

# Differences in the views of orthopaedic surgeons and referring practitioners on the determinants of outcome after total hip replacement

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doi:10.1302/0301-620X.87B10.16702 \$2.00

*J Bone Joint Surg [Br]*  
2005;87-B:1416-19.  
Received 3 May 2005;  
Accepted 14 June 2005

**In order to assess current opinions on the long-term outcome after primary total hip replacement, we performed a multicentre, cross-sectional survey in 22 centres from 12 European countries. Different patient characteristics were categorised into 'decreases chances', 'does not affect chances', and 'increases chances' of a favourable long-term outcome, by 304 orthopaedic surgeons and 314 referring practitioners. The latter were less likely to associate age older than 80 years and obesity with a favourable outcome than orthopaedic surgeons ( $p < 0.001$  and  $p = 0.006$ , respectively) and more likely to associate age younger than 50 years with a favourable outcome ( $p = 0.006$ ). Comorbidity, rheumatoid arthritis, and poor bone quality were thought to be associated with a decreased chance of a favourable outcome. We found important differences in the opinions regarding long-term outcome after total hip replacement within and between referring practitioners and orthopaedic surgeons. These are likely to affect access to and the provision of total hip replacement.**

More than 10% of people older than 60 years of age are affected by osteoarthritis (OA) of the hip.<sup>1</sup> Many different conservative treatments are available, including self-management, drugs, and physiotherapy, although these only achieve modest symptomatic control. In advanced disease, surgery is the only effective intervention. Total hip replacement (THR) has shown its ability to reduce pain, restore function and improve the quality of life.<sup>2</sup> However, the indications for the procedure are sometimes unclear, the decision-making depending upon patients, referring practitioners and orthopaedic surgeons.

In many countries, general practitioners act as gatekeepers for referral for THR, but we do not know if they have the same views on who should have a hip replacement as orthopaedic surgeons. Furthermore, we do not know whether these views on who is most likely to benefit reflect current knowledge.

Differences in opinion between referring general practitioners and orthopaedic surgeons are likely to affect the provision of THR. They might also help to explain the variation in the rates of THR observed within and between countries.<sup>3</sup> We, therefore, conducted a survey to investigate the assessment of determinants of a favourable long-term outcome after primary THR between orthopaedic surgeons and their referring practitioners within different European countries.

## Materials and Methods

The European collaborative database of the patterns of cost and practice in THR (EURO-HIP) is based on data provided by collaborating orthopaedic centres throughout Europe. Orthopaedic centres in 12 European countries were contacted, based upon a literature review on outcome measurements, as well as personal contacts and potential interest in collaboration. The group was established in 2002 by inviting the heads of departments, or their representatives, from 28 major European orthopaedic centres to a meeting in Zurich, Switzerland. After agreement on the study protocol and the questionnaire, 22 centres from 12 countries were willing to participate.

**Sample.** The survey of the determinants of a favourable, long-term outcome after THR was conducted using a standard questionnaire for all orthopaedic surgeons performing THR at each centre, and for all referring general practitioners. However, if the number of referring practitioners was larger than 20, the 20 individuals who had referred the most patients were selected.

**Data collection.** The orthopaedic surgeons were given their questionnaire in person while the referring practitioners were sent theirs by post, with a covering letter explaining the survey signed by the head of the corresponding centre. Referring practitioners were reminded

**Table I.** Demographics, professional background and characteristics of orthopaedic surgeons performing total hip replacements (THR) and referring practitioners

	Surgeons	Referring practitioners
Number	304	314
Mean age in yrs (SD)	41.9 (9.1)	46.9 (8.7)
Number of women (%)	12 (3.9)	57 (18.2)
Median number of years since medical school (25th to 75th) <sup>*</sup>	14 (8 to 23)	21 (15 to 27)
Median number of years since end of specialist training (25th to 75th)	9 (5 to 17)	15 (8 to 21)
Median number of THRs performed per year (25th to 75th)	35 (20 to 65)	-
Median number of patients seen per year (25th to 75th)	-	2000 (875 to 4650)
Median percentage of patients with OA <sup>†</sup> hip (25th to 75th)	-	5 (5 to 12)
Median number of patients for total hip replacement per year (25th to 75th)	-	10 (6 to 30)

\* percentile

† OA, osteoarthritis

**Table II.** Comparison of the assessment of determinants of a favourable long-term outcome after total hip replacement

	Orthopaedic surgeons			Referring practitioners			p value <sup>*</sup>
	Decreases chances number (%)	No effect number (%)	Increases chances number (%)	Decreases chances number (%)	No effect number (%)	Increases chances number (%)	
Men	29 (9.6)	221 (72.9)	53 (17.5)	20 (6.4)	238 (76.3)	54 (17.3)	0.5
Old age (> 80 yrs)	122 (40.5)	109 (36.2)	70 (23.3)	176 (56.2)	104 (33.2)	33 (10.6)	< 0.0001
Young age (< 50 yrs)	120 (39.7)	70 (23.2)	112 (37.1)	93 (29.9)	73 (23.5)	145 (46.6)	0.006
Obesity	246 (80.9)	55 (18.1)	3 (1.0)	279 (89.1)	32 (10.2)	2 (0.6)	0.006
Comorbidity	250 (82.5)	47 (15.5)	6 (2.0)	276 (88.5)	31 (9.9)	5 (1.6)	0.06
Rheumatoid arthritis	188 (62.1)	60 (19.8)	55 (18.1)	207 (67.2)	64 (20.8)	37 (12.0)	0.06
Poor bone quality	247 (81.5)	55 (18.2)	1 (0.3)	275 (88.4)	32 (10.3)	4 (1.3)	0.06

\* for difference in the mean scores between orthopaedic surgeons and referring practitioners using the Cochran-Mantel-Haenszel statistic

twice, by letter or telephone, after three and six weeks. All questionnaires were answered anonymously and stored at the corresponding centre until completion of the survey and all who were involved provided written informed consent.

**Questionnaire.** The questionnaires for both the surgeons and the referring practitioners contained a single page which asked for demographic characteristics, including hallmarks of professional education specific to the two groups. This part was immediately followed by seven questions, under the heading of patient characteristics and long-term outcome, which were identical for surgeons and referring practitioners. Participants were asked 'How would each of the following patient characteristics in your view affect the chances of a favourable long-term outcome of hip replacement (pain and function)?' For each item, three answers were possible: increases chances of favourable outcome; does not affect outcome; and decreases chances of favourable outcome. The questionnaires were primarily developed in English, the final versions being sent to different investigators for translation into French, Italian, and Hungarian. These versions were then translated back into English in order to resolve any discrepancies.

**Statistical analysis.** Differences in the distribution of answers between surgeons and referring practitioners were assessed by testing for differences in their mean scores using the Cochran-Mantel-Haenszel statistic, and taking the inherent ordering of the categories into account. All analyses were performed using SAS version 8.2 statistical software (SAS

Institute Inc., Cary, North Carolina). Values for  $p < 0.05$  were regarded as significant.

## Results

The mean age of surgeons was five years younger than referring practitioners (42 *vs* 47 years), and there were considerably fewer women among the surgeons than among the referring practitioners (4% *vs* 18%; Table I).

Table II shows the participants' assessment of the determinants of a favourable long-term outcome after THR for seven patient characteristics. The majority of orthopaedic surgeons and referring practitioners felt that gender did not affect the chances of a favourable long-term outcome after THR (73% and 76%, respectively).

With respect to the influence of old age, defined as older than 80 years of age, there were marked differences between orthopaedic surgeons and referring practitioners. More than half (56.2%) of the referring practitioners thought that old age decreased the chance of a favourable outcome, but only 40.5% of surgeons agreed with this; a considerable proportion (23.3%) stated that old age increased the chance of success.

The opposite was seen for the younger age groups, defined as younger than 50 years of age. The proportion of surgeons deciding that young age decreased the chance of a favourable long-term outcome was similar to the proportion who felt that the chances increased. Referring practitioners were more likely to state that young age increased the chance of a favourable outcome.

Although 18.1% of surgeons felt that obesity did not affect the chance of a favourable long-term outcome, only 10.2% of referring practitioners agreed with this. For the presence of significant comorbidities, rheumatoid arthritis and poor bone quality, no major differences between surgeons and referring practitioners were observed. The majority believed that these conditions decreased the chance of a favourable long-term outcome.

## Discussion

Orthopaedic surgeons can only perform THRs if they are referred the patients. Since referring practitioners often act as gate-keepers for THR, their knowledge and views regarding the only known, effective treatment for advanced osteoarthritis of the hip<sup>4</sup> are especially important for orthopaedic surgeons. Our results indicate that referring practitioners generally think that patients have to be very disabled to benefit from operation and that they should not be overweight, too old, or have comorbidities. Presumably, therefore, they do not refer many patients who might benefit according to current knowledge. These are the first data available on decision-making processes in primary THR from several European countries.

The evidence to inform the debate as to which patient characteristics affect the long-term outcome after THR has recently been reviewed.<sup>5,6</sup> Gender is not an important independent factor,<sup>7</sup> although men might have better outcomes with respect to activities of daily living.<sup>6,8</sup> Increasing age has been associated with a poorer outcome in many<sup>7,9-17</sup> but not all<sup>18,19</sup> studies and functional changes with age itself need careful consideration.<sup>19</sup> Although better prosthetic survival has been seen in older patients,<sup>20</sup> the long-term results of THR in patients younger than 50 years of age have also been found to be good.<sup>21</sup> Absolute weight is also an important risk factor for prosthetic failure,<sup>22</sup> although body mass index, a measure of overweight, does not seem to relate to either prosthetic failure<sup>22</sup> or a reduced quality of life one and three years after THR.<sup>23</sup>

Several studies have found a worse functional outcome in patients with comorbidity,<sup>6</sup> but Liang, Cullen and Poss<sup>24</sup> reported that patients with medical conditions do as well as younger patients and patients with uncomplicated illness with regard to functional results. With the possible exception of avascular necrosis, the disease type, including rheumatoid arthritis, has not been consistently shown to affect the outcome of THR.<sup>6</sup> Indeed, some data indicate that people with rheumatoid arthritis do better than those with OA.<sup>25</sup> Poor bone quality, specifically atrophic OA, has been shown to affect long-term socket survival after THR.<sup>26</sup>

The variation we observed in the assessment of the predictors of a favourable long-term outcome among surgeons agrees with previous observations<sup>27-29</sup> and might be explained by a lack of knowledge about current published evidence. Deficits and lag-times for the translation of published findings into medical practice have been reported for other medical areas,<sup>30</sup> and results from published studies

are often contradictory and based upon selected patients from specialised centres. Medical staff are generally well-trained in assessing patients as a whole rather than as a set of independent variables. Their prediction of outcome for an individual patient is likely to be better than the simple application of published results.<sup>31</sup>


The views of patients, as well as their families and friends, are often neglected but are nevertheless important with respect to the indication for elective surgery.<sup>32</sup> Such views have been shown to be significantly different from those of surgeons.<sup>33</sup>

The need for THR is increasing because of changes in both demography and the threshold for surgery.<sup>34</sup> As referring practitioners act as gatekeepers in many European countries, their role in the provision of THR might be more important than that of surgeons. Assuming that a factor which decreases the chance of a favourable outcome reduces the likelihood of referral for THR, it should interest orthopaedic surgeons that most referring practitioners associated old age, obesity, comorbidity, poor bone quality, and rheumatoid arthritis with a poor outcome. Dissemination of current evidence about the indications for THR, and the determinants of a good long-term outcome, as well as the sharing of views between referring practitioners and surgeons, is likely to be important in ensuring a fair provision of the operation.

Our study has some limitations, mainly the use of a convenience sample with respect to the participating centres. It is likely that participating centres were more interested in the decision-making process than non-participating centres, and more aware of the pertinent literature. Therefore, we have probably underestimated the amount of within-group variation as well as the extent of any discrepancy between the two groups. To decrease selection bias, we translated the questionnaires to achieve participation within the EUROHIP centres. Since the selection of participating centres is likely to vary between countries, and as numbers in individual countries were relatively small, we abstained from comparisons between countries. We did not define what favourable long-term outcome means. This allowed for different patient compositions between centres and countries. As we only asked for relative statements this does not invalidate our findings.

In conclusion, in the first European survey on orthopaedic surgeons' and referring practitioners' assessment of the determinants of a favourable long-term outcome after THR, we observed wide variations in opinion within and between two groups of doctors involved in determining which patient receives THR. The propagation of relevant evidence, local discussions between referring practitioners and surgeons, as well as increased emphasis on patient perspectives on the long-term outcome of THR are urgently required.

## Supplementary Material

 A further opinion by Professor Ian Learmonth is available with the electronic version of this article on our website at [www.jbjs.org.uk](http://www.jbjs.org.uk)

EUROHIP (a European collective database of cost and practice patterns of total hip replacement) was supported by the Bertelsmann Foundation and Centerpulse Orthopaedics Ltd.

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