## Surgery within 24 hours reduces mortality and complication rates in patients with periprosthetic femoral fractures of the hip

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## INTRODUCTION:

In literature, patients with fractures of the proximal femur, early operative treatment within 24 hours after the event has been shown to be associated with reduced mortality and complication rates. Patients with periprosthetic femoral fractures after total hip arthroplasty share similar anthropometric characteristics and comorbidities. Therefore, we aimed to investigate mortality and complication rates between patients with periprosthetic femoral fractures operated within and more than 24 hours after diagnosis.

## METHODS:

In a monocentric study, 350 consecutive patients with periprosthetic femoral fractures of the hip treated in a high volume arthroplasty and trauma center between 2006 and 2020 were retrospectively analyzed. Patients were divided into two groups using time to surgery within 24 hours after diagnosis as threshold. The time of the first radiograph was defined as time of fracture diagnosis. For transferred patients from external hospitals this time point of first radiograph was obtained to eliminate this bias. Patients were categorized according the Vancouver classification system and treated accordingly. The primary outcome variables were operative and general complications as well as mortalities within 1-year. The data were extracted from the institutional joint registry, patient files and radiographs. For 1-year results, altogether 23 patients were lost to follow-up.

## **RESULTS:**

Overall, the mean time to surgery was 1.4 days, and the 1-year mortality was 14.6%. The time to surgery  $\leq$  24 hours (n = 166) and time to surgery > 24 hours (n = 184) groups were comparable in terms of baseline characteristics and comorbidities (table 1). Regarding operative data revision arthroplasty was performed more frequently in the > 24h group due to a higher rate Vancouver B2 fractures (table 2). Surgical complications were equally frequent in the two groups (16.3% versus 15.2%, p = 0.88). General complications occurred more often in the late patient care group (11.4% versus 28.3%, p<0.001, table 3)). The 30-day mortality (0.6% versus 5.5%, p=0.012), and 1-year mortality (8.3% versus 20.5%, p=0.003) rates increased in patients who had time to surgery > 24 hours (figure 1). Cox regression analysis revealed a hazard ratio of 4.4 (95% CI = 2.1-9.2, p < 0.001) for the time to surgery > 24 hours group.

DISCUSSION AND CONCLUSION: Periprosthetic femoral fractures of the hip represent a severe and life-threating injury. Prompt operative treatment can contribute to reduce mortality and overall complications in these patients.

