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The full report is titled "Evidence for Use of Coronary Stents. A Hierarchical Bayesian Meta-Analysis." It is in the 20 May 2003 issue of *Annals of Internal Medicine* (volume 138, pages 777-786). The authors are J.M. Brophy, P. Belisle, and L. Joseph.

Benefits of Coronary Stents

What is the problem and what is known about it so far?

Blockage of the arteries that supply blood to the heart (coronary heart disease or CHD) causes more deaths in the United States than any other condition. Many people with CHD undergo procedures, such as percutaneous transluminal coronary angioplasty (PTCA), to unblock clogged or narrowed arteries. PTCAs relieve chest pain and may improve survival in some patients with CHD. For standard PTCA, a physician threads a thin tube (catheter) through blood vessels and uses a balloon attached to the tip of the catheter to widen the arteries that have been narrowed by disease. For PTCAs with stents, a physician inserts a small metal or plastic tube into a narrowed artery and leaves it there to help keep the artery open. Patients having PTCAs often get stents, even though they cost more than standard PTCAs. A summary of the studies that have compared the two procedures would help physicians and patients understand the benefits of each.

Why did the researchers do this particular study?

To summarize results of trials that compared coronary stents to PTCA.

Who was studied?

The trials included 9918 patients with CHD.

How was the study done?

The researchers searched the medical literature to find randomized trials that compared coronary stents with PTCA. They found 29 trials that 1) included patients with CHD but no acute heart attack and 2) followed patients for at least 6 months after their procedure. In many trials, patients who had standard PTCA could have a stent if they developed complications or if the PTCA was unsuccessful. This "bailout" strategy was called provisional stenting. The researchers compared outcomes between groups by using special methods of analysis (meta-analysis).

What did the researchers find?

The researchers found no differences in numbers of heart attacks, coronary artery bypass surgeries, or deaths between groups. Patients who were given stents had lower rates of restenosis (reclosing of the artery) and fewer repeated procedures to open up coronary arteries than did patients who underwent standard PTCA. Routine stents compared with provisional stents reduced the need for repeated coronary artery procedures by about 5 per 100 patients treated.

What were the limitations of the study?

Costs were not studied. None of the trials tested new stents that are coated with drugs (drug-eluting stents); these may help prevent relogging.

What are the implications of the study?

Compared with standard PTCAs, stents more often prevent restenosis and avoid the need for repeated procedures; however, they do not improve survival or prevent heart attacks. Using stents routinely rather than provisionally has only modest benefits.

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