An official website of the United States government
Here's how you know

FULL TEXT LINKS

Wolters Kluwer FULL TEXT

Find It @ UCL

Randomized Controlled Trial Clin Orthop Relat Res. 2026 Jan 1;484(1):119-128.
doi: 10.1097/CORR.0000000000003645. Epub 2025 Aug 12.

Cemented Fixation in Arthroplasty for Hip Fractures Does Not Increase Cardiopulmonary Complications: A Secondary Analysis of the HIP ATTACK Trial

Christiaan H Righolt [1 2 3 4], Flavia K Borges [5 6 7], Jhase Sniderman [2 8], Thomas R Turgeon [2 8], P J Devereaux [5 6 7], Mohit Bhandari [9], Ernesto Guerra Farfan [10 11], Abdel-Rahman Lawendy [12], Ameen Patel [6], Vikas Tandon [6], Wojciech Szczeklik [13], Sandra Ofori [5 6], Valerie Harvey [5], Eric R Bohm [2 8], Gavin C A Wood [14]; on behalf of the HIP ATTACK Investigators

Collaborators, Affiliations
PMID: 40828989 DOI: 10.1097/CORR.0000000000003645

Abstract

Background: Cemented fixation in arthroplasty to treat hip fractures is now widely recommended, but it is not universally used. Some surgeons may feel that the risk of bone cement implantation syndrome and its cardiopulmonary sequalae are too high, in part, because the evidence provides little detail on postoperative myocardial injury and other medical complications after cement use.

Questions/purposes: We aimed to use data from the HIP ATTACK trial (an RCT in which patients with a hip fracture were randomized to accelerated time to surgery versus normal timing of surgery) for a secondary analysis to answer the following questions on arthroplasty for patients with hip fractures: (1) Are patients who undergo cemented hip arthroplasty for hip fractures more likely to experience cardiopulmonary events than patients who undergo uncemented hip arthroplasty? (2) Are patients who undergo cemented hip arthroplasty for hip fractures more likely to experience myocardial injury, identified by elevated troponin levels, than patients who undergo uncemented hip arthroplasty?

Methods: We performed a post hoc analysis of the HIP ATTACK trial for a subset of patients who were treated with THA or hemiarthroplasty for a femoral neck fracture because the trial collected postoperative troponin levels to allow us to identify myocardial injury. The HIP ATTACK trial consisted of 2970 patients. We limited our source cohort to the 1049 patients who underwent hip arthroplasty and were not lost to follow-up (four patients who had undergone arthroplasty were lost to follow-up). We excluded two patients with unknown fixation and six patients with "other arthroplasty." We limited our analysis to femoral neck fractures, which excluded 75 more patients. Of the 966 patients who received hip arthroplasty, 61% (593) had cemented fixation. Patients with cemented fixation were older than patients with cementless fixation (median [IQR] 82 (74 to 88) versus 79 (71 to 86); p = 0.003). Race was self-reported by patients and differed between patients with cemented and cementless fixation. A higher proportion of patients who received cementless fixation had undergone THA (compared with hemiarthroplasty) than patients in the cemented fixation group (24% [91] versus 11% [66]; p < 0.001). We used logistic regression to estimate the association between cement use and a composite outcome consisting of all-cause mortality and various cardiopulmonary outcomes. We included cardiopulmonary outcomes possibly associated with bone cement implantation syndrome; there were only a small number of patients who had only nonsevere outcomes. We had 80% power to detect an OR of ≥ 1.6. We adjusted for all baseline differences between both groups except for anesthesia (as it was not associated with the outcome) and duration of surgery (as it is a function of cement use).

Results: After controlling for age, sex, race, and relevant comorbidity, we found that cement use was not associated with differences in the composite outcome at 90 days (OR 1.0 [95% confidence interval

(CI) 0.7 to 1.4]; p = 0.99) or 1 year (OR 1.0 [95% CI 0.7 to 1.4]; p = 0.95) or with postoperative elevated troponin (OR 1.4 [95% CI 1.0 to 1.9]; p = 0.06) on Day 1.

Conclusion: There was no difference in cardiopulmonary outcomes among patients with arthroplasty to treat their hip fracture by fixation method. These findings further support the recommendations to use cemented femoral fixation in THA and hemiarthroplasty for patients with hip fractures. Surgeons with limited experience with cemented femoral fixation should familiarize themselves with these skills. Future studies should assess what barriers to cemented fixation exist and how they can be mitigated.

Level of evidence: Level III, therapeutic study.

Copyright © 2025 by the Association of Bone and Joint Surgeons.

PubMed Disclaimer

Related information

MedGen

LinkOut - more resources

Full Text Sources

Ovid Technologies, Inc.

Wolters Kluwer

Medical

MedlinePlus Health Information

Research Materials

NCI CPTC Antibody Characterization Program