

Study finds cardiac complications high after orthopedic surgery for heart disease patients

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A new study published today in the *HSS Journal*, the leading journal on musculoskeletal research, found the incidence of myocardial ischemia (defined by an elevated troponin level) after major orthopedic surgery in patients with cardiac risk factors is high, although the incidence of serious cardiac complications remains low. Hospital for Special Surgery (HSS) researchers recommend a simple blood test to measure troponin, an enzyme known to play a role in cardiac complications, to help identify patients who are at greater risk of a cardiac event following surgery.

Postoperative complications can be life-threatening and consume considerable healthcare resources. Orthopedic surgeries are on the rise and by 2030 there may be 500,000 total hip replacements and three million total knee replacements per year.

"Cardiovascular events are the most serious complications after major orthopedic surgeries, and patients with [myocardial ischemia](#) are at significant risk," said lead author Dr. Michael K. Urban, MD, PhD, Division of Anesthesiology, Hospital for Special Surgery. "We recommend measuring levels of a cardiac protein, troponin, which is released into the blood during cardiac injury. Identifying patients with elevated troponin levels, allows us to intervene to prevent further cardiac events to improve outcome and reduce the overall cost of care."

Plasma elevations in the enzyme troponin I (cTnI) are associated with myocardial events after major [surgery](#) and have been shown to be a more

specific marker for cardiac injury compared to others. This study found that patients with higher postoperative cTnI levels were more likely to have cardiac complications during hip or knee replacement surgery and spinal fusions. In addition, some procedures such as spinal fusions were found to place the patient at nearly four times greater risk compared to joint replacement procedures.

Researchers concluded the incidence of postoperative myocardial ischemia (defined by elevated cTnI) after major orthopedic surgery in patients with [cardiac risk factors](#) is high (8.7%). During a one-year period, 10,627 inpatient orthopedic procedures were performed at HSS and 805 patients were identified as at risk for postoperative myocardial ischemia. Of the at-risk orthopedic patients, approximately 20 percent had elevated troponin levels, but less than 9 percent had troponin levels suggestive of myocardial injury. Of patients with elevated troponin levels, 31 percent had postoperative [cardiac complications](#). Consistent with previously published research, nearly 90 percent of myocardial ischemic events occurred by the third day post-surgery.

"As demand for orthopedic surgery continues to rise, it is imperative that we identify more effective and efficient ways to reduce post-surgical complications," said Dr. Urban. "We believe measuring [troponin](#) levels in high-risk patients after orthopedic surgery can advance the management of patients with heart disease and reduce complications."

The American College of Cardiology and the American Heart Association also recommend measuring [troponin levels](#) for [patients](#) with signs or symptoms suggestive of myocardial ischemia.

Provided by Hospital for Special Surgery

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