



Q: Do hip fractures need to be repaired within 24 hours of injury?

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A: Patients with unstable medical conditions or with impaired cardiopulmonary function should have operative repair delayed to return them to their healthiest baseline prior to surgery. Otherwise, patients should proceed to operative repair as soon as practically possible.

The case for operating immediately
Early operation (ie, 8 to 24 hours from admission)

has been associated with a reduction in the incidence of nonunion of fracture and avascular necrosis of the femoral head, improved long-term functional status, and decreased rates of urinary tract infections, decubitus formation, pneumonia, and venous thromboembolism.¹⁻³

Retrospective uncontrolled studies show that failure to repair hip fractures within 24 hours is associated with increased mortality. As there are no randomized prospective studies comparing delayed surgery with expeditious surgery, it is not known whether surgical delay adversely affects outcomes directly or if delay in surgery is simply a reflection of underlying morbidities that adversely affect outcomes. The literature does show that early operation improves pain control,

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which decreases the incidence of delirium and reduces length of hospital stay.

Delay surgery when comorbidities are significant

Patients with hip fractures often have comorbidities such as diabetes, congestive heart failure, coronary artery disease, anemia, malnutrition, dehydration, electrolyte disturbances, and rhabdomyolysis with renal failure. These problems may contribute to the event leading to the fracture (neuropathy, visual impairment, weakness) or may be related to immobility after the fracture. Such conditions, if not assessed and treated preoperatively, may lead to perioperative complications such as myocardial ischemia and infarction, delirium, and nutritional compromise, increasing in-hospital and overall mortality and delaying weight bearing and rehabilitation.^{2,4} Therefore, a delay in surgical intervention of 24 to 48 hours after admission is appropriate to correct such metabolic disturbances and to optimize chronic medical conditions in an attempt to improve overall outcomes.

Several studies note no significant difference in the incidence of postoperative mortality between immediate and delayed hip fracture repair when controlling for the severity of medical conditions. In a retrospective study, Grimes et al⁵ evaluated 8,383 patients with hip fractures that were repaired surgically between 1983 and 1993. In unadjusted analyses, a delay in surgery greater than 24 hours from admission was associated with increased long-term mortality compared with prompt surgery (ie, < 24 hours from admission); however, after adjustment for demographic variables and for the severity of underlying medical problems, no significant association was found. Mortality at 30 days and postoperative morbidity measures were similar, although a longer time to surgery was associated with the development of decubitus ulcers.

A recent retrospective study of more than 120,000 admissions in the United Kingdom noted that delay of 2 or more days was associated with increased mortality, but the magnitude of this effect was reduced with adjustment for comorbidities.⁶

Many agree that uncontrolled medical comorbidities

and postoperative complications increase the risk of death in association with hip fracture, but the effect of optimization of these comorbidities on outcomes had not been assessed until a recent prospective cohort study.⁷ Researchers evaluated 571 patients with hip fractures from four New York hospitals and categorized their medical abnormalities as either major (more likely to require correction prior to surgery) or minor (less likely to require correction prior to surgery). The odds ratio of having a complication was increased in the presence of a major abnormality but not in the presence of a minor abnormality. If a major abnormality was present on admission but only minor abnormalities were present at the time of surgery (ie, the major abnormality was corrected), no increased risk was noted.

Conclusion

Medical comorbidities contribute to morbidity and mortality after hip fracture repair. Existing evidence suggests that brief surgical delay (up to 72 hours) does not adversely affect health or functional outcomes in patients with hip fracture, and may allow for stabilization of uncontrolled medical conditions prior to surgery. Further studies are needed, however, to characterize the group of patients who would benefit from operative delay for medical optimization.

REFERENCES

1. Zuckerman JD. Hip fracture. *N Engl J Med* 1996; 334:1519–1525.
2. Parker MJ, Pryor GA. The timing of surgery for proximal femoral fractures. *J Bone Joint Surg Br* 1992; 74:203–205.
3. Perez JV, Warwick DJ, Case CP, Bannister GC. Death after proximal femoral fracture—an autopsy study. *Injury* 1995; 26:237–240.
4. Morrison RS. The medical consultant's role in caring for patients with hip fracture. *Ann Intern Med* 1998; 128:1010–1020.
5. Grimes JP, Gregory PM, Noveck H, Butler MS, Carson JL. The effects of time-to-surgery on mortality and morbidity in patients following hip fracture. *Am J Med* 2002; 112:702–709.
6. Bottle A, Aylin P. Mortality associated with delay in operation after hip fracture: observational study. *BMJ* 2006; 332:947–950.
7. McLaughlin MA, Orosz GM, Magaziner J, et al. Preoperative status and risk of complications in patients with hip fracture. *J Gen Intern Med* 2006; 21:219–225.

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