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# PEER-REVIEW REPORT

**Name of journal:** *World Journal of Orthopedics*

**Manuscript NO:** 89159

**Title:** Acetabular cup size trends in total hip arthroplasty

**Provenance and peer review**: Unsolicited Manuscript; Externally peer reviewed

**Peer-review model:** Single blind

**Reviewer's code:** 02694731
**Position:** Editorial Board
**Academic degree:** MD, PhD
**Professional title:** Adjunct Professor, Doctor, Senior Lecturer, Surgeon
**Reviewer's Country/Territory:** Switzerland
**Author's Country/Territory:** Ireland

**Manuscript submission date:** 2023-10-22
**Reviewer chosen by:** Yu-Lu Chen
**Reviewer accepted review:** 2023-11-24 11:49
**Reviewer performed review:** 2023-11-24 15:14
**Review time:** 3 Hours

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|---|---|
| **Scientific quality** | [ ] Grade A: Excellent [Y] Grade B: Very good [ ] Grade C: Good<br>[ ] Grade D: Fair [ ] Grade E: Do not publish |
| **Novelty of this manuscript** | [ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair<br>[ ] Grade D: No novelty |
| **Creativity or innovation of this manuscript** | [ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair<br>[ ] Grade D: No creativity or innovation |

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|---|---|
| **Scientific significance of the conclusion in this manuscript** | [ ] Grade A: Excellent [ Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No scientific significance |
| **Language quality** | [ Y] Grade A: Priority publishing [ ] Grade B: Minor language polishing [ ] Grade C: A great deal of language polishing [ ] Grade D: Rejection |
| **Conclusion** | [ ] Accept (High priority) [ Y] Accept (General priority) [ ] Minor revision [ ] Major revision [ ] Rejection |
| **Re-review** | [ Y] Yes [ ] No |
| **Peer-reviewer statements** | Peer-Review: [ Y] Anonymous [ ] Onymous |
| | Conflicts-of-Interest: [ ] Yes [ Y] No |

## SPECIFIC COMMENTS TO AUTHORS

Dear authors, This is an interesting article reporting an observation made in various locations but, as you mentioned, also to my knowledge, has never been published before. I personally have made the same observation in my department. I do agree with you that implanting the socket is a difficult and crucial step in total hip replacement. There are a number of factors that influence the fit and fixation of the acetabular cup. Although there are countless publications on cup implantation, there are few that address the specific biomechanical details of cementless acetabular cup fixation. In addition to the primary stability aspects, it is arguably the controlling view of the acetabular bone by the surgeon during the reaming process and then the "feel" for the biomechanics of cup insertion that improve in the hands of the surgeon as he or she learns and masters acetabular cup implantation. In the discussion section, you discussed the possible role of the socket implant and the acetabular bone. I suggest that you include in the Methods section whether the surgeons always used the same cup model or whether they changed the cup type one or more times during the observation period. It is a common experience that constantly changing the cup type from one patient to the other never leads to a good

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acetabular implantation, because the specific characteristics of the cup are also a crucial part of the learning process. I recommend to add this aspect to the discussion. I further suggest that you add these two publications to your reference list, which provide good information on where the cup fixation forces in press-fit cups act. They also show what the pressure distribution looks like in the implant/bone interface and they reveal that the fixation quality depends not only on the socket, but above all on the biomechanical properties of the acetabular bone, which could partially explain the observed gender differences: Widmer KH, Zurfluh B, Morscher EW.Load transfer and fixation mode of press-fit acetabular sockets. J Arthroplasty. 2002 Oct;17(7):926-35. doi: 10.1054/arth.2002.34526. Widmer KH, Zurfluh B, Morscher EW. [Contact surface and pressure load at implant-bone interface in press-fit cups compared to natural hip joints]. Orthopedist. 1997 Feb;26(2):181-9. doi: 10.1007/s001320050084. The latter, unfortunately only published in German, indicates to which locations within the actablulum the forces of a press-fit cup should preferably be transmitted. This study also provides clear guidelines as to which acetabular surfaces should be visually inspected during the milling process and where the load-bearing surfaces of the acetabular bone are located and, consequently, where the subchondral bone should be preserved. On the other hand, this also underlines that preoperative geometric planning alone and its intraoperative implementation using navigation or robotic tools is probably not sufficient, but always requires intraoperative visual control.