Interprosthetic Femur Fractures: A Multicenter Retrospective Study

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Purpose: Patients with ipsilateral total knee arthroplasty (TKA) and total hip arthroplasty (THA) are at a higher risk for interprosthetic femur fractures (IFFs), which gives the surgeon the challenge of treating a periprosthetic hip and distal femur fracture simultaneously. The purpose of our study is to identify practices and determine factors that positively impact patient results.

Methods: An IRB-approved retrospective study was performed of patients who underwent open reduction and internal fixation (ORIF) of IFFs from 2011-2021 at 12 trauma centers. Patient demographics, comorbidities, treatments, and outcomes were collected and analyzed using descriptive statistics and univariate measures.

Results: 128 patients met inclusion criteria with 104 females (81%) and average age 77 years (range, 57-98). 109 patients had primary THA (33 cemented stem) and 114 primary TKA (14 cemented). 12 (9%) occurred within the first 90 days of THA or TKA. All patients underwent ORIF with 10 patients receiving 2 plates and 14 with plate plus intramedullary nail (IMN) combination. 26 patients (25%) underwent revision of their THA and/or TKA at time of fixation. 63 patients were non-weightbearing with 2 months the average to full weightbearing (FWB). Two plates represented the fastest time to FWB ($P<0.001$). 59% of patients returned to baseline. Patients treated with either dual plate or plate plus IMN combinations healed faster ($P<0.001$) and had improved rates of returning to baseline function ($P<0.034$). 13 patients developed malunion/nonunion and 10 had hardware failure. The deep infection rate was low at 4%. There were 19 patients (15%) who underwent additional procedures for complications. The mortality rate was 11% and associated with >1 comorbidity ($P = 0.002$).

Conclusion: In the largest study to date, ORIF with spanning lateral plate remains the most common treatment for IFF. 20% of patients required revision of THA and/or TKA. 20% of patients underwent dual fixation and 11% were treated with plate plus IMN combination. Patients with dual fixation had higher rates of union and return to baseline ambulatory status. 15% of patients needed additional surgery. Mortality rates at 1 year were lower than hip fracture data, but not insignificant. The information gathered can help guide treatment principles and permit realistic expectations regarding IFF treatment.