

SHORT REPORT

Improvement in quality of life six months after primary total hip arthroplasty in a Pakistani population

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Abstract

This prospective, cohort study was carried out to assess the improvement in quality of life of patients undergoing elective primary total hip arthroplasty (THA). It was conducted at the orthopaedic department of the Aga Khan University Hospital, Karachi, from June 2014 to May 2015, and comprised patients who had undergone THA. A total of 89 patients having a mean age of 41.5 ± 12.0 years with a baseline core outcomes measure index (COMI)-hip score of ≥ 3.5 were included. A decrease in COMI-hip score by ≥ 3 points six months post-operatively was considered improvement in quality of life. Patient satisfaction with restriction to squatting was assessed separately. The mean reduction in COMI-hip was 4.9 ± 1.3 with 83(93%) patients experiencing significant improvement in quality of life. Age >50 years and American Society of Anaesthesiologists (ASA) level $>III$ was significantly associated with no improvement in quality of life. Most patients were satisfied with their disability to squat irrespective of COMI-hip score. THA was found to be associated with significant improvement in quality of life and COMI-hip score was applicable in our population despite its inability to assess disability with restriction in squatting.

Keywords: Hip Arthroplasty, Patient Satisfaction, Outcome Assessment, Quality of life.

Introduction

Total hip arthroplasty (THA) has become the treatment of choice for advanced hip arthritis and osteonecrosis for the last couple of decades.¹ Various patient-directed questionnaires assessing quality of life have been used to objectively assess functional outcomes and document improvement after THA.^{1,2} These questionnaires provide an easy method of assessment and have been shown to correlate well with physical assessment parameters.³

Outcomes of THA have been studied for both short- and long-term effects and have shown substantial

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improvement in up to 75 % of patients, 6 months post-operatively.⁴ Nevertheless, variation in outcomes has been seen in people from different cultural backgrounds due to their diverse social practices.^{5,6}

Recently, the core outcomes measure index (COMI) has been formulated for the hip. Despite being brief, it showed good correlation with established full-length questionnaires for outcomes assessment after THA.⁷

There is scarce literature regarding the improvement in quality of life after THA on patients in our society as they place a high premium on squatting for their daily activities like praying, using the toilet, etc. The current study was planned to assess the improvement in quality of life of patients undergoing elective THA using COMI.

Methods and Results

This prospective, cohort study was carried out at the orthopaedic department of the Aga Khan University

Table-1: Demographic characteristics of the study population (n=89).

Characteristics	Frequency (%)
Gender	
Male	64 (72)
Female	25 (28)
Co-morbidities	
None	14 (16)
1	59 (66)
2	12 (14)
3 or more	4 (4)
ASA level	
I	14 (16)
II	59 (66)
III	16 (18)
IV	0
Status of non-operated side	
Not involved	16 (18)
Involved but operated	32 (36)
Involved but not operated	41 (46)
Diagnosis	
AVN	76 (85)
Osteoarthritis	12 (14)
Rheumatoid arthritis	1 (1)

ASA: American Society of Anaesthesiologists.

AVN: Avascular necrosis.

Table-2: Effect of patient characteristics on improvement in quality of life.

Characteristics	Improvement in quality of life		P-value
	Yes (%)	No (%)	
Age stratified (years)			0.003
<50	66 (98.5)	1 (1.5)	
≥50	17 (77)	5 (23)	
Gender			0.11
Male	58 (90)	6 (10)	
Female	25 (100)	0	
BMI stratified (kg/m ²)			0.06
<30	49 (98)	1 (2)	
≥30	34 (87)	5 (13)	
ASA status stratified			0.001
I and II	72 (98.5)	1 (1.5)	
III and IV	11 (69)	5 (31)	
Co-morbidities stratified			0.73
<2	68 (93)	5 (7)	
≥2	15 (94)	1 (6)	
Status of non-operated side			0.13
Not involved	15 (94)	1 (6)	
Involved but operated	32 (100)	0	
Involved but not operated	36 (88)	5 (12)	
Diagnosis			0.62
AVN	70 (92)	6 (8)	
Osteoarthritis	12 (100)	0	
Rheumatoid arthritis	1 (100)	0	
Post-operative complications			0.06
None	78 (95)	4 (5)	
Dislocation	3 (75)	1 (25)	
Infection	2 (67)	1 (33)	

ASA: American Society of Anaesthesiologists

AVN: Avascular necrosis

BMI: Body mass index.

Hospital (AKUH), Karachi, from June 1, 2014 to May 31, 2015, and comprised patients who had undergone THA. Approval was obtained from the institutional ethics committee. All patients were followed up for 6 months post-operatively and their improvement in quality of life was measured using COMI-hip score. Non-probability, consecutive sampling was adopted.

Patients aged 18-90 years who underwent elective primary THA for arthritis or osteonecrosis having a baseline COMI-hip score of ≥ 3.5 were included. In contrast, patients undergoing revision THA or THA for other indications (failed hip surgery, neck of femur fracture, pathological fracture) were excluded.

Informed consent was taken from all participants and pre-operative COMI-hip score was calculated. Procedures were performed by an orthopaedic faculty member and patients subsequently followed in clinic routinely. The final assessment of quality of life was done six months

post-operatively.

Data analysis was done using SPSS 20. Mean and standard deviations (SD) were calculated for continuous variables, whereas categorical variables were expressed as frequency and percentages. Chi-square test was applied to assess associations between patient characteristics and improvement in quality of life, whereas independent sample t-test was used to assess the difference in mean COMI-hip score in patients feeling satisfied or dissatisfied with their inability to squat. $P \leq 0.05$ was considered significant.

Of the 89 patients, 64(71.9%) were men and 25(28.1%) were women. The overall mean age was 41.5 ± 12.0 years and mean body mass index (BMI) was 29.0 ± 4.4 kg/m². Moreover, 76(85.4%) patients were diagnosed with a vascular necrosis (AVN). Besides, 14(15.7%) patients were at level I according to American Society of Anaesthesiologists (ASA) physical status classification system, 59(66.3%) at level II, 16(18%) at level III, while none of the patients were at ASA IV level (Table-1).

Post-operative complications included dislocation in 4(4.5%) patients and surgical site infection in 3(3.4%).

The mean COMI-hip score was 8.2 ± 1.0 before operation and 3.3 ± 1.2 six months after the operation, showing a mean reduction of 4.9 ± 1.3 . Considering a decrease in COMI-hip of ≥ 3 as significant, 83(93%) patients experienced a significant improvement in quality of life.

There were 67(75.3%) patients whose age was <50 years compared to 22(24.7%) patients aged ≥ 50 years. Improvement in quality of life was observed in 66(98.5%) patients aged <50 years and in 17(77.3%) patients ≥ 50 years ($p=0.003$). Of the 73(82%) patients with ASA I-II levels, improvement in quality of life was observed in 72(98.6%) patients compared to 11(68.8%) patients with level III ($p=0.001$). No other significant association was found with other patient characteristics (Table-2).

When asked about satisfaction with their restriction to squatting, 73(82%) responded as being satisfied. No significant association was found between satisfaction with squatting restrictions and COMI-hip score ($p=0.12$) or improvement in quality of life ($p=0.93$).

Conclusion

Concerns have been raised that quality of life scores may not reflect the difficulty faced by patients due to post-operative restrictions in squatting and kneeling, especially in societies where these are part of routine religious and cultural activities. Fujita et al. showed that despite significant improvements in functional scores,

dissatisfaction with using Japanese toilet and sitting while eating increased from pre-operative levels when assessed 6 weeks post-operatively. But these values lost their significance after 6 months.⁶ Our study also showed that despite having differences in satisfaction with performing vital activities, such as using toilet and praying, the COMI-hip scores were comparable for both groups. Although COMI-hip score was unable to identify this dissatisfaction, at 6 months post-operatively, the impact on overall quality of life of these restrictions may not be of significant concern. In addition, only a small percentage (18%) of patients did report dissatisfaction, all of whom were below 35 years of age.

A significant association of older age and higher ASA level with no improvement in quality of life was seen. Nilsson et al. reported similar findings that younger patients gained more function post-operatively compared to older patients.⁸ Ethgen et al. also highlighted in their systematic review of literature that age itself was not an obstacle for effective surgery. Comorbidities were highlighted as the culprit when improvement was found to be modest.⁹

There is great disparity among reporting of factors influencing quality of life outcomes. This may be due to the variety of questionnaires and instruments available to assess these outcomes and assessment done at different time intervals. Deyo et al. while seeking to promote standardisation of outcome measurement in clinical trials for low back pain research found that better standardisation of outcome measurement could facilitate comparison of results among studies, and more complete reporting of relevant outcomes.¹⁰ Similarly, if a short standardised core set of questions like the COMI-hip is standardised worldwide, it would provide a common basis for multicentre comparisons and studies.

The major limitation of this study is that it is a single-centre study and results are drawn from a convenience

sample, therefore, they may not be representative of our population as a whole. The patients were comprised of a mix of different ethnicities and socio-economic backgrounds which was not independently scrutinised in our questionnaire. This makes it difficult to generalise our findings to the entire population. Moreover, this study assessed only short-term outcomes at 6 months and long-term outcomes may differ.

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