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Letter to the Editor

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Sir,

We read with interest “Increased volumetric wear of polyethylene liners with more than 3 years of shelf-life time” (DOI 10.1007/s00264-003-0454-9; Int Orthop (2003) 27:153–59) by Puolakka et al. The article appears to be important in demonstrating the time-dependent oxidative changes in polyethylene liners. We would like to comment on a few aspects of the study.

In the Results and Discussion sections, the authors state that “we found a clear correlation between shelf-life time and volumetric wear rate of UHMWPE liners”.

1. In order to draw this conclusion a statistical analysis should be performed that allows this statement (e.g., linear regression analysis). No correlation coefficient was given in the article. The variables influencing wear cannot be treated as independent variables as was done in the present study. Head size, head material, shelf life, and time in situ all potentially influence wear, and therefore a multivariate regression analysis should have been performed. Only for 11 retrieved liners could the shelf life be defined. Three liners had a shelf life of more than 3 years. These three liners all articulated with 32 mm femoral heads. Of the remaining eight liners with a shorter shelf life, six were coupled with 28 mm heads. It is very difficult to draw the

reported conclusions with such a small sample number in an inhomogeneous group.

2. In the Results section the authors refer—after the above-cited statement—to Fig. 4. It is supposed to show the correlation between shelf life and yearly volumetric wear rate, but it clearly shows the values of total measured wear and shelf life. The time in situ varied between 3.5 and 8.4 years, and therefore the total volumetric wear is not suitable to investigate the influence of shelf life.

We think that the study gives important information about the in vivo polyethylene wear of one specific cementless cup design. The documented high wear may be related to the design of the prosthesis or the shelf life, but the statistical evaluation of the presented data does not allow for those conclusions. Other recently published studies [1, 2] present contradictory results, and further investigations are necessary to evaluate the reported assumption.

Sincerely

Christian Heisel, Thomas P. Schmalzried

References

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