in elderly patients showed a higher postoperative complication rate and percentage of low-energy injury than those in younger patients. Therefore, patellar fractures in the elderly population should be considered fragility fractures, and further studies are warranted to suggest a specific treatment plan for fragility patellar fractures.