

# Benefits Of Early Surgical Intervention for Proximal Femur Fractures In Elderly Patients Over Age 100: A Retrospective Review

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**INTRODUCTION:** Proximal femur fractures are a significant concern among the aging population, and the prevalence of cases among individuals over 100 years of age is on the rise. Limited evidence exists regarding the impact of surgical intervention on postoperative outcomes in this age group. This study aims to investigate the safety and efficacy of surgical treatment for very elderly patients aged over 100 years with proximal femur fractures and to evaluate the impact of early surgery on patient outcomes.

**METHODS:** A retrospective cohort study was conducted involving 15 very elderly patients aged over 100 who underwent surgical treatment for proximal femur fractures, and an additional 137 patients in their 90s included as a control group. Subsequent analyses divided patients into three groups: those who underwent early surgery at age 100 or older (100s group), those who underwent early surgery in their 90s (90s+ Early group), and those who did not undergo early surgery in their 90s (90s+ Late group). Evaluation items included patient characteristics, surgical details, rates of perioperative complications, length of hospital stay, proportion of patients discharged to the same facility or home, rate of regaining walking ability, and one-year survival rate. Statistical analyses included Fisher's exact or chi-square tests for categorical variables, Wilcoxon rank-sum tests for continuous variables, and ANOVA tests for comparison among groups.

**RESULTS:** Postoperative analysis revealed no significant differences in surgical outcomes, including complications, hospital stay, return to living environment, walking ability, and one-year survival rate between the over-100 and 90s groups. Subgroup analysis showed trends of fewer complications and better ambulatory ability in the 90s+ Early group compared to the 90s+ Late group. Similar outcomes were observed between the 100s group and 90s+ Early group.

**DISCUSSION:** This study illustrates the potential benefits of surgical intervention for proximal femur fractures in very elderly patients aged over 100 and highlights the importance of early surgery within 48 hours. While acknowledging limitations such as sample size, retrospective design, and single-center setting, our findings emphasize the value of evidence-based decision-making for this demographic.

**SIGNIFICANCE/CLINICAL RELEVANCE:** These findings have important implications for clinicians and patients, offering insights into fracture management strategies and emphasizing the role of timely surgery in optimizing outcomes for the super-aged population. Additionally, it can guide future research endeavors aiming to validate and expand upon our results in larger, multicenter cohorts.

## Comparison of postoperative outcomes between group of patients over 100 years of age and group of patients in their 90s

|   | 90s            | over 100 years | p-value       |
|---|----------------|----------------|---------------|
| <b>Waiting time (hours)</b>   | 91.5±65.3      | 35.2±22.7      | <b>0.001*</b> |
| <b>Surgical procedure (ORIF/BHA)</b>                                | 99/38          | 9/6            | 0.320         |
| <b>Operative time (minutes)</b>                                     | 55.4±19.5      | 54.1±18.7      | 0.816         |
| <b>Blood loss (ml)</b>  | 121.5±117.3    | 119.4±97.8     | 0.896         |
| <b>Blood transfusion volume (ml)</b>                                | 460.7±312.2    | 480.0±374.0    | 0.761         |
| <b>Perioperative complication (%)</b>                               | 19.0 (26/137)  | 13.3 (2/15)    | 0.592         |
| <b>Hospital stays (days)</b>  | 42.6±20.4      | 38.3±21.8      | 0.449         |
| <b>Percentage returned to their original living environment (%)</b> | 56.2 (77/137)  | 80 (12/15)     | 0.076         |
| <b>Rate of regaining walking ability (%)</b>                        | 51.4 (55/107)  | 60 (6/10)      | 0.603         |
| <b>One-year survival rate (%)</b>                                   | 89.8 (123/137) | 93.3 (14/15)   | 0.661         |

