ISSN: 2455 – 9938
PubMed- National Library of Medicine - ID: 101731611

EIJO: Journal of Science, Technology and Innovative Research (EIJO–JSTIR)
Einstein International Journal Organization (EIJO)
Available Online at: www.eijo.in
Volume – 8, Issue – 5, September - October - 2023, Page No. : 16 - 20

Surgical management of a case of congenital dislocation of hip

[1]Dr St Sanikop, Professor, KAHER, Department of Orthopaedics, J. N. Medical College, Belagavi 590010, Karnataka, India.

[2]Dr Gangadhar Bhuti, Assistant Professor, KAHER, Department of Orthopaedics, J. N. Medical College, Belagavi 590010, Karnataka, India.

[3]Dr Raunak Pareek, Consultant Orthopaedic Surgeon, 4/9-A Civil Lines, Bagh Farzana, Agra 282002, Uttar Pradesh, India.

Corresponding Author: Dr Raunak Pareek, Consultant Orthopaedic Surgeon, 4/9-A Civil Lines, Bagh Farzana, Agra 282002, Uttar Pradesh, India.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Congenital dislocation (CDH) of the hip joint [now falling under the umbrella term Development Dysplasia of hip (DDH)] has a high incidence in the Indian subcontinent. In spite of such incidence, a medical opinion is not sought by the parents until the walking age. Herein lies the need for a more extensive screening protocol. Such cases, when presented late, require surgical correction in cases where conservative management becomes redundant. Literature is divided on the course of management of such cases and we wish to present one such case here.

Keywords: CDH, Surgical Management, Bikini Incision.

Introduction

Developmental dysplasia of the hip is a spectrum of structural abnormalities that involve the growing hip and represents a wide spectrum of pathologic conditions, ranging from subtle acetabular dysplasia to irreducible hip dislocation with proximal femoral displacement. It has been seen that the majority of abnormalities arise as a result of maldevelopment of the acetabulum.[1] The acetabulum is known to be the primary culprit in such cases, however, as a result of a disturbance in the normal biomechanics of the hip joint secondary to acetabular dysplasia or malformation, the femoral head is involved. It is known to be associated with other severe malformations, such as spina bifida, arthrogryposis multiplex congenita, lumbosacral agenesis, chromosomal abnormalities, diastrophic dwarfism, Larsen syndrome and other rare syndromes.[1] The incidence ranges from as low as 1 per 1,000 to as high as 34 per 1,000. Higher incidences are reported when ultrasonography is also used in addition to clinical examination owing to its sensitivity.[2] Other associated factors include ethnic background (e.g. native Americans who use swaddling that forces the hips into extension and adduction), torticollis and lower limb deformity. There are number of predisposing factors that lead to the development of DDH, including ligament laxity, breech presentation, postnatal positioning and primary acetabular dysplasia, female new-born, breech presentation and oligohydramnios. [3,4]

Case Report

A 1 year and 4-months old male child was brought to the OPD by his parents, with complaints of inability to stand or walk. Upon examination, it was noted that the attitude of left hip was in flexion and adduction along with restricted extension, external rotation and abduction. The hip was otherwise painless and stable. On plain radiography of pelvis with both hips it was noted that the epiphysis of the left femoral head was displaced from their acetabulum and situated in the supero-lateral quadrant formed by the intersection of Perkin's and Hilgenreiner lines. The heads on either side appeared to articulate with a false acetabulum superiorly in the frog-leg view. First a trial of immobilization with hip spica was done after percutaneous tenotomy of adductor longus along with the release of contractures on the medial aspect. After 6 weeks hip spica was removed and a plain radiograph pelvis with both hips was taken showed that the left hip joint has migrated upwards.

Having taken the severity of the condition into consideration, surgical intervention was planned. The patient underwent surgery, using the anteromedial approach, after superficial and deep dissection the capsule was identified and capsulotomy was done and femoral head was exposed. The ligamentum teres was released along with the fibro-fatty tissue, which was resected off. A trial of reduction was then performed which then proved to be stable. A thick K-wire was used to transfix the left hip joint and was confirmed on C-arm.

The patient was discharged from the hospital in stable condition and no complications. After 2 months, the spica was removed under short general anesthesia and the patient was placed in a Pawlik Harness for a further two months. At 5 months follow-up, the epiphysis of the head was well maintained in the acetabulum.

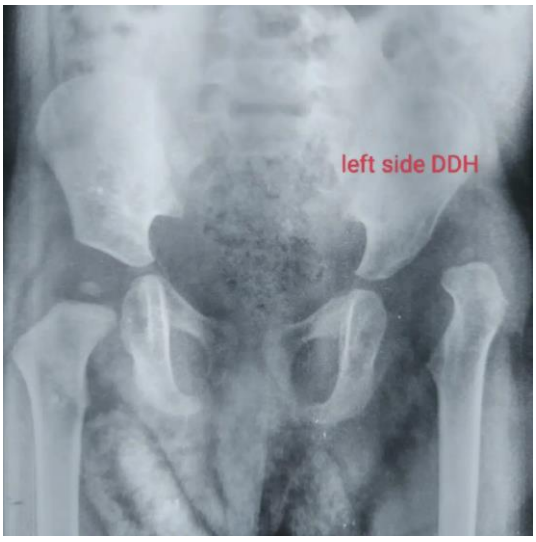

Fig.1: Plain Radiograph of Pelvis with Both Hips Showing Left Side DDH

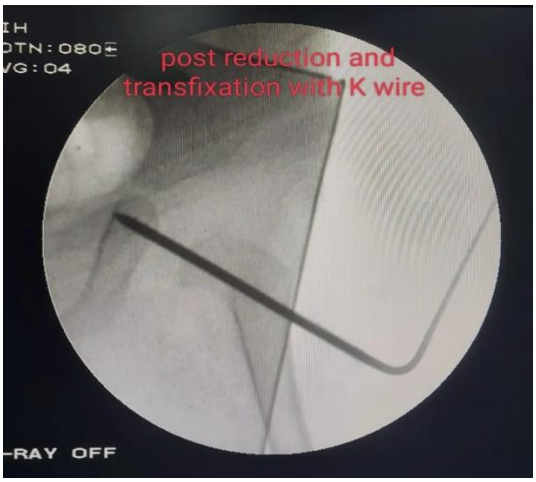

Fig. 2: Intra-Op C-Arm Image Showing Post Reduction and Trans fixation Using K Wire

Fig. 3: Clinical Image of The Child Wearing Pavlik Harness

Discussion

The first reported case of hip instability in the literature was done by Roser in 1879. In 1910, Le Damany and Saiget described a clinical test for hip instability which was highlighted in 1937 by Ortolani. Palmen in 1961 and Barlow in 1962 developed further tests to induce dislocation or subluxation.[5] Positive Ortolani test represents the reducibility of a dislocated hip into the acetabulum. A positive Barlow's test represents potential subluxation or dislocation. After three to six months, soft tissue contractures (most commonly adductors) limit motion of the hip despite being dislocated.[6] Hence, the examination of an older child requires careful assessment of extremities for asymmetric skin folds, leg length discrepancy (in case of unilateral hip dislocation), limited abduction (in bilateral cases where Galeazzi sign is negative). In neglected cases, DDH is generally diagnosed when children approach the walking age due to a limp on the affected side (positive Trendelenburg's sign) and/or hyperlordosis. As the child reaches three to six months of age, the dislocation will be evident on plain radiographs.

In a normally located hip, the medial beak of the femoral metaphysis lies in the lower, inner quadrant produced by the intersection of Perkin's and Hilgenreiner's lines, whereas in dislocated hips, it lies in the superior and lateral quadrant. In the dislocated hip, Shenton's line is broken because the femoral neck does not lie in continuity with the pubic rami. The Acetabular index is another useful measurement, formed by the junction of Hilgenreiner's line and a line drawn along the superior aspect of acetabular surface or the roof. In normal newborns, the acetabular index averages 27.5 degrees, at six months 23.5 degrees and at two years, 20 degrees. Thirty degrees is the normal upper limit.

In older children, the center edge angle is a more useful measure. In children aged 6-13 years, an angle less than 19 is considered abnormal, whereas, in older children, an angle lesser than 25 is considered abnormal.[7,8]

The treatment of DDH is age-related and the goal is to achieve and maintain concentric reduction of the femoral head into the acetabulum. The outcome is in direct correlation to how early the treatment is initiated. Due to a dearth of awareness and training, surveillance (use of ultrasonography), and pediatric Orthopaedic surgeons, the developing countries lag behind. When conservative management is preferred, the child should then be re-evaluated both clinically and by ultrasound at three weeks of age to confirm concentricity. Hips that are still dislocated need further treatment. Orthoses, such as Erlanger, Thubinger or Pavlik, can reduce the incongruous pressure to the anterolateral acetabulum and is preferred in this age group. Application of an orthosis should be followed by bi-weekly clinical examination, and ultrasonography, if required. If the hip is reduced at three weeks follow-up, the patient may continue to wear it for a further three weeks. After six weeks, if the hip is reduced then the orthosis can be discontinued. The dislocated hip, even after 3-4 weeks of orthosis use, should be evaluated and may be treated with an abduction brace. The Pavlik harness is contraindicated when there is major muscle imbalance, as in myelomeningocele (L2 to L4 functional level); major stiffness, as in arthrogryposis, ligamentous laxity, as in Ehlers- Danlos syndrome' or where the chances of non-compliance are high. If the hip fails to reduce with orthosis, then other options should be considered, such as an abduction (Von Rosen) splint. The main aim of treatment is to achieve concentric reduction and to prevent complications such as avascular necrosis.

Children of age group 6 months to 2 years may be treated with either closed or open reduction, followed by a spica cast, as has been done in our case. The aim is to achieve reduction without damaging the femoral head. We undertook this procedure as there are several studies favoring a reduction of hips after the appearance of the ossific nucleus.

Open reduction may be achieved through a medial (preferred due to minimal dissection and ease of contracture release). Disadvantages of the medial approach include inadequate exposure, risk to medial circumflex femoral vessels and inability to perform capsulorrhaphy. Post-operatively, a cast is recommended for a total period of 3 months and changed after six weeks. A medial approach is recommended for children with a maximum age limit of 18 months in expert hands. Treatment of older child (two years of age and older). In older children, the femoral head lies more proximally. Sankar et al. studied the factors predicting the need for femoral shortening in 72 hips which underwent open reduction. He concluded that the patients over the age of 36 months and patients with a vertical displacement greater than 30% of the width of the pelvis were more likely to require femoral shortening.

Conclusion

A high degree of suspicion is required to diagnose DDH in its early stages to prevent surgical management. In delayed cases, despite there being many schools of thought on the management of DDH in children, there is little consensus as to which is the most appropriate approach. In this case, we operated the patient 1 year and 3 months of age, owing to the severity of displacement and soft tissue contracture. The fact that the patient has improved, both clinically and radiologically and is on removal of the Pawlik harness justifies this approach and provides evidence for its use in the future. The weakness in the reporting of this case is that it is to be viewed as a separate entity and further research on a larger population is warranted.

References

1. LeBel ME, Gallien R. The surgical treatment of teratologic dislocation of the hip. J Pediatr Orthop B. 2005;14:331-6.
2. Rosendahl K, Markestad T, Lie RT. Ultrasound screening for developmental dysplasia of the hip in the neonate: the effect on treatment rate and prevalence of late cases. Pediatrics. 1994;94:47-52.
3. Bialik V, Bialik GM, Blazer S, et al. Developmental dysplasia of the hip: a new approach to incidence. Pediatrics. 1999;103:93-9.
4. Weinstein SL. Developmental hip dysplasia and dislocation. In: Morrissy RT, Weinstein SL, eds. Lovell and Winter's pediatric orthopaedics. Vol 2. 5th ed. Philadelphia: Lippincott Williams and Wilkins; 2001.p.905-56.
5. Dezateux C, Rosendahl K. Developmental dysplasia of the hip. Lancet. 2007;369:1541-52. Gage JR, Winter RB. Avascular necrosis of the capital femoral epiphysis as a complication of closed reduction of congenital dislocation of the hip: A critical review of twenty years' experience at Gillette Children's Hospital. J Bone Joint Surg Am. 1972;54:373-88.
6. Weinstein SL. Traction in developmental dislocation of the hip: Is its use justified? Clin Orthop Relat Res. 1997;338:79-85.
7. Weinstein S. Closed versus open reduction of congenital hip dislocation in patients under 2 years of age. Orthopedics. 1990;12: 221-7.