Of 125 Freeman-Samuelson total knee replacements (TKA) reviewed at a mean of 7.25 years, 82 (65%) were available for radiological assessment and radiolucent lines were seen in 41 (50%) and osteolysis in 13 (16%). The authors believed the incidences may be higher and propose that “the increased polyethylene wear from modular components, a rotationally-loose patella, and the surface-cementing technique may have contributed to the high rate of osteolysis seen in our study”.

In my opinion there is some missing information from these patients which would have been helpful and some aspects of the discussion seem not wholly appropriate.

It would, for instance, have been useful to know what the indications were for patellar resurfacing. Secondly, as it is clearly accepted that alignment relates to wear after total knee arthroplasty, as the EWALD system of radiographic scoring was being used, it would have been helpful to have included some details relating to alignment.

Thirdly, it seems that ten knees, in eight patients, were lost to follow-up and excluded leaving 115 for analysis. Six required revision for sepsis and thus the life table for aseptic loosening should show only 109 knees at the start. The life table should have included a column for lost patients.

Fourthly, the presentation of the results with regard to radiolucent lines would have been improved if the timing of the emergence of these lines had been included. One wonders whether the early radiolucent lines were found adjacent to the sclerotic tibial surface as described by Smith, Naima and Freeman1 as I note that the higher frequency of radiolucent lines was beneath the medial aspect of the tibial tray.

Fifthly, in the statistical analysis the authors found no significant differences (p = 0.512) in the incidence of osteolysis between the patella resurfaced and unresurfaced knees. It seems strange therefore, that they should speculate that movement between the non-articular surface of the patellar insert could have contributed to the incidence of osteolysis.

Sixthly, the authors present no information on the possible incidence of asymptomatic rotational movement of the uncemented patellar insert as they have only looked for it in seven cases when it could have also been looked for in the six septic revisions.

Seventhly, the absence of cases with a fully cemented tibial component clearly prevents conclusions relating to whether the method of tibial cementing contributed to osteolysis.

Within the Discussion the use of some references seems inappropriate. Reference two which is used to support the contention that the Freeman-Samuelson prosthesis gives good long-term results, was published in 1973 and appeared as a reprint in 2003 in the series “The Classic” in Clinical Orthopedics and Related Research.2 It does not relate to the Freeman-Samuelson prosthesis under investigation but to an historical design, which lacked a patellar flange. The report had a maximum follow-up of about three years and minimum of less than one year. This cannot therefore be considered long-term evidence of a well functioning prosthesis.

The sixth reference from Harris3 relates to osteolysis around hip arthoplasties, and this should have been indicated.

The reference to the work of Bartel, Bicknell and Wright4 is also used a little inappropriately. These workers analyse stresses in polyethylene bearings but did not study wear.

Furthermore the paper cited from Wasielewski et al5 certainly identified that the extent of backside wear correlated with the degree of tibial osteolysis but it might have been helpful to explain that all 67 retrieved polyethylene inserts had been used in uncemented arthroplasties.

Robinson et al6, when describing 17 cases revised for severe osteolysis from a series of 185 revision TKAs, did not discuss backside wear per se but mentioned gross polyethylene wear in ten cases, loose tibial components in eight and broken base plates in two. Nine of the tibial components were cemented although the methods of cementing, partial or complete, was not stated.

Reference to the work of Kulkani et al7 is also used a little inappropriately. These authors studied patellar replacement versus non-replacement in two groups of otherwise identically secured Freeman-Samuelson TKAs. The revisions referred to in that work arose in a sub-group of cases for whom a technique of uncemented fixation of the tibial and femoral components was undergoing evaluation. This technique failed and was abandoned. The revision cases for the whole series arose from that sub-group who required further surgery for loosening of the tibial, femoral or both components (with the exception of one patient in the non-resurfaced patella group who underwent revision for patello-femoral pain). This clearly does not allow a con-
clusion to be drawn with regard to whether patellar resurfacing influenced the rate of revision.

The paper by Sharkey et al\textsuperscript{8} is also somewhat misrepresented. These authors examined 212 revision TKAs in 203 patients performed over a three-year period on arthroplasties which had been undertaken between nine days and 28 years previously. Over half the revisions were performed less than two years after the initial procedure. Uncemented fixation was associated with early failure. Additionally, surface cementing of the tibial component without cementing the keel was also associated with early failure. However, the rate of loosening cannot be inferred as the total number of TKAs from which these revisions arose is not known and the method of tibial fixation with two pegs, an uncemented stem of 80 mm length and horizontal cement is not a feature of the report.

Finally, the paper by Smith et al\textsuperscript{1} is also in my opinion used inappropriately. Their work concerned the fate of the radiolucent line which often occurs with cemented fixation of the tibial component where sclerotic bone is present. It was felt that this radiolucent line occurred because cement could not penetrate effectively at this site leaving a route for particle ingress if a high wear rate prevailed. However, it was unreasonable to imply that this method of fixation was associated with an increased rate of osteolysis and polyethylene wear. No comparison group of fully cemented tibial fixation was studied. Tibial osteolysis leading to revision was found in 12 patients with loosened femoral components which had been inserted without cement and had migrated proximally to produce overhanging femoral bone margins which abraded the tibial polyethylene. In the group with well-fixed femoral components no revisions were required.

In summary, although this paper clearly addresses a very important issue with regard to the assessment of radiolucent lines and osteolysis after total knee arthroplasty, it seems very difficult on the evidence presented to support the conclusions that modular components, a rotationally loose patella and surface cementing may have contributed to the high rate of osteolysis seen in this study.

Maybe the authors would wish to comment on some of these issues.

CONFLICT OF INTEREST STATEMENT

The author has been a personal associate of Professor Freeman for nearly 20 years and has known Dr Samuelson for approximately 15 years. The views he expresses in this further opinion are his own and have not been prepared in conjunction with any other party.

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References


