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## Case Report

# Developmental Dysplasia of the Hip: A Journey of 25 Years - A Case Report

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### ABSTRACT

Developmental Dysplasia of the Hip (DDH) occurs 1 in 1,000 babies and progressive subluxation occurs in up to 50% of children with cerebral palsy (CP). Our patient was prematurely with suspected CP and dislocated hip. Initial conservative treatment and open reduction was expected to contain the dislocated head of femur in the acetabulum but did not. At the age of 4 years the hip started to subluxate and the second surgery only corrected half of the problem. At this time surgery to increase the depth of the acetabulum should have been done. As she grew up problem of the hip did not leave her and after 15 surgeries landed with arthritis for total hip replacement.

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### Introduction

The incidence of DDH varies between 1-5 per 1000 live births to subluxation and dysplasia (10 per 1000) [1-3]. The incidence of CP is assessed to be 2 per 1000 live births and is suggested to be the most common cause of physical disability affecting children [4]. Large population-based studies have found the incidence of hip dislocation to be 35 % in children with CP [5, 6]. Appropriate treatment is important to give these children as normal joint as possible and any miss-steps in the management lead to complications that end up in low functional outcome, early osteoarthritis and compromised quality of life. We report a case of DDH with CP which went through complication after complication.

### Case Report

A 25-year-old lady walked into my arthroplasty clinic for the first time in April 2019. She complained of mild pain in her right hip and limping due to apparent short right lower limb. She said she finished her graduation last year and was looking for a job. She had some issue with

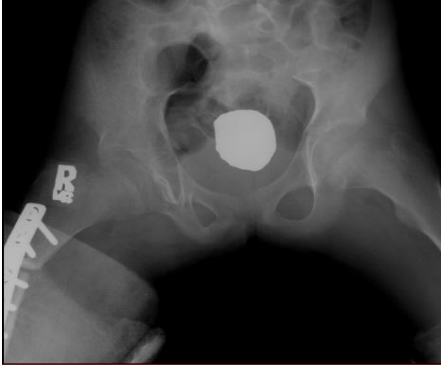
her speech but had normal intellectual and intelligence functions. Clinical examination showed that she had mild thoraco-lumbar scoliosis, wasted glutei and quadriceps on the right side. She had an apparent right lower limb short by 3 centimeters. Multiple healed scars around the hip and the lower limb. The greater trochanter was highly visible and palpable. All range of movements were restricted and pain at extreme range of movements.

The past history was she was born in 1994 prematurely and diagnosed as suspected Cerebral Palsy. At birth right hip was dislocatable and was treated by closed reduction and hip spica. In October of 1995 decision was taken for open reduction of right hip with capsulorrhaphy, excision of ligamentum teres, division of iliopsoas muscle and adductor tenotomy (radiographs were not available but documentary evidence in the file was available). Patient was followed up in the clinic on a regular basis.

Due to delayed milestones the child started to walk at the age of 3 years and at the age of 9 years presented to the hospital with limping in the year 2004. Radiographs showed that the acetabulum was not fully developed and the hip was subluxated. A decision to revise the hip was

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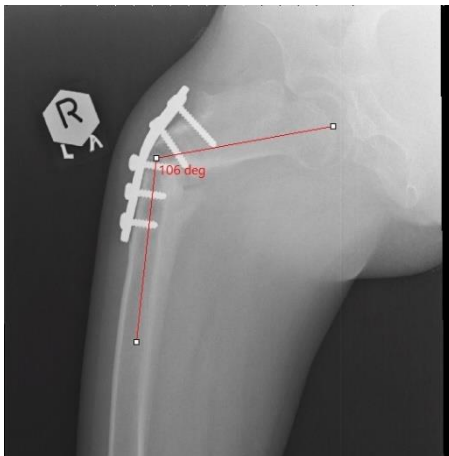
made and during the second surgery, iliopsoas was found to be incompletely divided, adductor longus was tight and undivided and so as ligamentum teres. The acetabulum contained fibrofatty tissue with otherwise healthy triradiate cartilage. A derotation osteotomy of 30 degrees was performed and the head was relocated opposite the central triradiate cartilage. Femoral shortening of 1.5 centimeters was done and fixed with a plate with two proximal and three distal screws (Figure 1). Patient was put in hip spica for 8 weeks. During follow up it was found that the osteotomy site was not healed and the proximal screws had pulled out (Figure 2). A third surgery was done where the plate and screws were removed and re fixed in 2006 (Figure 3).



**Figure 1:** Post-operative X-ray of the Varus Osteotomy of the femur done in December 2004.



**Figure 2:** X-ray of the right hip with delayed union of the Osteotomy site with the increasing of the varus angle June 2005.



**Figure 3:** X-ray of the right femur by December 2005, the top screws were pulling out with increasing of the varus angle.

Four years later in 2009 radiographs showed the head occupying the dysplastic acetabulum with a varus of 86 degrees (Figure 4). In 2012 X-ray showed (Figure 5) that as the VDRO united and remodeled, dysplasia and subluxation further increased and still the dysplastic hip was not addressed. (Figure 5) As she entered her adulthood patient obtained her care in a nearby hospital. Records from the hospital showed that she was still limping with a shortening of 6 centimeters. The plate and screws were removed and an attempt to lengthen the femur was undertaken. She underwent lengthening by multiple surgeries, with difficult time, infection and ended up with a fracture of the distal femur and ultimately distal nailing of the femur.

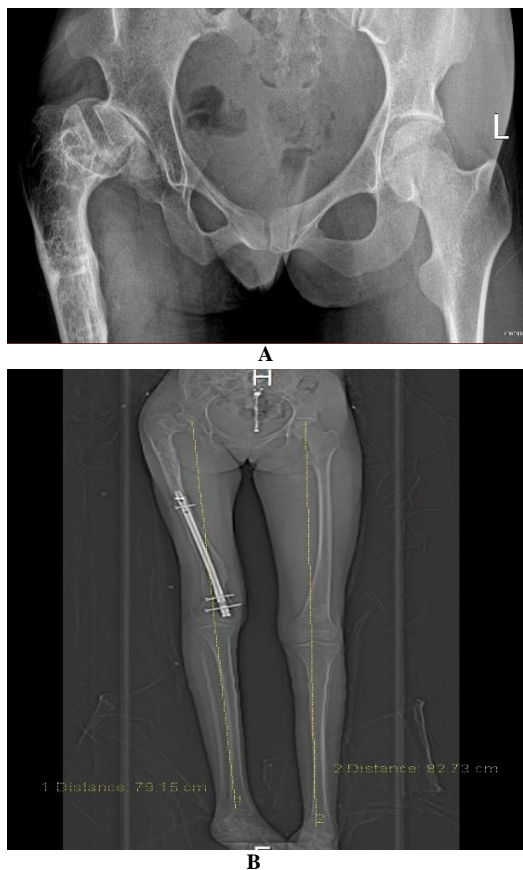


**Figure 4:** Revision of the osteotomy and fixation with new plate and screws. The osteotomy united. The acetabulum appears quite shallow as compared to the other side.



**Figure 5:** Radiograph taken in 2012 showing correction of the deformity due to varus osteotomy and post lengthening the hip appears subluxated and the arthritic changes are apparent.

During the last visit a X-ray of the pelvis (Figure 6A) was done which showed still shallow acetabulum, arthritis changes and subluxated hip joint and Computerized Tomography scanning of limb length measurement showed she still had 3.58 centimeters of shortening. (Figure 6B). After full discussion with her about the pros and cons of the joint arthroplasty, she said to me that “That you Experts Failed Me” after 25 years and 15 surgeries still I am limping and more suffering to come.



**Figure 6:** **A)** Xray taken in 2019 showing still shallow acetabulum, arthritis changes and subluxated hip joint. **B)** Computerized Tomography scanning showing the right lower limb to be still 3.58 centimeters short.

## Discussion

The young lady under consideration does in some ways fit the criteria of mild CP as assessed at birth [6]. The reasons of delayed milestone could be due to her premature birth at 26 weeks. She was labeled as CP initially as this delineate a group of disorders which affects posture, mobility, spasm of muscles which cause physical activity limitation [3]. There is still a controversy regarding the optimum treatment of DDH in CP as both acetabular dysplasia which is a common component and a proximal femoral valgus and uncovering of the femoral head occur, A varus derotation osteotomy (VDRO) alone was suggested to improve the proximal femoral angle and femoral head coverage. Contrary to this belief many believe that residual acetabular dysplasia is clinically troublesome. Studies have shown a combined approach with pelvic osteotomy and VDRO is more rewarding and improved long-term results [7, 8]. In our patient the single approach of VDRO was relied upon but it showed dysplasia of the acetabulum still existed after 20 years.

Time has come for the patient to undergo a THR and such patients exhibit altered anatomy of the dysplastic acetabulum and proximal femur added to 3.8 centimeters of shortening pose challenges and make surgery technically demanding. The aim of the surgery remains pain relief, ideal soft tissue balance to maximize post-surgery functional result and to give longevity of implants. King *et al.* (2016) reported that THR in patients CP and DDH implant revision rates are higher when compared to

patients without cerebral palsy, but this opinion was challenged and suggested that the belief of increased risk of complications following total hip arthroplasty in patients with cerebral palsy is not true [9, 10].

In conclusion whether patient's statement "That you Experts Failed Me" is true can be answered to the point that partially she may be correct. After the introspect it can be said that the first surgery was incomplete and that during the second surgery the dysplastic acetabulum was not addressed and femur had too much varus with femoral shortening which ended in 6 centimeters of shortening. The attempt of lengthening carried its own complications.

## Conflicts of Interest

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

## Ethical Approval

Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia does not require ethical approval for reporting case report.

## Funding

None.

## Consent

The patient described herein had given consent to the use of unidentified patient data for use in research and education.

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