ASK PATIENTS WHAT THEY WANT

EVALUATION OF INDIVIDUAL COMPLAINTS BEFORE TOTAL HIP REPLACEMENT

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We aimed to assess individual differences in complaints in patients just before total hip replacement (THR) and the importance attached to the relief of each of them. In a pilot study, using open-ended interviews, we identified 16 main complaints, four of which (night pain, unequal leg length and discomfort during sexual and recreational activities) were not included in any of the six hip-rating scales in general use. Each of the 16 complaints was then assessed in 72 patients and rated for severity and the relative importance of relief. From this we calculated a severity-importance rating for each complaint and a patient-specific score for all complaints.

The 72 patients had a mean age of 64 years (17 to 92) and 51% were men. The most important reasons for wanting a THR were day pain and walking difficulty, but the complaints mentioned above and not included in standard hip scores were also important.

Greater attention to the individual requirements of patients might improve evaluation of the outcome of orthopaedic treatments.

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Assessments of the results of surgical treatment are often made with little regard for the goals and desires of the individual patients. Outcome is usually measured on scales which have been developed by clinicians. Even if patients are evaluated for their 'quality of life', the questions are usually chosen and the answers scored for groups of patients, not for individuals (Feinstein 1987).

In orthopaedic surgery, there is great variation in complaints and disabilities, and an individual patient's hopes and expectations are rarely specified; the surgeon may be pleased with the outcome but the patient may not. There is a general belief that patients should not be asked direct questions, and that their answers, even if they were reliable, could not be appropriately standardised (Ellwood 1988).

'How are you?' is constantly asked and the answer is regularly accepted; most clinicians are therefore not averse to this type of question. We have tried to resurrect 'How are you?' as the crucial enquiry, to add 'What would you like done?' and to express the results in a useful, standard manner.

We have applied this approach to 72 patients about to undergo total hip replacement (THR) for the relief of pain and functional disability (Gartland 1988; Rogers, Larsen and Lowe 1982). Our aim was to reveal differences in individual spectra of complaints and the variable importance attached to their relief.

PATIENTS AND METHODS

Our study was in four stages:

- 1) open-ended 'pilot' interviews with patients who were about to have a THR;
- 2) the preparation and application of a test questionnaire;
- 3) the construction of a scoring system; and
- 4) the application of the scoring system to patients receiving THR.

The study was approved by the Human Investigation Committee of Yale University School of Medicine.

Open-ended pilot interviews. We asked ten consecutive patients who were about to have a THR 'What symptoms or problems do you want relieved by your new hip joint?' Twelve of the 16 complaints were already included in one or more of six commonly used hip-rating scales (Table I): these included daytime hip pain, need for analgesics, limping, use of walking aids, difficulty with walking and

Table I. Results for 72 patients

Complaint	Frequency of complaint		Mean severity (0 to 10)		Mean importance (0 to 10)		Mean severity-importance*		Weighting in Harris hip score
	Number	Percentage	Symptomatic patients	Entire group	Symptomatic patients	Entire group	Symptomatic patients	Entire group	
Day pain	72	100	7.5	7.5	9.1	9.1	68.8	68.8	44
Night pain	52	72	10.0	7.2	8.3	6.0	82.7	56.6	—
Taking medication	54	75	6.7	5.0	5.0	3.8	34.3	25.8	—
Difficulty walking	70	97	6.3	6.1	9.3	9.0	58.3	55.6	11
Difficulty stairs	69	96	5.0	4.8	7.5	7.2	37.5	36.0	4
Limping	64	89	5.9	5.3	7.6	6.7	45.5	40.4	11
Use walking aids	56	78	7.1	5.5	7.9	6.2	57.7	44.9	11
Difficulty shoes/socks	64	89	5.6	5.0	7.5	6.7	43.2	38.4	4
Difficulty sitting	56	78	5.4	4.3	6.1	4.8	34.4	27.1	5
Difficulty with public transportation	6	8	10.0	0.8	3.8	0.3	38.0	3.2	1
Difficulty driving	25	35	6.6	2.3	7.3	2.5	50.9	17.7	—
Difficulty in work	64	89	7.3	6.5	7.8	7.0	56.3	50.0	—
Difficulty in recreation	61	85	9.1	7.7	8.3	7.0	75.9	64.3	—
Difficulty in sexual activity	23	32	10.0	3.3	6.7	2.1	66.9	22.3	—
Difficulty in using bathtub	21	29	10.0	2.9	6.7	1.9	67.1	19.6	—
Unequal leg length†	14	61	10.0	6.1	7.5	4.7	75.2	45.8	—
Range of motion and deformity	—	—	—	—	—	—	—	—	9

* in the Harris scale the highest ratings are for normality, in severity-importance the highest scores are the worst

† only 23 patients interviewed

with stairs, and difficulty with shoes and socks, sitting, using public transport, taking a tub bath, driving a car, and performing housework or regular employment. There were, however, four additional complaints from some of the patients. These were night pain, unequal leg length, and discomfort during recreation and during sexual activity. They are not cited in the six conventional scoring systems (Merle d'Aubigné and Postel 1954; Larson 1963; Harris 1969; Charnley 1972; Ilstrup et al 1973; Salvati and Wilson 1973) or in the AAOS total hip arthroplasty evaluation form (Johnston et al 1990).

Preparation and application of test questionnaire. The 12 conventional complaints and the four new ones were used in a 16-item questionnaire (Appendix). All patients scheduled for an elective THR whether primary or revision at Yale-New Haven Hospital from January 1990 to May 1991 and during a two-month period at Waterbury Hospital completed this and also the AAOS total hip arthroplasty evaluation form and were interviewed by an orthopaedic surgeon. Patients were excluded if they refused participation, if they were unable to complete the interview, or if they could not speak English. The interview was conducted either in hospital the day before THR, or in an outpatient clinic less than one week before surgery.

The information acquired included detailed demo-

graphic data, history of the hip disease, and details of non-operative treatment. The history of the hip disease included any childhood or previous hip affliction, duration of symptoms, previous surgical treatment, and the admission diagnosis. Non-operative treatment included the type and length of medications, use of walking aids, hip injections, and physiotherapy. The current level of activity and work capacity was classified as recommended by Johnston et al (1990).

Each of the 16 hip complaints received an ordinal or binary rating for *severity*, increasing levels showing more severe symptoms or disability. These ratings had unequal numbers of levels to cover the diversity of clinical complaints (Guyatt, Bombardier and Tugwell 1986), and to be consistent with the ratings used in the AAOS total hip arthroplasty evaluation form (Johnston et al 1990). Thus *pain* was assessed at one of six levels of severity, whereas other complaints, such as problems in taking a tub bath, had binary choices as 'able' or 'unable'. One of the new questions, 'Does your hip interfere with your sexual activity?', did not seem to embarrass or disturb our patients, despite previous concerns (Bellamy and Buchanan 1986).

In a separate part of the interview, patients used a 10 cm visual analogue scale (Fig. 1) to rate the '*importance*' of gaining relief for each of their complaints. If a

patient had not specified a particular complaint, this was given an importance rating of zero.

Construction of scoring systems. Each patient's ratings were then combined to give severity-importance scores and patient-specific scores to determine how the summation of individual patient's complaints would compare with scores on the Harris scale.

Fig. 1

Visual analogue scale for the importance of a complaint.

Severity-importance scores. The severity rating for each complaint was transformed to a 0 to 10 scale, where 0 was the best rating and 10 the worst. To give examples, the six categories of daytime pain were scored as 0, 2.0, 4.0, 6.0, 8.0 and 10; the four categories of need for medication were scored as 0, 3.3, 6.7, and 10; while binary categories were scored as 0 or 10. The new severity rating was then multiplied by the visual analogue for importance to give the severity-importance score for each complaint.

Patient-specific scores. A patient-specific index score was constructed for each patient. If a patient's only complaints were pain, difficulty at work and on stairs, only these three complaints were included in the patient-specific index. The individual's severity-importance scores were totalled and compared with the maximum possible scores. The patient-specific index for each patient was therefore the percentage ratio between their severity-importance score and the total possible score for these complaints.

This ratio, representing average severity weighted by importance, provided an individual score of from 0 to 100, where 0 indicated the best rating and 100 the worst.

For example, a patient with only three complaints and severity ratings of 9 for pain, 7.5 for limping, and 6 for difficulty in walking, with respective importance ratings of 8, 10 and 1, would be given importance-severity scores of 9×8 , 7.5×10 and 6×1 . The patient-specific score would then be calculated as:

$$\frac{(9 \times 8) + (7.5 \times 10) + (6 \times 1)}{(10 \times 8) + (10 \times 10) + (10 \times 1)} \times 100 = 80.5$$

We compared the patient-specific score with that provided by a more conventional method, the Harris hip scale (Harris 1969), which includes the nine complaints shown in Table I, weighted by the originator so that the total ranges from 0 to 100. Since in the Harris scale 0 is the worst rating and 100 the best, we subtracted our patient-specific score from 100, so that 0 also indicated the worst rating and 100 the best.

Regression analyses. We used multiple linear regression analysis to study the relation between various characteristics of the patient and the importance rating for relief of

each complaint, using a regression model for each of the 16 complaints. The independent variables were age, gender, diagnosis (as osteoarthritis or other), and severity of complaint. The dependent variable was the patient's visual analogue rating of the importance of relief of that complaint. The analyses were done with PROC REG of SAS - PC (version 6.03).

RESULTS

Of the 81 patients eligible for the study, nine were excluded. Six were admitted on the day of the THR and were not available for interview, one refused, one could not speak because of severe Parkinson's disease, and one was unable to complete the visual analogue scales. The nine excluded patients had a similar demographic distribution as the main group.

The 72 patients admitted to the study had a mean age of 64 ± 7 (SD) ranging from 17 to 92; 51% were men, 89% were Caucasian, 23% lived alone, and 53% had involvement of the right hip. Preoperative diagnoses were osteoarthritis in 63%, rheumatoid arthritis in 8%, avascular necrosis in 10%, loose THR in 11%, and 'other' in 10%.

Of these patients, 94% had taken medication for the hip, 89% had used a walking aid, 32% had received physiotherapy, and 9% had had one or more steroid injections. The patients' levels of physical activity were classified as moderate work in 6%, light work in 13%, semisedentary in 53%, sedentary in 26%, and bedridden in 3%. When functional capacity was compared with that before the hip developed symptoms, three patients believed that they still had 100% capacity, seven reported 75% capacity, 17 had 50%, 22 had 25%, 19 had 0% and five were uncertain.

For all 72 patients, Table I gives the frequency of each complaint, and the weighting of complaints on the Harris hip scale. It also shows for patients complaining of each symptom and for the entire group the mean severity rating on a 0 to 10 scale, the mean importance rating also from 0 to 10 and the mean importance-severity scores. The frequency of complaints ranged from 8% for difficulty with public transport to 100% for daytime pain. The mean severity ratings for the entire group also varied widely, ranging from 0.8 for difficulty with public transport up to 7.7 for difficulty with recreational activities.

There were, in addition, several complaints by individual patients which were not included in the 16 on our list. These included hip stiffness, difficulty in bending, difficulty in standing and fear of falling. One patient complained about difficulty in running and one of difficulty in using the toilet. Although we did not add these rare complaints to our patient-specific scores, it would be possible to do so in future studies.

The highest mean importance ratings were for day pain and walking difficulty (9.1 and 9.0 respectively), but the four complaints not specified in other hip scoring systems had mean importance scores of 6.0 for night pain,

Table II. Comparison of patient-specific scores with Harris hip scores by number of patients

Patient-specific score (reciprocal)	Harris hip score					
	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 70
10 to 19	1	—	—	1	1	2
20 to 29	—	2	3	5	2	1
30 to 39	—	—	3	11	11	1
40 to 49	—	—	—	3	12	5
50 to 59	—	—	—	—	3	4
60 to 70	—	—	—	—	—	1

7.0 for difficulty in recreational activities, 2.1 for difficulty with sexual activity, and 4.7 for unequal leg lengths. These ratings were, of course, substantially higher for the individual patients who had these complaints. Mean *severity* did not always correspond directly to mean *importance*. For example, day pain and night pain had almost equal mean severity ratings (7.5 and 7.2) but the mean importance rating was 9.1 for day pain and 6.0 for night pain. Mean severity for difficulty with recreation was 7.7, and for difficulty with work was 6.5, but both functions received the same importance rating of 7.0.

Our 16 regression analyses of four variables that might affect the rating of importance showed no statistical significance for gender, and for increasing age only difficulty in using stairs was significant ($p = 0.02$). The diagnosis of osteoarthritis as against no osteoarthritis was significant when present for difficulty with tub baths ($p = 0.05$) and when absent for day pain ($p = 0.04$) and difficulty with shoes and socks ($p = 0.04$). By contrast, the severity of the complaint affected its importance ratings at levels of $p = 0.02$ to $p = 0.0001$ for all but two of the 16 complaints. The two complaints the importance of which seemed unaffected by severity were difficulty with stairs ($p = 0.04$) and difficulty using public transport ($p = 0.21$).

The mean importance rating for the whole group of 72 patients rarely represented the wishes of any individual patient. This discrepancy was particularly apparent for less frequent complaints such as night pain, difficulty with public transport, difficulty in driving, difficulty in sexual activity, and difficulty in taking a tub bath. The respective mean importance ratings for *symptomatic* patients and for the entire group were 8.3 and 6.0 for night pain, 3.8 and 0.3 for difficulty with public transport, 7.3 and 2.5 for difficulty with driving, 6.7 and 2.1 for difficulty in sexual activity, and 6.7 and 1.9 for difficulty in taking a tub bath. This confirms that the needs and hopes of individual patients may be poorly expressed by means derived from groups.

Comparison of severity-importance ratings with the weights assigned in the Harris scale showed agreement for day pain which had the highest rating in both. Some complaints which receive little or no attention in the

Harris scale, however, also had high mean severity-importance ratings: 40.4, 56.6 and 38.4 respectively for limping, night pain, and difficulty with shoes and socks. Difficulty during recreational activities, which is not included in the Harris scale or any other conventional indices, had the second highest mean severity-importance rating at 64.3.

The mean value for the patient-specific index converted to 28.7 ± 10.6 for comparison with the Harris hip scale, which gave a mean result of 42.8 ± 10.6 . To compare the individual results on these two scoring systems, we divided both sets into tenths and regarded agreement as being in the same tenth. The results are shown by the comparative scores in Table II in which only 13 of the 72 patients had ratings in the same tenth. No patient received a lower rating on the Harris hip scale than on the patient-specific rating; 82% were rated in a lower decade on the patient-specific rating index than on the Harris scale. The meaning of this disparity is highlighted by one example: a woman with a patient-specific rating of 15 had a Harris hip score of 64 because she had relatively mild hip pain. Other complaints, weakly weighted by the Harris scale, made her severely disabled: she needed to use a walker and was unable to put on her shoes and socks. These complaints were her main concern, and this was reflected in her patient-specific score and not in her Harris score. This has implications for the selection of patients for surgery.

DISCUSSION

Recently renewed emphasis on positive health and on the functional outcome of treatment (Gartland 1988) means that patients' preferences should be incorporated into evaluations of care (Feinstein, Josephy and Wells 1986; Wennberg 1990).

Many different hip-rating scales have been devised to quantify patients' dysfunction. They all have a similar format to provide scores on several subscales for aspects of pain and disability. Differences reflect uncertainty about both the complaints which should be included and their relative importance (Andersson 1972; Callaghan et al 1990; Galante 1990). Arbitrary scores assigned by

surgeons are added to give a total score which is thought to indicate the degree of dysfunction. Such scores, calculated before and after THR, all show highly successful relief of pain and disability (Harris and Sledge 1990).

These scales have important flaws when they are used to compare and judge the achievements of THR. First, the weightings differ considerably. For example, pain is given 25% of the total score in one index (Salvati and Wilson 1973) and almost 45% in another (Ilstrup et al 1973), so that the same patients may receive substantially different scores (Andersson 1972; Callaghan et al 1990). Secondly, as shown by our study, the standard systems do not consider the full spectrum of complaints. Thirdly, individual patients' views of the importance of symptoms may differ from those of surgeons.

An alternative approach is to weight complaints according to the mean importance ratings of a group of patients. We found, as expected, that day pain and walking difficulties were the main complaints, but other functional limitations were almost as important to patients. Night pain, unequal leg length, and discomfort during sexual or recreational activities were important reasons for some patients to request hip replacement. Difficulties with, or wish to return to recreational activities such as golfing and gardening, were cited by over 85% of the patients, with a mean importance rating of 7.0. Bellamy and Buchanan (1986) have previously reported that patients with osteoarthritis often cited recreational dysfunction as an important disability.

Individual assessments of importance, of course, vary considerably from the mean for a group: only 33% of our patients reported discomfort on sexual activity, so that the mean importance for the entire group was only 2.1. When it was cited, usually by younger patients, it was given a mean importance rating of 6.7. A rating system that ignores individual preferences must lack some important outcome measures.

Scoring systems based on individual patient preferences show an improved sensitivity to change in functional disability when compared with conventional methods (MacKenzie et al 1986; Tugwell et al 1987, 1990; O'Boyle et al 1992). One example is the McMaster-Toronto Arthritis (MACTAR) scale: in this, patients with rheumatoid arthritis rate their five most important symptoms, and all five receive equal weighting (Tugwell et al 1987), which makes the scale easy to use. This score, however, includes only five complaints, and these are assumed to have equal importance. In our patient-specific index we included all the important symptoms mentioned by our pilot group, and weighted them for individual ratings of importance.

We deliberately omitted range of hip motion and radiological evaluation. These are not complaints; the results of these assessments have minimal roles in selection for hip surgery and have a low correlation with the outcome of THR (Laucais et al 1989). These

variables are important, but should probably be measured and evaluated separately; they should not be combined with measures of pain and function.

One disadvantage of our mathematical approach is that patients with several moderately severe symptoms may sometimes receive a lower score for disability than a patient with a single severe and important complaint. There may be a more valid method of combining importance-severity ratings into a single score, and further research is required on the measurement of change in function after hip replacement.

We used ordinal categories for severity and visual analogue scales for importance, because orthopaedic surgeons are accustomed to such scales for severity (Johnston et al 1990) and visual analogue methods seemed to be an effective way to denote importance. Other scales could have been used in different ways (Kwoh, Garty and Lucas 1990) but the important concept is that each complaint is rated for both importance and severity.

We conclude that, just before THR, patients vary considerably in both the spectrum of their complaints and the importance that they attach to relief from each of their various complaints. A rating method that omits individual preferences may fail to measure outcomes that are important to patients. Methods which take account of individual preferences may have broader applications in assessing many other orthopaedic treatments which aim to relieve pain and disability.

APPENDIX - Questionnaire for hip complaints

Do you have daytime hip pain (pain in your groin, buttock, thigh, knee)?

- a) none
- b) occasional with no compromise of activities
- c) pain after strenuous or unusual activities
- d) pain with most normal activities
- e) pain severe enough to limit activities seriously
- f) crippled/bedridden

Does hip pain at night interfere with your sleep at least once per week (during the past month)?

- a) no
- b) yes

Do you take any pills or medication for your hip?

- a) none ($\leq 1/\text{wk}$)
- b) occasional pills: either narcotics or NSAID ($<$ daily)
- c) anti-inflammatory agents (daily) with or without occasional narcotics ($<$ daily)
- d) narcotics (daily) with or without NSAID

When you want or need to walk, how far do you (usually) go (city blocks = $1/10$ mile)?

- a) unlimited distance or ≥ 10 blocks
- b) ≥ 6 blocks but < 10 blocks
- c) ≥ 2 blocks but < 6 blocks
- d) < 2 blocks
- e) able to walk only within household only
- f) confined to a bed or chair

Can you climb stairs?

- a) normally using no bannister
- b) with difficulty using a bannister
- c) one step at a time because of my hip (any manner)
- d) any method
- e) unable to climb stairs because of my hip

After walking until your hip becomes painful (or at least 6 blocks), do you limp because of the hip?

- a) none
- b) mild
- c) moderate
- d) severe

Do you ever use canes, crutches, or a walker because of your hip?

- a) none
- b) cane for long walks (≥ 10 blocks)
- c) a cane or crutch only outside the house
- d) a cane or a crutch both inside and outside the house
- e) two canes or two crutches or a walker or wheelchair or bedridden

Do you put on your own shoes and socks?

- a) without trouble
- b) with difficulty or with 'aids' needed because of the hip
- c) unable or need personnel assistance

How comfortably can you sit and rise in chairs?

- a) can rise from chair without upper extremity support and can sit $\geq 1/2$ hour
- b) can arise from chair without upper extremity support but can sit only $< 1/2$ hour because of hip pain
- c) needs upper extremity support to rise but can sit for $\geq 1/2$ hour
- d) cannot arise from chair independently or need upper extremity support to rise and can sit for $< 1/2$ hour

Can you use public transportation?

- a) yes
- b) no, because of my hip

Can you drive a car?

- a) able to drive a car
- b) with difficulty because of my hip
- c) unable because of my hip

Can you do your job or housework?

- a) able to do usual job/housework
- b) work is modified because of my hip
- c) unable because of my hip

Can you do your desired recreational activities (hobbies, sports, other)?

- a) normally
- b) activities are modified because of my hip
- c) unable because of my hip

Does your hip interfere with your sexual activity (quality or frequency)?

- a) no problem
- b) difficulty because of my hip

Can you take tub baths?

- a) yes
- b) unable because of my hip

Have you noted any difference in leg lengths?

- a) no
- b) yes

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