

Statins show promise to reduce major complications following lung surgery

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The results of a prospective, randomized, placebo-controlled, double-blind trial of patients undergoing elective pulmonary resection was designed to evaluate the effects of statin therapy. Unfortunately, because of difficulties in enrolling patients who had never taken statins, the study was terminated early, and the sample size was smaller than anticipated. Trends in the data suggesting differences between groups failed to reach statistical significance except in a post-hoc analysis. The accompanying Editorial Commentary by Dr. Betty Tong emphasizes the potential importance of statins for reducing the morbidity associated with major thoracic surgery. The Expert Opinion contributed by Dr. Neel R. Sodha and Dr. Frank Sellke evaluates the evidence regarding the benefits of statins as an adjunctive therapy for cardiac and thoracic surgery.

Beverly, Mass., June 22—Statins have been shown to reduce complications from cardiovascular surgery. To determine whether statins might also help those undergoing major lung surgeries, a team at Memorial Sloan Kettering Cancer Center conducted a well-designed study that randomized patients to receive either a statin or placebo before and after surgery. They found that patients undergoing major lung resection experienced fewer complications overall, however, the differences between groups for specific complications or changes in inflammatory markers failed to reach statistical significance, according to a report in the *Journal of Thoracic and Cardiovascular Surgery*, the official publication of the American Association for Thoracic Surgery (AATS).

Because encouraging trends were observed, the authors have called for further evaluation in a larger multicenter, randomized, controlled trial. In an Editorial Commentary that accompanied the report, Betty C. Tong, M.D., of the Division of Cardiovascular and Thoracic Surgery of Duke University Medical Center (Durham, NC), concurred. 'Imagine all the people who could potentially have benefited from the knowledge gained by this trial had it accrued as originally intended. With continued enthusiasm and surgeon commitment to multicenter clinical trials, we will be able to elucidate further the role of therapies such as this in preventing complications after lung resection,' noted Tong.

The original study design called for 480 patients to be enrolled. In part because previously unpublished data on the efficacy of the statin (atorvastatin) to reduce postoperative atrial fibrillation were released soon after the trial began and it became challenging to find patients who were not taking the drug, only 164 patients were randomized into two groups.

Total postoperative complications occurred in 22 percent of patients receiving placebo and 12 percent patients receiving the statin. While the difference was not statistically significant, the composite of major pulmonary and cardiovascular complication rates in those who underwent more extensive surgeries (anatomic lung resections) were three-fold higher in placebo-treated patients than those who received the statin and the difference was statistically significant.

While other complications including pneumonia, acute respiratory failure, myocardial infarction, deep vein thrombosis, and mortality were more frequent in the placebo group compared to the statin group, the differences were not statistically significant. Postoperative rates of atrial fibrillation in the atorvastatin group were cut by almost half (from 27 to 14 percent), but the change, while perhaps clinically meaningful, was not statistically significant. In addition, no differences were found in plasma

levels of markers of inflammation, such as C-reactive protein, tumor necrosis factor- α , or myeloperoxidase. 'These promising results in patients undergoing anatomic pulmonary resection merit further evaluation in a larger multicenter, randomized, controlled trial before recommendation as standard clinical practice,' explained lead author David Amar, M.D., of the Departments of Anesthesiology and Critical Care Medicine, and co-principal investigator Bernard Park, M.D., of the Department of Surgery at Memorial Sloan Kettering Cancer Center (New York).

In light of the increasing use of statins, including during the perioperative period for cardiac and [thoracic surgery](#), and their low potential for adverse effects, Neel R. Sodha, M.D., and Frank W. Sellke, M.D., of the Division of Cardiothoracic Surgery of Alpert Medical School of Brown University (Rhode Island) prepared an Expert Review of the clinical evidence of perioperative [statin](#) use. 'A review of the research shows that slightly more than half the studies [done for cardiac surgery] support the anti-inflammatory effect of statins. Clinical studies are confounded because most [patients](#) proceeding to cardiac or thoracic surgery are receiving statins to reduce the progression of coronary artery disease. Therefore, it is difficult to know whether statins also reduce postoperative complications. Conclusions regarding the relationship of statins to clinical outcomes cannot be drawn based on current data,' stated Sodha and Sellke.

They point to wide variation among reports concerning the magnitude of the reduction in inflammatory parameters. Noting that the two trials (including that of Amar and colleagues) investigating the effect of statins in thoracic surgery produced discordant results, they concluded that 'this inconsistency lends more weight to the need for caution in using statins for the sole purpose of minimizing perioperative inflammation.'

More information: [dx.doi.org/10.1016/j.jtcvs.2014.12.016](https://doi.org/10.1016/j.jtcvs.2014.12.016)

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