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### Author(s)
Ishikawa, Hitoshi / Andoh, Yoshihiro / Hirata, Souichiro / Nisida, Koutarou / Ishikawa, Makoto

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Conversion of Fused Hip to Low-Friction Arthroplasty:  
A Case Report

Hitoshi Ishikawa¹, Yoshihiro Andoh², Souichirou Hirata¹, Koutarou Nisida³, and Makoto Ishikawa²

A fused hip of a sixty-five-year old man was converted to a low friction total hip arthroplasty. Relief of pain in the low back and knees, improvement of mobility and correction of limb-length discrepancy were very satisfying to the patient. The lateral transtrochanteric approach is advised because it allowed a complete circumferential view of the acetabulum and accurate placing of the component. Although a surgeon often converts an immobile hip to a mobile one by means of total hip arthroplasty, it should be mentioned that careful selection of patient is critical, and the indications for the procedure should be much stricter.

Key Words  
Fused hip,  
Conversion,  
Total hip arthroplasty,  
Surgical technique.

INTRODUCTION

Although arthrodesis of the hip has been used extensively in the past as the procedure of choice for many disabling diseases of the hip joints (1-3), hips fused in malposition produce severe loss of function due to strain on the contralateral hip, the lumbar spine and the knees. Conversion of fused hip to an arthroplasty has been shown to have a beneficial result in such cases (3-7). Relief of pain in the low back and knee, improved mobility of the hip, and correction of limb-length discrepancy have been consistently demonstrated (3-8). However, the conversion of fused hip to a replacement arthroplasty is technically more difficult than a primary arthroplasty performed for the more common indications (3, 5, 6, 8). This report describes a case who had had surgical fusion due to tuberculous arthritis and we had converted a fused hip to low-friction arthroplasty. The patient satisfaction was extremely high as he could now sit more comfortably, and it was easier to get into a bath.

CASE REPORT

A sixty-five-year old man presented in January of 1995 with five years history of pain localized lower part of lumbar region. There had been some associated left knee pain which was exacerbated by walking. He had no associated fever or cough. Twenty five years before being seen
by us the patient had received an arthrodesis of the left hip, because of the hip joint tuberculosis. He managed to live a satisfactory life until a few years ago when pain developed in the lumbosacral region and ipsilateral knee. Physical examination revealed the hip to be firmly arthrodesed, with fixed flexion of 20°, and adduction of 10°. The ipsilateral knee had a valgus deformity of 10°, and range of motion of -10° to 130°. Laboratory data included a white blood-cell count of 6500 per milliliter with 65% segmented polymorphonuclear cells, 20% lymphocytes, 3% monocytes, 1% eosinophils and 2% basophils. The haemoglobin was 15.6g per deciliter and the erythrocyte sedimentation rate was 16 millimeter per hour. Conventional radiographs revealed a solid fusion of the left hip (Figure 1). The patient had a limb-length discrepancy of 2 cm. Late degenerative changes in the lumbosacral spine and ipsilateral knee was noted (Figure 2).

SURGICAL TECHNIQUES AND X RAY EVALUATIONS

In order to relief of pain of lumbar region and ipsilateral knee, and to provide motion of the left hip joint Charnley’s total hip replacement arthroplasty was indicated. The lateral approach to the hip was used. This approach allowed excellent visualization of the gluteus muscles and adequate exposure of the hip. The trochanter was exposed and its size and the state of gluteus medius were noted. The greater trochanter was osteotomized and reflected, and then femoral neck was osteotomized by an oscillating saw. This allowed complete circumferential view of the acetabulum and accurate placing of the components. An acetabulum was recreated by hole drill and chisels. Acetabular and thin stemmed femoral...
components were fixed with bone cements (Figure 3). ROM exercise of hip joint was encouraged by continuous passive motion (CPM) two days after surgery, and the patient was allowed to ambulate with partial weight bearing (20%) two weeks after surgery. Four months after surgery, the patient walked with one cane without any pain in hip region, and the hip remained stable. Range of motion was as follows: flexion, 0°~95°, internal rotation, 15°; external rotation, 20°; abduction, 25°; and adduction, 10°. The patient satisfaction with this procedure is now extremely high.

DISCUSSION

The benefits of converting a hip that has had an arthrodesis or is ankylosed to a total hip replacement arthroplasty have been well documented (3-8). Thus, it is often tempting to the surgeon to convert an immobile hip to a mobile one by means of total hip arthroplasty. The primary purpose of total hip arthroplasty is mainly to relief of pain; and secondary purpose is to provide motion and thus improve function. However recent long term follow-up study (6) showed an extremely high rate of failure at ten years in patients who had had previous attempt at surgical ankylosis, and the failure was significantly higher in the patients who were fifty years old or less at the time of arthroplasty.

Therefore, careful selection of patients is critical, and the indications for the procedure should be much stricter for these patients than for other candidates.

Our patient presented here was a sixty-five-year old man, and patient's motivation to improve hip function was very high.

Preoperative strength of the abductor is difficult to measure when a hip is fused. Digital palpation may be the best method of assessing the functioning abductor mass preoperatively as suggested by Kilgus et al (7). In our case, the abductor mass appeared somewhat atrophic during surgery, the function of the muscles returned surprisingly well. Thus, adequate physical therapy is mandatory, ie, CPM should be started immediately after surgery when an acetabulum could be recreated in original portion as in our case, to avoid the necessity for prolonged postoperative treatment, and to minimize the danger of stiffness of the joints.

The lateral approach to the hip was used in our case. This approach allowed excellent visualization of the gluteus muscles and adequate exposure of the hip. Extensive soft tissue mobilization is necessary and it is
mandatory to remove the greater
trochanter to gain adequate exposure.
Therefore this transtrochanteric
approach is advised because it allows
a complete circumferential view of the
component to original portion.
Furthermore this provides strength of
abduction by reconstructing the
abductor lever arm. Correction of
limb-length discrepancy was very
satisfying to a patient and improved
the gait without dropping the hip.
Finally, although it is often to the
surgeon to convert an immobile hip to
a mobile one by means of total hip
arthroplasty, it should be mentioned
that careful selection of patient is cri­
tical, and the indications for the proc­
edure should be much stricter, and it
is important for the surgeon to eval­
uate preoperative risk factors and
address the patient appropriately.

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