Early rehabilitation in Resurfacing, standard and large head THA patients. A randomized clinical trail (RCT) 1,2 +Penny J O. 1Olesen O; 2Varmarken J.K; 3Overgaard S
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ABSTRACT INTRODUCTION:
As the length of sick absence is associated to expulsion from the work force(1) an accelerated recovery becomes an important aspect of continued professional/economical success. The traditional total hip arthroplasty (THA) has some disadvantages including postoperative restrictions such as imposed limited range of motion (ROM) due to the risk of dislocation. As large Metal-on-Metal (MoM) articulations reduces the risk of dislocations,(2) the patients are not subjected to the same restrictions. The unrestricted movement regime combined with a theoretically larger ROM(3,4,5) may potentially lead to a more intensive and faster recovery. Compared to the large head MoM THA, larger surgical trauma for a Resurfacing hip arthroplasty (RHA) could delay the rehabilitation. The aim was to compare a standard 28mm THA to a large-head Metal-on-metal THA and a resurfacing arthroplasty with regard to, sick leave, surgical trauma and clinical function during the first 6 post operative months.

METHODS:
The study was conducted as a non-blinded RCT, using sealed envelopes and was approved by the Ethical Committee (project-ID: VF-20060090). The sample size based on ROM is calculated to 15 in each group based on a power of 80%, a delta SD 45 degrees of a MIREDIF of 45 degrees and a 5% type-one error. Fifty one patients with primary osteoarthrosis (34 men, 17 women) mean age 57.2 yrs (53.6-61.9) has been included after informed consent. Using two departments we randomized to resurfacing (n=20) or standard 28 mm THA (n=19) and large head MoM THA (n=12) or standard 28 mm THA (n=13). The latter group was not used for analysis. We recorded operation time, blood loss, incision length, length of stay and length of sick-leave. Clinical scores: WOMAC, HHS (inclusive total ROM as a separate score), and UCLA activity were recorded preoperatively, at 8 weeks and 6 months. For step rate, a pedometer was worn 7 days prior to check-up. All data were collected by the same investigator.

Statistical methods: Data are presented as mean (SE). Data were compared with ANCOVA analysis adjusted for the baseline measurement, and missing values. STATA 9.2’s robust option was used to obtain Huber White estimation for the SE.

RESULTS SECTION:
The large-head THA had a larger blood loss and the RHA had larger surgical trauma and clinical function during the first 6 post operative months. At 6 months the articulations with large heads felt significantly worse. WOMAC scores had a tendency to favour the Large head THA at 8 weeks.

DISCUSSION:
These data indicated an early reduction of the difficulty in performing everyday tasks for a large head THA compared to resurfacing and 28 mm THA. The difference was statistically significant at 6 months, where both groups of patients with large articulations felt less restricted than the 28 mm THA but was not supported by improvements in actual activity. Large head THA had large improvements in ROM both from baseline to 8 w. and again to 6 months whereas RHA didn’t demonstrate the early improvement. This delay might be explained by larger surgical exposure in RHA in addition to a minor possible free ROM due to impingement between the femoral neck and acetabulum or cup. RHA caught up on ROM at 6 months as did the WOMAC improvements, so one could speculate that an improved ROM cases daily living. Another explanation for the better WOMAC scores for the patients with large articulations could be that they did not worry or take precautions about dislocations and therefore felt less restricted.

In conclusion, feeling less restricted does, in this population, not lead to increased activity or shorten the sick-leave.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>RHA</th>
<th>28mm THA</th>
<th>Large THA</th>
<th>P-val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery time(min)</td>
<td>113.6 (15.3)</td>
<td>62.4 (10.7)</td>
<td>86.9 (11.2)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Blod (ml)</td>
<td>536.7 (474.9)</td>
<td>426.5 (175.1)</td>
<td>816.7 (347.9)</td>
<td>0.003</td>
</tr>
<tr>
<td>Incision (cm)</td>
<td>23.4 (2.9)</td>
<td>14.3 (3.6)</td>
<td>14.1 (1.1)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Length of Stay(d)</td>
<td>3.6 (1.8)</td>
<td>3.3 (1.2)</td>
<td>4.4 (1.7)</td>
<td>0.167</td>
</tr>
<tr>
<td>Sick leave (d)</td>
<td>85.4 (55.4)</td>
<td>104.3 (88.7)</td>
<td>132.3 (100.5)</td>
<td>0.421</td>
</tr>
</tbody>
</table>

*App. 10 min of surgery time is due to implantation of tantalum markers

REFERENCES:
(1) The Danish ministry of occupation. Analysis of the Danish Sick Absence (Danish), 2001
(5) Lavigne M. et al. Randomized double-blinded study comparing clinical outcome and gait characteristics after large diameter head total hip arthroplasty (LDH-THA) and hip resurfacing (HR). 10th EFFORT congress Vienna 2009.