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Original Article

Early complications of primary total hip arthroplasty in the supine position with a modified Watson-Jones anterolateral approach

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ABSTRACT

Background: For total hip arthroplasty (THA), minimally invasive surgery (MIS) has been developed to reduce incision length, muscle damage, and a shorter hospital stay. However, reduced exposure of anatomical landmarks may result in technical errors and inferior implant survivorships. The aim of this study was to report the short-term results and clinical complications of primary MIS THA in the supine position.

Methods: A consecutive series of 103 patients who underwent MIS cementless THA with a modified Watson-Jones anterolateral approach (AL) were enrolled. Outcomes data were reviewed at a minimum of 12 months following the procedure. Clinical evaluations were made using the Merle d'Aubigne and Postel hip score. The results of these procedures were retrospectively compared with those of a historical series of 98 total hip arthroplasties that had been performed by the same surgeon with use of a posterolateral approach (PL).

Results: In the MIS AL THA group, intraoperative fracture was observed in 6 hips; 3 in greater trochanter and 3 in calcar femoral. One hip was subjected to irrigation because of postoperative infection was suspected. In the PL group, intraoperative fracture was demonstrated in 4 hips in calcar femoral. No postoperative dislocation and no pulmonary embolism or nerve paralysis was observed in both groups.

Conclusions: The MIS AL THA did not show a clinically relevant superior outcome compared with the PL THA. When performing MIS AL THA, special attention should pay for prevention of greater trochanter fracture.

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1. Introduction

Total hip arthroplasty (THA) is one of the most frequently performed and successful reconstructive procedures in orthopaedic surgery.[1,2] Recently, minimally invasive surgery (MIS) THA have reported that theoretically result in less blood loss, less pain, and a shorter hospital stay when compared with THA performed with use of larger incisions.[3–5] While there is concern that the safety and efficacy of MIS THA. Several reports have conducted MIS THA versus classic procedures in THA. Goosen et al reported the MIS THA did not show a clinically relevant superior outcome in the first postoperative year.[6] Yang et al showed that the Harris hip score did not significantly different 3 years after operation between MIS THA and conventional THA.[7] In the present study, we evaluated the short-term results of MIS THA through an anterolateral (AL) approach on a supine position. We then compared these results retrospectively with those of a historical series of hip replacements that had been performed by the same surgeon through a posterolateral approach (PL). Our null hypothesis was that MIS AL THA is not associated with a higher risk of complications and repeat surgery when compared with a PL THA.

2. Subjects and methods

Between July 2009 and May 2011, 134 consecutive primary THAs were performed in our hospital. Inclusion criteria of this study were[1] uncemented cups and femoral stems[2]; underlying diseases were osteoarthritis; and[3] at least 12 months of follow-up, except for patients with lethal events. Exclusion criteria were[1] previous hip surgery[2]; underlying diseases were osteonecrosis, rheumatoid arthritis, fracture, and others. Due to control group included only osteoarthritis patients with uncemented THAs. Eight patients were excluded because of cemented THAs. Thirteen patients were excluded due osteonecrosis and 3 patients were excluded due to rheumatoid arthritis. Additionally, 7 patients were excluded because of previous hip surgery. Thus, this study involved 6 men and 97 women (103 hips) who underwent minimally invasive (MIS)-THA in the supine position (Table 1). All operations were performed by a single surgeon (T.N.). No patient was lost to follow-up study at 12 month after operation. The MIS AL THA group was compared retrospectively with a group of 98 patients (98 hips) in whom THA had been performed by the same surgeon, between May 2007 and June 2009, with a use of classic technique through a posterolateral approach on the lateral decubitus position. This retrospective study approved by our institutional review boards. Clinical data that were obtained for the two groups of patients included age, gender, body mass index, side of involvement, intraoperative blood loss, total duration of hospital stay, and postoperative complications. Clinical evaluations were made using the pre- and postoperative Merle d'Aubigne and Postel hip score.[8] Radiographic data were obtained from a single postoperative anteroposterior radiograph of the pelvis and included the cup abduction angle, and the alignment of the femoral stem. In addition, Cup anteversion was measured as the intersection angle of the line connecting the anterior and posterior borders of the cup and the line parallel with the sagittal plane of the pelvis on the plane passing through the femoral head (Fig. 1).[9] Stem anteversion measured as the angle between the line connecting the posterior portions of femoral condyles and the axis of the stem superimposed sequentially (Fig. 2).[10] Varus malpositioning of the femoral stem was considered to be present when the longitudinal axis of the stem was tilted in >3°of varus relative to the diaphyseal axis of the femur. Stem sinking measured an anteriposterior radiograph of the hips between immediate postoperative and at 12 months. The level of significance was set at $P < 0.05$.

Table 1 – Patient characteristics.

	MIS AL	PL	
Number of hips	103	98	NS
Age (year): mean (SD)	66.2 (11.5)	75.2 (12.5)	$P < 0.01$
Male:Female	16:87	12:86	NS
Right:Left	53:50	50:48	NS
Body mass index: mean (SD)	22.9 (3.52)	23.1 (3.28)	NS

MIS: minimally invasive surgery, AL: anterolateral, PL: posterolateral.

3. Results

The study groups did not differ significantly with regard to age, gender, involved side, or body mass index (Table 1). The mean operative duration was 62.4 min (33.9 min) with a mean

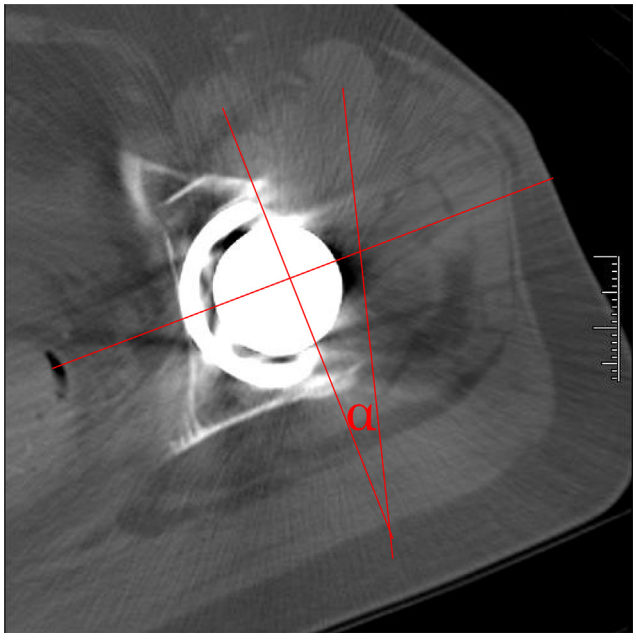

Fig. 1 – Cup anteversion (α) was measured as the intersection angle of the line connecting the anterior and posterior borders of the cup and the line parallel with the sagittal plane of the pekvis on the plane passing through the femoral head.