Time To Surgery and Mortality Following Hip Fracture

Grimes JP, Gregory PM, Noveck H, et al. The effects of time-to-surgery on mortality and morbidity in patients following hip fracture. Am J Med 2002;112:702–9.

Study Overview

Objective. To determine the impact of time to surgery on mortality and morbidity in elderly subjects with hip fracture and active medical problems.

Design. Retrospective cohort study.

Setting and participants. 8383 consecutive patients aged 60 years or older who underwent surgical repair of a hip fracture between 1983 and 1993 were included. Patients were drawn from 20 hospitals in 4 metropolitan areas in the United States. Patients were excluded if they had metastatic cancer, had trauma with multiple injuries, were admitted to the hospital more than 48 hours after the fracture, or declined blood transfusion.

Main outcome measures. Medical chart reviews and the National Death Index were used as data sources. The primary endpoint was all-cause mortality. Secondary endpoints included 30-day mortality, decubitus ulcer formation, serious bacterial infection, myocardial infarction, and venous thromboembolism. Information was collected for multiple clinical and demographic variables.

Main results. 79% of the cohort were women, the mean age was 80.4 years, and median follow-up was 5 years. 45% had surgery more than 24 hours after admission. Of this group, 65% had active medical problems. No one with active medical problems had surgery within 24 hours of admission. In the unadjusted analysis, increasing time to surgery was associated with increased mortality. After adjustment for underlying medical problems and other differences, there was no difference in long-term or 30-day mortality for patients having surgery 48 to 72 hours after admission when compared with 24 to 48 hours (hazard ratio, 0.94 [95% confidence interval {CI}, 0.85–1.04]; and relative risk [RR], 0.71 [95% CI, 0.45–1.10], respectively). Delay was associated with an increased risk of decubitus ulcers, however. An association between delay of surgery for more than 72 hours and mortality could not be adequately assessed since few patients had surgery more than 72 hours after admission.

Conclusion. In this large cohort, delay in surgical repair of hip fracture for up to 72 hours was not associated with higher mortality after adjustment for concomitant medical conditions.

Commentary

Some prior studies have suggested that delayed operative repair of hip fracture is associated with increased mortality [1–3]. These studies generally were small and were not able to determine how much of the observed mortality increase was due to patients' pre-surgical medical conditions versus the delay in surgery itself. Grimes et al's study is, therefore, a welcome contribution to this literature. Their cohort was large, and they could control for a variety of clinical factors.

In this study, there was no increase in postoperative mortality seen with delay of surgery from the second to the third hospital day. Comparisons between those operated on before and after 24 hours could not be made for patients with active medical problems because this entire group underwent surgery after 24 hours. It is not clear whether or not there are important differences in outcomes for patients without active medical problems who have surgery within 24 to 48 hours versus less than 24 hours. This information would be welcome in light of a previous report showing an increased risk of death when surgery is performed after 24 hours, even when patients with an American Society of Anesthesia classification of 1 or 2 were considered [1]. For this reason, and because there was an increased risk of decubitus ulcer formation associated with operative delay, surgery should not be delayed without a good cause.

Applications for Clinical Practice

For elderly patients with hip fracture and active medical illness, delay of surgical repair up to 72 hours itself does not appear to be associated with an increase in mortality. It makes sense to optimize medical problems that are likely to lead to postoperative complications. When there is no good reason for delay, prompt surgical repair is appropriate.

–Review by Stephen D. Persell, MD

References

1. Hamlet WP, Lieberman JR, Freedman EL, et al. Influence of health status and the timing of surgery on mortality in hip fracture patients. Am J Orthop 1997;26:621–7.
2. Dolk T. Hip fractures—treatment and early complications. Ups J Med Sci 1989;94:195–207.
3. Kenzora JE, McCarthy RE, Lowell JD, Sledge CB. Hip fracture mortality. Relation to age, treatment preoperative illness, time of surgery, and complications. Clin Orthop 1984; 186:45–56.

Copyright 2002 by Turner White Communications Inc., Wayne, PA. All rights reserved.