

**Maintained lower periprosthetic fracture rate for a cemented anatomical vs a tapered polished stem in hip arthroplasty at 5 years: a follow-up of an observational prospective cohort study.**

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Background and purpose

We have previously shown that, up to 2 years after surgery, the cumulative incidence of periprosthetic fractures (PPF) after hip arthroplasty for an elderly cohort of patients can be lowered by using a cemented anatomical stem (AS) in comparison to a polished collarless tapered stem (PTS). We now aim to further investigate the incidence of periprosthetic fractures up to 5 years after surgery.

Patients and methods

This prospective single-center cohort study comprises a consecutive series of 1077 patients (mean age 82 years, 73% females, 75% surgery for a femoral neck fracture) who underwent a cemented hip arthroplasty between the years of 2012-2015 using either a collarless polished tapered stem (PTS group, n = 517) or an anatomic stem (AS group, n = 560). We now have a mean follow-up time of 5 years postoperatively. We collected data through a combination of a search of our in-hospital surgical and medical databases, register data and regular follow-up visits.

Results

The rate of PPF was 1,1% (n=6) in the AS-group and 5.2% (n=27) in the PTS-group. The fracture pattern differed significantly between the groups, where the AS-group all had fractures classified as Vancouver A (n=2) or C (n=4) and the PTS-group had the majority of fractures classified as Vancouver B 1-3 (n=22). The overall rate of hip complications was 4.4% (n=25) in the AS group and 10.4% (n=54) in the PTS-group. At this point in the study 67% (n= 761) of the patients are deceased.

Conclusion

In this elderly and frail patient group the use of a cemented anatomical stem leads to less periprosthetic fractures of Vancouver class B without increasing the rate of other complications as compared to a cemented polished collarless tapered. In hospitals where elderly patients with poor bone quality are operated, we recommended the use of cemented anatomic stems.