Q: Should statins be discontinued preoperatively?

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A: Although discontinuation of 3-hydroxy 3-methylglutaryl coenzyme A reductase inhibitors (statins) preoperatively has largely become routine practice, recent literature indicates that this action may be inappropriate.

Historical reasons for statin interruption

The rationale for stopping statins preoperatively has been unclear. Statin manufacturers recommend discontinuing these agents a few days prior to elective major surgery, claiming the potential for major surgery to cause rhabdomyolysis in patients predisposed to renal failure. Apart from a small number of case reports, there is minimal evidence that statin therapy increases the risk of postoperative rhabdomyolysis. A retrospective cohort study of 981 consecutive patients undergoing major elective vascular surgery assessed the effect of statin exposure on the risk of myopathy.[1] In addition to no cases of rhabdomyolysis, there was no increased risk of myopathy in statin users.

Most research on statins in the perioperative setting has focused on their role in cardiovascular risk reduction. Well known for their powerful lipid-lowering role, statins also appear to prevent plaque rupture, optimize endothelial function, and provide anti-inflammatory effects. These effects are referred to as the "pleiotropic effect" of statins.[2] In contrast to these drugs' lipid-lowering effects, which take several weeks to months to occur, their pleiotropic effects are thought to take place within hours to days. It is likely one or more of the pleiotropic mechanisms that improves outcomes when statins are given in the setting of acute coronary syndromes.[3]

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Clinical trial evidence: reduction in perioperative risk with statin continuation

The few clinical trials assessing perioperative statin use have evaluated patients undergoing major noncardiac surgery (largely vascular procedures) and the incidence of perioperative complications such as death, myocardial infarction (MI), and other ischemic events such as angina and stroke.[4–7] All trials assessing the association between statin exposure and reduction in perioperative complication rates have shown positive results, with adjusted risk reductions ranging from 30% to 78% in each study's primary end point.

The first trial to investigate statin use and perioperative risk reduction was a retrospective, case-control study of 2,816 patients undergoing vascular surgery.[4] It demonstrated a greater than fourfold reduced risk of perioperative mortality with statin use. A retrospective study using a large database of 780,591 patients evaluated whether lipid-lowering therapy was associated with reduced mortality in the setting of major noncardiac surgery.[5] Using propensity matching analysis, the authors found significantly less in-hospital mortality for patients receiving lipid-lowering therapy (odds ratio: 0.62; 95% CI, 0.58 to 0.67; $P < .001$).

The only prospective trial to date was a randomized, double-blind study of 100 patients undergoing elective vascular surgery.[7] Patients were randomized to atorvastatin 20 mg/day or placebo, with therapy starting a mean of 31 days before surgery and continuing for 45 days. The primary end point was a composite of death from cardiac causes, nonfatal MI, unstable angina, and ischemic stroke. At 6 months, a significant reduction in the primary end point was noted in the statin group ($P = .031$). Limitations of this single-center trial were its small sample size, a low event rate, and a broad composite end point.

Statin withdrawal may be risky

Although never studied directly, information would suggest that perioperative statin withdrawal in higher-

risk patients may be detrimental. Considering the proven benefits of these medications in the setting of myocardial ischemia, and recognizing that major surgery poses an increased risk for such an event, it may be prudent to have statin therapy continued during this time of potential need.

Given the current evidence, we recommend continuing statin therapy perioperatively for patients already receiving it. This recommendation includes taking the medication on the day of (or evening before) surgery to maximize the potential benefit. Future research is needed to address whether statin therapy should be initiated in high-risk patients as a means of decreasing perioperative cardiovascular risk.

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