Evaluation of treating cases of developmental dysplasia of the hip presented at the walking age with closed reduction with or without adductor tenotomy.

Thesis

By

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Abstract

includes treatment with a Pavlik harness or other device.

Although there are many obstacles for closed reduction and hip spica cast application for cases of developmental dysplasia of the hip in older child, still we can achieve satisfactory results in properly selected cases which must be observed carefully until skeletal maturity. The orthopedic surgeon must be aware of the possible complications either early or late and should not hesitate to perform appropriate secondary procedures depending on the development of the hip joint after reduction during the follow up period.

Key words:

Evaluation of treating cases of developmental dysplasia of the hip presented at the walking age with closed reduction with or without adductor tenotomy.

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List of abbreviations

DDH	Developmental dysplasia of the hip
AIA	Acetabular index angle
CEA	Central edge angle
AVN	Avascular necrosis
ON	Osteonecrosis
CT	Computerized tomography
MRI	Magnetic resonance imaging
MRSA	Methicillin-resistant staphylococcus aureus organism
GR	Gradual reduction
AT	Articulo-trochanteric distance

Introduction

Developmental dysplasia of the hip (DDH) has been recognized from the time of Hippocrates. It is a common condition which remains controversial and confusing despite diagnostic and treatment advances. The terminology can be unclear and inconsistent, diagnosis can be subtle and there can be long-term sequelae even in patients given optimal treatment [(1)].

The etiology of developmental dysplasia of the hip (DDH) is multifactorial with both hereditary and environmental contributions acting as internal and external influences, respectively. Breech presentation, female sex, positive family history, first-born children, and left hip affected are commonly associated with DDH [(2)] [(3)]. Additional factors include intrauterine positioning syndromes (torticollis, metatarsus adductus, femoral anteversion, genu recurvatum, oligohydramnios, and twin pregnancy), swaddling, and hip capsular laxity [(4)].

Ultrasound screening can be ‘selective’ for high-risk groups or ‘universal’ for all neonates. The use of ultrasound in the detection of DDH was first proposed by Graf in the 1980s [(5)]. Since then many different modifications have developed which fall into two main groups: static tests that assess morphology and dynamic tests which assess stability [(6)].

The goal of orthopedic management is to identify dysplasia at the earliest possible time and to apply treatment methods designed to normalize the hip, which includes treatment with a Pavlik harness or other device. Infants that present after

age 6 months commonly require closed reduction plus hip spica immobilization followed by abduction bracing. Regular radiographic follow-up is performed with expectations for normal hip development. Unfortunately this desired course does not always occur, leaving some children with residual dysplasia despite good early treatment [7].

When closed reduction of the hip fails in developmental dysplasia or extreme positioning is required to maintain a reduction, the standard of care is to perform an open reduction. However, many aspects of surgery for open reduction in developmental dysplasia remain controversial, including the indications, timing in relation to the appearance of the ossific nucleus, surgical approach, the management of extra-articular and intra-articular obstructions to reduction, and the duration and position of postoperative immobilization [8].

Since the preliminary report by Weinstein and Ponseti in 1979 and their long-term follow-up study of 93 hips in 1997, [9] open reduction by the medial approach has received substantial interest and increasing support. The reported advantages of the medial approach are that it is safe and effective [8].

Osteonecrosis of the capital femoral epiphysis is a major complication of treatment for developmental dysplasia of the hip (DDH) with reported incidences ranging from 6% to 48% [10]. This irreversible condition is associated with subsequent hip pain and declining hip function in childhood [11]. Premature arthritis requiring hip arthroplasty as early as during the third decade is common with severe forms. For these reasons, osteonecrosis is considered one of the most important quality indicators of DDH treatment [12].

Aim of the work

The purpose of this study is to identify predictive factors that would best indicate the satisfactory functional and radiological outcome after closed reduction of developmental dysplasia of the hip (DDH) in patients between 9 months and 3 years.