

Perception of Leg Length Discrepancy after Total Hip Replacement and Its Impact on Quality of Life

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Objective: To assess the leg length discrepancy (LLD) in the patients who underwent primary total hip replacement both the actual inequality (anatomical LLD) and the perceived feeling of inequality (perceived LLD). Moreover, the impact of the perceived LLD on quality of life was evaluated.

Material and Method: From January 2011-January 2012, 151 hips from 151 consecutive patients were studied about the post-operative LLD by measuring the post-operative radiographs at follow-up time. Questionnaires concerning the perception of LLD and the Harris hip score (HSS) were completed. Assessing the postoperative quality of life with the EQ-5D patient self-rating tool also was done.

Results: Seventy nine patients had anatomical LLD and 41 patients could perceive LLD. Age, gender, post-operative time at follow-up and the HSS were not significantly different between both perceived LLD and non-perceived LLD patients. After 12 months post-operatively all non-anatomical LLD patients perceived no LLD. Only the EQ-5D of non-perceived LLD group was significantly better.

Conclusion: Perception of LLD after total hip replacement is a significant factor that influences the patients' quality of life. However, this frustration could resolve or improve with time.

Keywords: Perception of leg length discrepancy, Quality of life, Total hip replacement

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Among orthopaedic procedures, total hip replacement is an effective and reliable operation to cope with pain and disability in patients who have problems about their hips. Ultimate outcome from this operation could achieve by restoration of the artificial hip to normal mechanics of the individuals. This is including the leg length of the affected side which should be restored as near equal as the normal side.

However, LLD after total hip replacement still occurs and decreases the satisfaction of patient. Wylde V et al found that 30% of patients could perceive LLD. Thirty six percents of these patients had anatomical LLD. Only half of perceived LLD patients were bothered⁽¹⁾. Whereas Konyves and Bannister founded that the perception of LLD seemed to decrease with time from 43% of patients at 3 months to 33% at 12 months postoperatively⁽²⁾. White et al showed no statistical association between LLD and functional outcome or patient satisfaction⁽³⁾. From such disparity

of the literature, the author aimed to learn the perception of LLD in the patient who underwent primary total hip replacement and its impact on quality of life.

Material and Method

All patients who underwent total hip replacement and on followed-up in out-patient unit from January 2011-January 2012 were collected in the present study. Patients who had conditions that might affect on LLD had been excluded. Excluding criteria were scoliosis, pelvic tilting, knees, ankles, feet problems or prosthesis loosening. Finally 151 patients (151 hips) met the criteria and were included in the present study. The demographics data of these 151 patients such as age, gender, postoperative time at follow-up were recorded. Then the questionnaires and radiographs for evaluating LLD were taken from these 151 patients at out-patient unit on the day of follow-up.

To evaluate the patients' perception of LLD, 3 questions were asked. Firstly, the patients were asked whether they felt their legs have the same length when they stood up. Secondly, whether the patients had limping. Thirdly, whether the patients used raise shoe. The patients were defined as having perceived LLD if there was one or more of these questions were positive.

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To assess the functional outcomes after total hip replacement, the Harris hip score was completed⁽⁴⁾. To assess the patients' quality of life after total hip replacement, the EQ-5D (Thai version) was included in the questionnaires⁽⁵⁾. The EQ-5D evaluates 5 dimensions question including: mobility, self care, usual activities, pain/discomfort and anxiety/depression. EQ-5D is a standardized instrument for use as a measure of health outcome⁽⁶⁾.

To estimate anatomical LLD, radiographs of both hips of the patients were taken. On each side, the distance from the tip of greater trochanter to the transischium line perpendicularly was measured⁽⁷⁾. Anatomical LLD was defined when different length of the tip of greater trochanter to the transischium line was more than 5 millimeters⁽¹⁾.

Statistical analysis

The demographic data, postoperative time at follow-up and length of LLD were presented in percentage, mean and range. The author used t-test for statistical analysis.

Results

The demographics data of the 151 patients could be presented as the following. There were 74 males and 77 females. The average age was 46.9 years (range: 25-60). The average postoperative time at follow-up was 24 months (range: 6-95). Seventy nine patients had anatomical LLD with an average distance of 6 millimeters (range: 0-22).

There were 41 (27%) patients who had perceived LLD. Of these 41 patients, 30 (73%) had anatomical LLD, 14 (34%) reported limping, but shoe raise had not been used in any patients. The average HSS of the perceived LLD (41) patients was 84, which was not significantly worse than that the average HSS of the non-perceived LLD (110) patients. Measuring the health outcome by using EQ-5D the perceived LLD group had score 0.857 where as the non-perceived LLD group had score 0.959 (significant different at $p = 0.05$).

Comparing the patients who had non-anatomical LLD and could perceive LLD (11 patients) with patients who had anatomical LLD and could not perceive LLD (49 patients), there were not significantly different in average age and HSS. The non-anatomical LLD patients and could perceive LLD group had average LLD 2.7 millimeters, post-operative time at follow-up was 11.8 months and EQ-5D was 0.903. Whereas the patients who had anatomical LLD and could not perceive LLD group had average LLD 9.5

millimeters, post-operative time at follow-up was 25.2 months and EQ-5D was 0.962. Only the EQ-5D was significantly different ($p = 0.05$).

The perception of LLD and limping of patients in the present study had tendency to improve with time. After 12 months post-operatively, all of 72 patients who had non-anatomical LLD felt no perceive LLD and no limping. The patients who had anatomical LLD took 30 months postoperatively to improve their LLD perception and limping. At that time there were 11 patients who still felt LLD and limping.

Discussion

All patients who undergo total hip replacement expect to improve their hip problems and quality of life. LLD after total hip replacement still occurs although having good surgical technique. This remains a source of frustration for both the patients and the surgeons.

The present found that the outcome of perceived LLD or non-perceived LLD patients had no statistic significant different when evaluated by the HSS. The anatomical LLD and the non-anatomical LLD patients also was not significantly difference in the HSS. On the contrary, the perception LLD did have impaction in quality of life when assessed by EQ-5D. In the non-perceived LLD patients had significantly better in quality of life than the perceived LLD patients regardless of having anatomical LLD or not. In contrast to the present, Wylde V et al reported significant worse outcome in the perceived LLD group when assessed the outcome by the Oxford hip score⁽¹⁾. The present study did not demonstrate the quality of life in their patients. Comparing with White et al⁽³⁾ who demonstrated no statistical association between LLD after total hip replacement and the HSS, SF 36 score or patient satisfaction even LLD were 33 mm lengthening or shortening 22 mm. However, they did not evaluate the sense of perceived LLD in their patients. The strength of the author's study was the assessment of perceived LLD and quality of life. From the results, it was persisted that perception of LLD influenced on quality of life when evaluated with the EQ-5D. The EQ-5D (Thai version) is a patient self-rating index score for generic measure of health status, clinical and economic appraisal⁽⁸⁾. Since the HSS is a surgeon-based tool and there is considerable evidence demonstrating a lack of agreement between surgeon and patient assessment of health status⁽⁹⁾, this could explain why there was not different of the HSS of the patients in the present study.

Some early studies demonstrated a not able

inconsistency in restoring leg length. In 1978, Williamson and Reckling reported 144 patients undergoing total hip replacement in which the average post-operative LLD was 16 millimeters, 27% of them required shoe lift⁽¹⁰⁾. Turula et al found an average of 9 millimeters of LLD in unilateral cases and 12 millimeters in bilateral cases. Among 55 patients ten of these had LLD exceeding 14 millimeters and marked limping⁽¹¹⁾. Sarangi and Bannister reported that patients could perceive LLD when leg lengthening exceeded 6 mm⁽¹²⁾. In the present study the average of anatomical LLD was 6 millimeters. So when compared to the previous study, the patients in the present study had more equal in the leg length. This might be the reason why the patients in the present needed not a shoe lift and did not perceive LLD even had anatomical LLD in some patients.

Postoperative time also had an influence on the perception of LLD. Perception of LLD and limping had gradual resolution in 12 months and after 30 months only 11 (13%) patients in the existing anatomical LLD group perceived LLD and limping. This characteristic also presented by Konyves and Bannister, decreasing of perceived LLD from 43% of patients at 3 months post-operatively to 35% at 12 months⁽²⁾. The resolution of perceived LLD was because of the functional LLD. The functional LLD is attributing to factors, such as the tightness of the soft tissues around the hip and/or degenerative disease with scoliosis of the lumbar spine causing obliquity of pelvis. This was described by Rodriguez and Ranawat whose patients' recovery from functional LLD by 6 months postoperatively with stretching exercises⁽¹³⁾. So this functional LLD concept explained why patients in non-anatomical LLD group could perceive LLD and patients in existing anatomical LLD group could resolve the sense of LLD.

The limitation of this present is that the survey questionnaires did not ask the patients whether their operative legs were longer or shorter than the contralateral leg. So this present could not determine the prevalence of shortened or lengthened of legs after total hip replacement. However, Konyves and Bannister reported that patients were significantly perceived an LLD if the leg was lengthened on the operative side⁽²⁾.

In conclusion, the perception of LLD of patients after total hip replacement is a significant factor which influence on quality of life after the procedure. However, surgeons can reduce the frustration of patients who perceive LLD by counseling them the fact that if they have no anatomical LLD they will gradually have resolution of LLD sensation in 12

months. Even the patients have anatomical LLD most of them (87%) will recover by 30 months. Finally if the anatomical LLD after total hip replacement is not exceeding 6 millimeters, satisfactory results could be expected.

Potential conflicts of interest

None.

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การรับรู้ความรู้สึกขาสั้นยาวของผู้ป่วยหลังผ่าตัดข้อสะโพกเทียมและผลกระทบต่อคุณภาพชีวิต

เจริญชัย พากเพียรไพโรจน์

วัตถุประสงค์: เพื่อประเมินภาวะขาสั้นยาวในผู้ป่วยหลังรับการผ่าตัดข้อสะโพกเทียม ทั้งค่าความสั้นยาวขาจริงกับการรับรู้ถึงความรู้สึกว่ามีขาสั้นยาว นอกจากนี้ยังประเมินผลกระทบของความรู้สึกว่ามีขาสั้นยาวต่อคุณภาพชีวิตผู้ป่วยในระยะกลางหลังผ่าตัด

วัสดุและวิธีการ: ระยะเวลาในระหว่างเดือนมกราคม พ.ศ. 2554 ถึงเดือนมกราคม พ.ศ. 2555 ผู้ป่วย 151 ราย ข้อสะโพกเทียม ได้รับการประเมินในการศึกษานี้ การประเมินขาสั้นยาวโดยการวัดจากภาพถ่ายรังสีเมื่อผู้ป่วยมาติดตามการรักษา การประเมินความรู้สึกขาสั้นยาวของผู้ป่วยโดยใช้แบบสอบถาม การประเมินผลลัพธ์การผ่าตัดใช้ Harris hip score สำหรับการประเมินคุณภาพชีวิตของผู้ป่วย ใช้แบบประเมิน EQ-5D ซึ่งประเมินโดยผู้ป่วยเอง

ผลการศึกษา: พบว่าผู้ป่วย 79 ราย มีขาสั้นยาวโดยวัดจากแผ่นภาพรังสี และมีผู้ป่วย 41 ราย มีความรู้สึกขาสั้นยาว ไม่พบว่ามีความแตกต่างระหว่าง อายุ เพศ ระยะเวลาหลังผ่าตัด และ Harris hip score ในผู้ป่วยที่มีความรู้สึกขาสั้นยาวกับผู้ป่วยที่ไม่ มีความรู้สึกขาสั้นยาว สำหรับผู้ป่วยที่ไม่มีขาสั้นยาวโดยการวัดจากแผ่นภาพรังสีนั้น พบว่าหลังการผ่าตัด 12 เดือน ผู้ป่วยทั้งหมดจะไม่มีความรู้สึกขาสั้นยาว และในกลุ่มผู้ป่วยที่ไม่มีความรู้สึกขาสั้นยาว จะมีผลลัพธ์ของแบบประเมินคุณภาพชีวิต EQ-5D ดีกว่าอย่างมีนัยสำคัญ

สรุป: การรับรู้ความรู้สึกขาสั้นยาวของผู้ป่วยหลังการผ่าตัดข้อสะโพกเทียมเป็นปัจจัยที่มีผลต่อคุณภาพชีวิตของผู้ป่วยอย่างมีนัยยะสำคัญ อย่างไรก็ตามการรับรู้ความรู้สึกขาสั้นยาวจะดีขึ้นหรือหายไป ตามระยะเวลาหลังการผ่าตัด
