

SKOR FUNGSIONAL *HIP (HARRIS HIP SCORE)* PADA PASIEN *OSTEOARTHRITIS (OA) HIP JOINT* DENGAN DEFEK *ACETABULUM* YANG DILAKUKAN *TOTAL HIP ARTHROPLASTY (THR)* DAN *ACETABULOPLASTY*

FUNCTIONAL HIP SCORE (HARRIS HIP SCORE) IN HIP OSTEOARTHRITIS PATIENTS WITH DEFECTS IN THE ACETABULUM PERFORMED TOTAL HIP ARTHROPLASTY (THA) WITH ACETABULOPLASTY

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ABSTRAK

Total hip arthroplasty (THA) merupakan pilihan bagi hampir semua pasien dengan kelainan sendi panggul yang menyebabkan ketidaknyamanan dan gangguan fungsi. Hasil jangka panjang yang baik dikarenakan perangkat endoprosthesis tersebut mampu memberikan kemampuan menahan beban, mempertahankan fungsi, rentang gerak dan stabilitas. Peneliti mencoba untuk mengevaluasi skor hip fungsional pasien osteoarthritis pinggul dengan defek pada acetabulum yang dilakukan tindakan THA dengan acetabuloplasty di Rumah Sakit Ortopedi X, Surakarta, sejak Januari - September 2016. Kemudian kami evaluasi untuk fungsional hip pasien sebelum dan sesudah operasi menggunakan Harris Hip Skor (HHS). Berdasarkan data yang diperoleh didapat jumlah sampel perempuan 18 pasien dan laki-laki 14 pasien. Pada karakter umur rentang umur sampel antara 49 tahun sampai 66 tahun. Penilaian skor HHS sebelum operasi memiliki rentang nilai 20,8 sampai dengan 69,4. Hasil pengukuran skor HHS terhadap sampel yang dilakukan setelah tindakan operasi adalah sebagai berikut Fair 9 pasien, Good 13 pasien, dan Excellent 10 pasien. Hasil penelitian dapat disimpulkan bahwa THA dan Acetabuloplasty memberikan hasil terapi terbaik pada pasien Osteoarthritis dengan defek acetabulum, meliputi kemampuan menahan beban tubuh, fungsi, rentang gerak dan stabilitas sendi.

Kata Kunci: Osteoarthritis Hip, Defek Acetabulum, THA, Total Hip Arthroplasty, Acetabuloplasty, Harris Hip Score

ABSTRACT

Total hip arthroplasty (THA) is an option for almost all patients with hip joint abnormalities that cause discomfort and disruption of significant function. This is because of good long-term results that the endoprosthesis device gives regarding the ability of weight-bearing, function, range of motion and stability of hip joint. We try to evaluate the functional hip score of hip osteoarthritis patients with defects in the acetabulum, performed THA with acetabuloplasty in X Orthopaedic Hospital since January until September 2016. Then we evaluated for patient's functional outcome before and after operation using Harris Hip Score (HHS). From 32 patients were reviewed and identified, there were 18 females and 14 males, mean age was 57,5 y.o (range 49-66 y.o). All had primary THA and Acetabuloplasty. There were 10 patients have excellent functional outcome (90-100 based on Harris Hip Score/HHS), 13 patients have good functional outcome (80-90), 9 patients have fair functional outcome (70 – 79), no patient have poor functional outcome (60 – 69) and have failed functional outcome (below 60). In this study we concluded that THA and acetabuloplasty gives best treatment for osteoarthritis patient with acetabular defects, regarding the ability of weight-bearing, function, range of motion and stability of hip joint.

Keyword : Osteoarthritis Hip, Acetabular Defect, THA, Total Hip Arthroplasty, Acetabuloplasty, Harris Hip's Score

INTRODUCTION

Osteoarthritis (OA) Hip is one of the most common causes of hip pain. Patients who have osteoarthritis of hip OA is usually in advanced age

and have low levels of activity. Osteoarthritis is a chronic disease that is not known with certainty the cause, but it is characterized by loss of joint cartilage in increments. This disease causes pain

and disability in patients that interferes with daily activities. The impact of economic, psychological and social of osteoarthritis is enormous, not only for patients, but also their families and the environment (Solomon *et al.*, 2001).

Until now there has not found drugs that cure osteoarthritis. Treatment exists today only serves to reduce pain and maintain function of the affected joint. There are three main objectives to be achieved in the process of osteoarthritis therapy, which is to control pain and other symptoms, to overcome the interference in daily activities, and to inhibit the disease process (Moore and Dalley, 2006). Treatment options may include exercise, weight control, joint protection, physical therapy and medication (World Health Organization, 2003). When all of the treatment options that do not deliver results, indicated for patients with severe pain who do not respond to conservative treatment or pain caused substantial functional incapacity and able to influence the lifestyle, may be considered to do surgery on the affected joint (Bucholz *et al.*, 2006; James, 2013). The surgical procedure includes osteotomy, removal of osteophytes, joint fusion, partial or total arthroplasty. Total Hip Arthroplasty (THA) can offer a good solution-reducing pain and improving patient function. However, some cases of hip OA accompanied by anatomical abnormalities, such as AVN (Avascular Necrosis), osteoporosis and dysplastic hip, both at the head of the femur and/or acetabulum, so the patient should receive additional therapy, one of them being reconstruction of the acetabulum (Acetabuloplasty) (Harkess and Crockarell, 2013; Wayne and Todd, 2003).

METHOD

In the selection of the sample with purposive sampling technique in which patients with osteoarthritis of the hip joints acetabulum defects obtained the total 32 patients, consist of 14 male, 16 female from 49-66 years old recorded for Harris hip score before surgery, then postoperative physiotherapy and treatment for 3 months, and then calculated for the value of Harris hip score postoperatively.

There are several ways for doing the reconstruction of acetabulum, such as augmentation of superolateral margin of the acetabular rim with Autograft / acetabuloplasty with the head of the femur, elevating the position of cup acetabular to make the center of the hip was higher, medialization from the center of the hip with the cotyloplasty technique; impaction grafting. The use of additional reinforcement ring, of some of the options above techniques. Acetabuloplasty with large autograft donor (collum femur) is the most cheap and effective way (Nildoster and Bremander, 2011, Westby *et al.*, 2014).

Specific techniques for implantation of the total hip system vary depending on the skeletal fixation method; preparation for additional fixation tools for acetabulum; the shape of the femoral component; stem length; and the collection of modular parts of the acetabular component, the femoral cap, and, on some systems, the femur component itself (Wayne *and* Todd, 2003; Nildoster and Bremander, 2011). In this study the technique of acetabuloplasty used are autograft taken from the patient's own femoral head that is affixed using 2 pieces of screw.

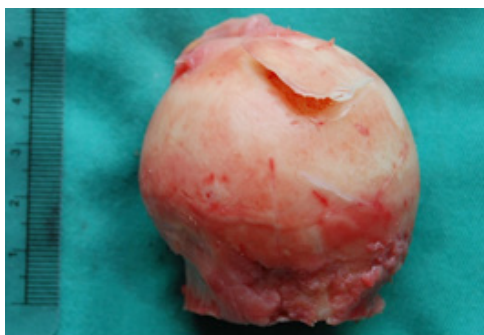


Fig. 1 Autogenous Femoral head grafting



Fig. 2. Autogenous femoraal graft attached to the acetabular defect using 2 screws.



Fig 3. Xray taken from preoperative OA hip patient with acetabular defect

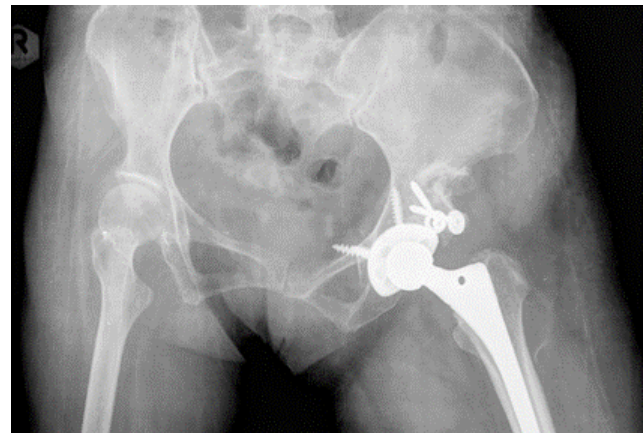


Fig 4. Xray post operative Total hip arthroplasty and acetabuloplasty

After operation, Harris Hip Score was measured. There are 10 items response options appraisal / scale. It has maximum score of 100 points (best) include pain (1 item, 0-44 points), function (7 items, 0-47 points), absence of deformity (1 item, 4 points), and range of motion (2 items, 5 points). Domains covered are pain, function, deformity and range of motion. Domain pain in the form of pain perception and its effect on the activity and the effects on the quickness of the treatment. Domain function consists of daily activities (climbing stairs, using public transportation, sit, and wear shoes and socks) and the pattern of step (limping, tools, and with walking distance). Deformity take into hip flexion,

adduction, internal rotation, and the difference in limb length. Range of motion measuring hip flexion, abduction, internal and external rotation and adduction (Westby *et al.*, 2014; Vivek *et al.*, 2009).

RESULTS AND DISCUSSION

HHS preoperative assessment score has a range of values of 20.8 up to 69.4. HHS score measurement results of the samples were performed after surgery with range of 79.9 up to 96.6, are as follows Fair 9 patients, 13 patients Good, and Excellent 10 patients. The data analysis is using T test. (compare mean t-test) and the results of the study were processed using SPSS,

Table 1. Descriptive analysis

	Mean	Std. Deviation	N
HHS Score After operation	85,741	8,2268	32
Sex (1=M, 2=F)	1,44	,504	32
Age (year)	58,25	5,919	32
HHS Score before operation	47,200	10,6279	32

Descriptive analysis in this study aims to provide an overview of the study variables. Among the dependent variable that HHS score after surgery, while the independent variable is the HHS score before surgery, age, and gender. From the table above, it is known that the amount of sample is 32 patients. Average or mean of the gender variable is 1.44 mean value close to 1, the more women than men. For the mean age of the sample average 58 years old. While at HHS score preoperatively average is 47.2. From one sample kolmogorov-smirnov test, the the data used in

this study is normally distributed, shown from the value of significance greater than 0.05 which is 0.93. And from the Paired sample test, the value of t is 26.353 greater than the value of t table 1.695, then Ho is rejected and H1 accepted this means there is a difference between HHS score before and after operation. There is a significant difference between HHS Score before operation and HHS Score after operation. This can be seen from the result of the probability value that shows the number less than 0.05, so that the hypothesis is accepted.

Osteoarthritis (OA) of the hip is manifested as degeneration of the tissues of the hip joint, including hyaline cartilage, fibrocartilage, bone, and synovium. Hip arthritis can result from several different patterns of joint failure. Underlying pathologic changes due to conditions such as osteonecrosis, trauma, sepsis, Paget's disease, and rheumatoid arthritis can produce degeneration of the joint, with Osteonecrosis with segmental collapse of the femoral head is an all too common indication for total hip replacement (Hoaglund, 2014).

In the lower extremity, the hip is the most common joint affected by OA. When symptomatic, hip OA is responsible for pain, functional disability and reduced health related quality of life and recently Bieleman *et al.* reported a negative association with work participation (Tubach *et al.*, 2005). Total hip arthroplasty tops the list of the most successful reconstructive surgical procedures. Both in terms of implant survivorship and patient perceived outcomes, hip arthroplasty consistently ranks as an excellent, cost-effective surgery. Using Kaplan-Meier analysis, survivorship of conventional THR at 20 years stands at 85 to 90% (Bucholz, 2014).

Acetabular reconstruction of a dysplastic hip with distorted anatomy of the acetabulum and proximal femur together with conjoined leg length discrepancy present major challenges during performing THA in osteoarthritic hip with acetabular defect patients. Obtaining satisfactory acetabular coverage is the key step (Wong and Ho, 2014). There are variety of surgical techniques available for THA in dysplastic hips. For acetabular reconstruction techniques include acetabular reconstruction with vascularized fibula, pedicled iliac graft, and autologous bone graft

using patients femoral head (Goran and Katarina, 2014).

Wong and Ho report the result of acetabuloplasty in combination with primary total hip arthroplasty for the dysplastic hip has showed durable cementless acetabular survival and fixation. With increasing of HHS from 52 to 93 at one year (Wong and Ho, 2014). Fawzy and Mandelus report 76 consecutive hips with symptomatic acetabular dysplasia treated by acetabular shelf augmentation for a mean period of 11 years, Six months after operation, pain had improved in 68 (90%) hips. At ten years after operation, 35 hips (46%) still reported relief from pain (Fawzy and Mandelus, 2015).

Patient perceived outcomes as assessed by quality of life measures also are outstanding following THR. Whether measured by SF-36 (general functional outcome), WOMAC (limb/disease specific measure) or a general clinical measure such as the Harris Hip Score, total hip arthroplasty offers predictable improvements in patients' pain and functional status. The improvements reported in these outcome measures exceed those of nearly any other orthopaedic or general surgical procedure (Bucholz, 2014). Our encouraging results in adults with hip arthritis and acetabular defect are comparable with those of other study.

CONCLUSION

THA and Acetabuloplasty in patients with Osteoarthritis hip and acetabulum defects can provide significant results, improve function on activity daily living and the ability of weight-bearing, function, range of motion and stability, by significantly increasing score of HHS postoperative compare to HHS preoperative.

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