## Correspondence

# Total hip arthroplasty for primary osteoarthroses in younger patients in the Finnish arthroplasty register



*Sir*—Firstly, the Finnish Orthopaedic community should be complimented with this report of their experience with total hip arthroplasties in patients under 55 years. However, we would like to make some comments.

The report is based on 4,661 THAs performed in Finland in patients under 55 years of age with the diagnosis of primary osteoarthrosis. This is 45% of all THA implants in patients under 55, and the more difficult hips are thus excluded. From the report, it is clear that the market for young patients in Finland is dominated by uncemented implants nowadays; in 2000–2001, 81% of the stems and 88% of the cups were uncemented. The median follow-up time was 6.2 years. Considering this, the revision burden of 15% at that median follow-up time is relatively high. The reason may be that many less favorable implants have been performed in the past.

In the introduction, the authors adopt the criteria of the NICE (2003) report for a good long-term outcome of a hip prosthesis (> 90% survival rate of the whole implant at 10 years) and refer to some reports which claim to illustrate the excellent outcome of (non)cemented hips. However, the reports cited do not fulfill the criteria of the NICE report. Indeed, the reports cited suggest an excellent survival of one of the components of a noncemented hip implant. However, patients benefit from a total hip implant only if all the components of the implant survive at least 10 years. The survival rate of McLaughlin and Lee (2000) (44% at a mean of 10.2 years), Aldinger et al. 2003 (78% at 12 years), and Capello et al. (2003) (54% at 14 years) clearly do not fulfill the NICE criteria. Although the reports cited by Kim et al. (2002, 2003) approach a minimum of 10 years survival, they still do not have the minimum 10-year survival rate. The cited report of Jacobsen et al. (2003) has neither the minimal follow-up nor the required outcome (83% survival at 8 years). References to available reports of cemented hip implants in the literature that do fulfill the NICE criteria for at least the minimal 10-year follow-up are omitted.

When the authors compare the outcome for stem fixation (i.e. comparing cemented versus the noncemented concepts), they conclude that in the decade 1980–1990, survival of the noncemented stems was better than cemented stems. In the period 1990–2000, however, there was no difference in survival rates between noncemented stems and cemented stems at the endpoint "revisions of stem for any reason". At this point in the discussion, the conclusions about cemented stems should have ended. However, the outcomes of the different types of noncemented stems are subsequently studied and compared to the overall group of cemented stems. This is not very realistic. Like noncemented stems, cemented stems have different outcomes (Swedish and Norwegian Hip Registers). The reason why the authors compared different types of noncemented stems with all cemented stems collected together in one group is unclear. Perhaps the number of different cemented stem designs was too small for comparison. Comparing the outcomes of the different types of noncemented stems individually should also be done with care; as is also concluded by the authors in the discussion, the mean FU of the different types of stems differs by a factor of 3 (FU HA-coated uncemented 3.4 years; ext. porous-coated 11 years).

Regarding cups, in the decade 1980–1990 the overall survival of cemented cups was better than that of noncemented cups, while between 1990


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and 2000 the survival rates of cemented and noncemented cups were comparable.

Based on this very informative report, the conclusion should therefore be that the outcome in young patients for both cemented and noncemented implants is still a problem, that the overall results of cemented versus noncemented stems in the last decade are comparable, that within the total group of noncemented stems, some designs have better outcomes than others, and that the outcome of modern noncemented cup designs is comparable to that of cemented all-polyethylene cups.

The most important information in this report is, however, lacking—and that is the overall survival, including any reoperation for any reason, of each type of implant in these young patients. Patients only benefit if all the components of an implant survive well. For example, in the Norwegian Register the Corail noncemented stem has an excellent survival rate of 15 years in young patients. Combined with a cup, it gave inferior results. Thus, looking at the overall survival of the total implant, the individual patient obtained no benefit from the stem and this is what really counts for the individual patient. The main question, therefore, is "has there been any combination of (non)cemented stems and (non)cemented cups implanted in patients which has a superior outcome and did this combination approach the requirements of the NICE criteria?" This would guide surgeons to use implants in young patients which really benefit them as individuals.

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*Sir*—We thank Drs. Schreurs and Gardeniers for their detailed analysis and comments. We wish to return the following comments.

It has been reported that THA for developmental dysplasia of the hip has poorer outcome than THA for osteoarthrosis; the importance of considering confounding factors in the survival analysis is obvious (Furnes et al. 2001). Thus, analyzing all diagnoses in younger patients as one group would not be scientifically valid. On the contrary, it would be absolutely conflicting.

As we have described in our article, orthopedic surgeons in Finland have paid dearly for experimenting with new, undocumented implants. For example, smooth-threaded uncemented cups and some uncoated uncemented stems appeared to be total catastrophes; common use of these inferior implants accounts for the crude revision burden (15%).

Drs. Schreurs and Gardeniers claimed that none of the following cited reports in our paper fulfilled the criteria of the NICE (2003) report at all. It must be noted that only the study authored by Kim et al. (2003) meets the NICE criteria purely. The other studies, however, also include important information and deserve a closer look.

In their series of 111 THRs, Capello et al. (2003) reported a 95% survival rate at 14 years for an HA-coated uncemented stem. The authors used an uncemented acetabular component, with previous documentation of poor performance (Manley et al. (1998)); again, the cup appeared to be a true failure with a 54% survival rate at 14 years.

McLaughlin and Lee (2000) reported results of 100 consecutive uncemented THRs in patients with a mean age of 37 years. Uncemented femoral components had a 98% survival rate at 12.5 years. The authors used a smooth-threaded uncemented acetabular component with previously reported inferior results (Tallroth et al. 1993); 56% of the cups were revised in the series.

In a study of 158 THRs in 141 patients aged 55 years or younger, it was found that an uncemented stem showed an excellent 12-year survival rate of 97% (Aldinger et al. 2003). In 98% of cases, the authors used uncemented smooth-threaded cups with well-documented poor results (Engh et al. 1990, Tallroth et al. 1993, Simank et al. 1997). In the rest of the cases, they used cemented cups. Acetabular components had a 78% survival rate at 12 years.

Jacobsen et al. (2003) reported a 91% survival rate at 7.6 years for an uncemented THR. None of the 97 uncemented stems, however, were revised for aseptic loosening (98% survival rate at 7.6 years with any stem revision as endpoint). 14 of the 16 cups revised were uncemented threaded cups.

Recently, McAuley and co-workers published results of 561 uncemented THRs in patients aged 50 years or younger (McAuley et al. 2004). 10-year survival rates were 99% for the uncemented femoral component, 90% for the uncemented acetabular component, and 89% for the THR. When liner exchange operations were excluded, the 10-year survival rate of the uncemented THR was 95%. We regret not noticing this excellent paper while writing the manuscript.

Kim et al. (2002) reported results of 64 hybrid THRs (cemented stem, uncemented cup) in patients aged 50 years or under; no femoral or acetabular component was revised because of aseptic loosening. The THR showed a 98% survival rate at 9.4 years, with any revision as endpoint.

In a series of 118 uncemented THRs, Kim et al. (2003) reported a 99% 10-year survival rate with any revision as endpoint, and a 100% 10-year survival rate with aseptic loosening as endpoint.

To our knowledge, there has been only one report of cemented THRs fulfilling the NICE criteria in *young* patients (Keener et al. 2003).

Only a few designs comprise most of the cemented stems implanted in younger patients in our study. There were so few cemented stems inside different "cemented concepts", that comparing them would not have been scientifically valid. It is true that mean follow-up of different uncemented concepts varies. The Kaplan-Meier analysis and the Cox regression analysis take these different follow-up times into account, however.

We agree with Drs. Schreurs and Gardeniers on one issue: the overall survival of the total implant is what really counts for the individual patient. Where interpretations of our study are concerned, we disagree with our honorable colleagues. Firstly, one cannot generalize that outcome of THA in young patients is still a problem; for example, proximally porous-coated uncemented stems had a 94% survival rate at 10 years, press-fit porous porous-coated cups had 94% survival at 10 years, and all-polyethylene cemented cups had 93% survival at 10 years. These results suggest that there are already implants on the market that work well in younger patients, too. It is all about choosing the right implants.

Overall survival of proximally porous-coated or HA-coated uncemented stems was better than that of cemented stems with aseptic loosening as endpoint. When survival rates of stems are to be compared, in our opinion the most important endpoint is aseptic loosening; revision for any reason as endpoint also includes factors that are independent of the stem design (e.g. dislocations, infection, etc.).

One should not "throw the baby out with the bathwater". If there is an excellent (un)cemented stem, which has been used with an inferior (un)cemented cup, the conclusion cannot be that neither of these components should be implanted. To the best of our knowledge, there have been only two studies published in peer-reviewed orthopedics journals in which both components have met the NICE criteria in young patients (Keener et al. 2003, Kim et al. 2003). Thus, orthopedic surgeons must search for the best available stems and cups to be used in THAs on young patients. We have analyzed results of THR designs (also combinations) in young patients from the Finnish Arthroplasty Register, and we hope that these results will soon be available to our colleagues.

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