



## Total arthroplasty in patients with developmental dysplasia of hip fractures: Two case reports

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### ABSTRACT

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Treatment of fractures in patients with developmental dysplasia of hip is not clear. In patients without any pre-existing hip pathology, open or closed reduction and internal fixation is used to treat hip fractures. Total arthroplasty is used as a salvage procedure in hip fractures of young patients. Total arthroplasty serves perfect functional results in elderly patients with developmental dysplasia of hip. We presented two multi-trauma patients with developmental dysplasia of hip, and their hip fractures were treated with total arthroplasty. Painless and functional hip joints were obtained, and patients were mobilized early to prevent systemic complications. We think that total arthroplasty is the most convenient treatment method for hip fractures in patients with developmental dysplasia of hip.

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### 1. Introduction

Patients with developmentally dislocated hip can survive for decades with hip pain and limp. Some of these patients do not accept operative treatment options because of the complications of the operations. High energy traumas may cause hip fractures in these patients. Hip fractures are treated by using internal fixation in young patients (Karn et al., 2006; Weiss et al., 2012; Matre et al., 2013). Methods of open or closed reduction and fixation result healing of most hip fractures, and in young patients every attempt is made to preserve the bone (Weiss et al., 2012). The goal of treatment is to mobilize the patient, pain relief and maintenance of function (Weiss et al., 2012). These goals could be obtained by total hip arthroplasty (THA) in developmental dysplasia of hip (DDH) (Anderson and Harris, 1999). The favorable clinical results of treatment of dislocation of the hip indicate that proper reconstruction techniques and implants make

THA feasible in patients who have congenital hip disease (Anderson and Harris, 1999).

Hip fractures in patients with DDH were treated with THA for better clinical and functional results. Pre-existing and current pathologies were treated at the same session. We report treatment of hip fractures with THA in two patients with DDH.

### 2. Case reports

#### Case 1

A 36-year-old woman admitted to emergency department after motor vehicle accident. On her physical examination swelling and deformity were observed in her right shoulder and humerus. She complained pain with passive motion of the right hip. Plain radiographs revealed displaced acromion fracture, humeral diaphyseal fracture and right intertrochanteric femoral fracture. Also bilateral DDH was

observed in direct x-ray (Fig. 1A). Informed consent was obtained from the patient. After stabilization of general situation due to high energy trauma, patient was operated. Open reduction and internal fixation was performed for acromion and humerus. THA was performed to right hip. Patient was mobilized with one crutch two days after the operation. Left arm was in a sling, and heel support is used for left shoe. In post operative six months all implants in acromion were removed, and THA was performed to the left hip (Fig. 1B). After one year the patient could mobilize without crutches.



**Fig. 1A.** Preoperative Direct X-ray of Case 1: Bilateral developmental dysplasia of hips and right intertrochanteric femur fracture.



**Fig. 1B.** After 6 months direct X-ray of Case 1: Total hip arthroplasty of both hips.

### Case 2

A 38-year-old woman admitted to emergency department after fall from height. She was sustained acetabular fracture, subtrochanteric femoral fracture, supracondylar femoral fracture on her right side. Also DDH was present (Fig. 2A). Informed consent was obtained from the patient. After stabilization of general situation, fracture of right acetabulum was reduced and fixed with two threaded kirshner wires, and THA was performed (Fig. 2B). Supracondylar femoral fracture was open reduced and fixed with twelve-holed



**Fig. 2A.** Preoperative Direct X-ray of Case 2: Right developmental dysplasia of hip and subtrochanteric femur fracture.



**Fig. 2B.** Postoperative direct X-ray of Case 2: Open reduction and internal fixation of right acetabulum and total hip arthroplasty was performed to right hip.

anatomical femoral plate. In the postoperative second day patient was mobilized without weight bearing. After six weeks partial weight bearing was allowed. After one year she could mobilize without support.

### 3. Discussion

Various treatment options such as intramedullary nail, sliding hip screw, external fixation, hemiarthroplasty and THA were defined for the treatment of hip fractures (Karn et al., 2006; Weiss et al., 2012; Matre et al., 2013). Open or closed reduction and fixation is the primary treatment method for hip fractures (Karn et al., 2006; Weiss et al., 2012; Matre et al., 2013). Hip arthroplasty is suggested as a salvage procedure for the complications of internal fixation, such as nonunion, avascular necrosis, failure of fracture fixation (Weiss et al., 2012).

The patients with DDH were treated with THA and good functional results were obtained by Anderson and Harris (1999). Anatomical abnormalities caused some technical difficulties, and complications were common in THA for DDH (Anderson and Harris, 1999). There were two distinct pathologies; preexisting hip dislocation and hip fracture after trauma. Both were treated with THA.

Acetabulum fractures occur predominantly in patients younger than age of 40 years with high energy trauma, and if displaced are treated with open reduction and internal fixation (Herscovici et al., 2010). Acetabular fracture combined with preexisting arthritis might be treated with conservative treatment, acute THA, delayed THA, open reduction internal fixation technique. THA method was suggested for patients who have osteoarthritis of the hip, associated femoral head fractures, or nonreconstructible fractures (Boraiah et al., 2009; Herscovici et al., 2010). Case 2 was mobilized early and systemic complications of major trauma were prevented.

Pre-existing hip dislocation before trauma and hip fracture after trauma were treated at the same session. We think that THA is the most convenient treatment for hip fracture in patients with DDH. Early mobilization with THA is also important in these multi-trauma patients to prevent systemic complications.

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