Ceramic-On-Ceramic Total Hip Arthroplasty: Frequency and Type of Noises
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Introduction: Audible noise in total hip arthroplasty (THA) with ceramic-on-
ceramic (COC) bearing surfaces is a well known problem. Our hypothesis is that
part of these noises could be due to acetabular component orientation. We there-
fore decided to identify the frequency and the types of noises in COC THA oper-
ated in our department and correlate the cup positioning in patients with noisy
COC THA to patients without noises.

Materials and Methods: From our local THA database we identified 135 pri-
mary THA operated with COC bearings from June 2004 to April 2006 in 117
patients with a minimum follow-up of one year. Eighteen patients were bilaterally
operated with COC THA; 12 as one-stage and six with months between. One
patient with two hips had died, and further seven patients were lost to follow-up.
Thereby 109 patients with 126 hips did enter this analysis.

All patients were operated by four experienced surgeons through a posterolat-
eral approach. All ceramic liners were titanium-encased and manufactured by
Stryker (Trident®).

We interviewed all 109 patients by telephone from a standardized question-
naire. Patients were asked if there has been any noise from the operated hip. If con-
firmed, they were asked to characterize the type of noise. Furthermore, the patients
were asked to describe at which activities the noises were provoked. Subsequently,
we examined x-rays of all 126 hips and determined the inclination and anteversion
of the cup (Safe Zone: 25° ± 10° anteversion and 45° ± 10° inclination [1]).

Results: Thirteen hips (10.3%) produced a noise at the time of the inter-
view (Group A). Nine hips (7.2%) earlier had a noise which had disap-
peared (Group B). Hundred and four hips (82.5%) have never been noisy
(Group C). Table 1 illustrates the characteristics of noises from the hips
in Group A and B. Table 1: Characteristics of Group A and B.

![Figure 1: Cup positioning related to existence of noise (Group A; Group B; Group C).](image)

Three hips (2.4%) were revised due to noises from the hip: Case one experi-
cenced after two years squeaking and grating. The hip had been dislocated twice.
Revision showed mechanic wear of the titanium border of the ceramic bearing.
Case two experienced after eight months squeaking and later on intensely clicking.
Revision showed wear due to collision between the neck of the femur stem and the
titanium border of the acetabular liner. Case three experienced clicking immedi-
ately after surgery. On x-rays, signs of impingement were obvious and wear accord-
ing to impingement was found during revision. In all three cases there were no
signs of component loosening or ceramic damage.

Discussion: To our knowledge, we are the first to analyse all types of noise
form COC THA, as only squeaking is formerly described [1, 2]. In our study,
17.5% of all COC THA made noises in form of clicking, squeaking or grating.
Noises disappeared in 7.2% of hips, and hence 10.3% had remaining noises. We
found that there was no significant relation between cup positioning and remaining
noises from the operated hip.

Morlock et al, J of Arthroplasty 2001; 16-8: 1071-1074.