CORRESPONDENCE

Bilateral Endoprosthetic Total Hip or Knee Arthroplasty

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Increased Risk of Bilateral Infection

Hypothesis: Simultaneous bilateral endoprosthetic total hip or knee arthroplasty (as in the current article) is in theory inevitably associated with an increased rate of bilateral infections.

Reasoning: A department specific risk of infection due to surgery—for example, 5/1000—for endoprosthetic total hip or knee arthroplasty means that even for simultaneous bilateral surgery, such a risk of infection exists (if not even a higher risk, which we will not consider here). If one furthermore assumes that in case of surgery both surgical sites may be affected—the current article does not provide any information in this respect—then the risk of bilateral infection may be 5/1000 if all cases of infection are always bilateral or, for example, 5/10 000 if only one in 10 cases of infection is bilateral.

In two-stage surgery (with an interval of several weeks between procedures) the risk per intervention is 5/1000. Both interventions combined have a risk of infection of $2 \times 5/1000 = 10/1000$ for an infection to affect one joint.

The probability that in a two-stage procedure (with an interval of several weeks between procedures) both joints become infected is $5/1000 \times 5/1000 = 25/1000\ 000$.

In order to be able better to balance these very divergent surgical risks it would be necessary to obtain detailed data on the bilateral proportion of infections in the group of patients having had simultaneous surgery.

Unrelated to that, statistical probability in simultaneous bilateral surgery works against the surgeon, which is why I personally do not recommend this procedure to my patients.

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Conflict of interest statement

The author declares that no conflict of interest exists.

In Reply:

Patient safety in surgical procedures takes priority in making the decision on which method should be used. Fortunately, perioperative complications are rare in total endoprosthesis of the hip. This makes it difficult to draw evidence based conclusions in terms of assessing and balancing the risks of simultaneous bilateral surgery and two-stage surgery, where patient receive one implant at a time. We have seen no joint infections, joint dislocations, or clinically detectable thromboembolic events in any single one of our simultaneous procedures over the past five years (n=77).

As we explained in our article, meta-analyses have found no statistically significant differences regarding the mentioned risks (1). The two-stage procedure, however, entails the risk for the patient of developing thromboembolism on two separate occasions.

The results of an analysis of all total endoprostheses of the knee in the United States in 1998–2006 seem important: according to this analysis, the morbidity and letality risk increase if during inpatient treatment the second procedure is performed at a later stage. For this reason, this method should not be used (2).

In our opinion, the only disadvantage for the patient is the increased need for blood transfusions. In our prospective study (with 30 patients, respectively), donor blood was transfused in four patients who had had a simultaneous procedure but in only two patients who had had a unilateral procedure. However, bearing in mind that bilateral osteoarthritis of the hip and two unilateral procedures may require blood transfusion on two separate occasions, then this disadvantage is also immaterial.

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Conflict of interest statement

Professor Pfeil has two patents regarding external bone fixation. He has received licensing fees from Mathys and Smith and Nephew for hip endoprostheses. He is on the advisory board of Boehringer-Ingelheim. He has received travel and hotel expenses from Smith and Nephew.