Return to Sports in Young Athletes after Hip Replacement Surgery

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Opening artwork; Carla Bedini, Fascination

Abstract
Total hip arthroplasty operations practiced in subjects under 50 years old are in constant upsurge, thanks to improvements in materials and trust in the duration and in the result of the operation. Experienced has demonstrated, in the typical patient, the effectiveness of the prosthesis can have a significant impact on everyday quality of life of the patient both on a psychological and physical level, particularly in regards to pursuing a lifetime without functional limitations. We undertook a retrospective study assessing 186 patients operated for total hip prosthesis from 2010 to 2012. We observed that patients undergoing total hip replacement surgery had a greater chance of resuming previously practiced sports activity compared to patients that did not undergo the same surgical procedure, furthermore the percentage of patients that practiced more than one sport climbed from 30% to 43% after the surgery.
INTRODUCTION
Due to the higher demands of the population and the improved long-term results of total hip arthroplasty (THA), the portion of younger and more active patients that are treated with this procedure has been steadily increasing\(^1,2\).
This increase in incidence of THA in younger patients during the last 10-15 years has been recorded in several national arthroplasty registers (DHR 2004, Nevalainen 2004, NAR 2005, SOS 2005). Over the same period there was no change in the incidence of hip OA (Danielsson and Lindberg 1997). This may reflect on the increases in health services that are capable of offering THA to patients in need. Moreover, the inclusion criteria for THA may have become more flexible and the technology associated with THA has developed noticeably, as well as the patient’s expectations.
A good long-term outcome (≥90%, 10 year survival rate) (NICE 2003) has been reported in patients under 55 years of age for cemented\(^3,4\) and non-cemented \(^5,6\) THAs.

MATERIALS AND METHODS
A retrospective study was made from 2010 to 2012 that consisted of 186 patients who underwent hip replacement surgery. The study group was made up of 139 females and 47 males with a mean age of 40.9y. Patients were evaluated through the use of two scales: Lewis’ algofunctional index\(^7,8\), which takes into consideration morning stiffness, pain or discomfort during nighttime, orthostatic standing position, while seated, during possible everyday activities (walking up the stairs, putting on socks, and so on) and the maximum distance travelled and the activity scale according to Tegner, which takes into consideration at what level the sport is practiced and the workload performed by the patient.
Moreover, patients that were contacted were further subdivided into subcategories based on the etiology that lead to the surgery and the prosthetic tribology that was employed, the diameter of the heads and whether the prosthetic components were cemented or not.

RESULTS
The statistical analysis performed on the Lequesne score showed a significantly better functional result in patients between the ages of 17 and 39 with respect to patients 40 y and older and a superior outcome in males compared to females.
Concerning the subcategories it was pointed out that the most frequent etiology is primary coxarthrosis (69%), followed by femoral avascular necrosis (17%) (Table 1). Furthermore, the analysis of the tribologic choices showed that the ceramic-polyethylene pairing was the most used (64%), followed by ceramic-ceramic (36%); The head diameter that was most employed was 32mm (61%) followed by 36mm (39%). The choice of head implant was dependent on the type of acetabulum that was used (for some implants it was possible to use a 36mm head only an acetabulum that started with a diameter of 52mm).
After the surgery it was observed that the percentage of patients that practiced more that one sport climbed from 30% to 43% and, simultaneously, the number of patients that practiced contact sports went down to zero. In addition, after the surgery all the patients practiced at least one sport (Fig. 1,2).

CONCLUSION
Today, thanks to the improvement in materials, the ceramic-polyethylene pairing seems to be the most frequently used in the sportsman. The last generation polyethylene (X-Linked), thanks to its three dimensional structure, offers resistance to tensile stresses in all planes\(^9\) (Fig. 3).
We discarded the use of metal-metal pairing in these kinds of patients with high functionality as it may increase the risk on CoCr release. The metal-metal pairing is too be excluded in female patients of childbearing age because metal ions have been demonstrated to pass the placenta\(^10\).
The size of the head component has also changed; nowadays heads with a diameter smaller than 32mm are no longer used, as it has been demonstrated to be a direct correlation between increased head size and reduced risk of dislocation.
Patients with prosthesis must be encouraged to remain physically

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Coxarthrosis</td>
<td>128</td>
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<tr>
<td>Epiphysiolysis</td>
<td>4</td>
</tr>
<tr>
<td>Fractures</td>
<td>23</td>
</tr>
<tr>
<td>Femoral avascular necrosis</td>
<td>31</td>
</tr>
<tr>
<td>TOTAL</td>
<td>186</td>
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</tbody>
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Table 1 - Etiology that lead to the surgery.
REFERENCES


