Original Article

Baseline characteristics and treatment in patients with developmental dysplasia of hip: A single centered experience

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Objective: To determine the common age of presentation, side of presentation and gender wise distribution, common procedures performed for the correction of developmental dysplasia of hip in our population.

Methodology: This cross sectional study was conducted at department of Orthopedics, Khyber Teaching Hospital, Peshawar in four years. It included 237 (318 hips) patients by convenient sampling technique. Data analysis was performed using SPSS version 20.

Results: Out of 237 patients, 84 (35.4%) had right hip affected.Mean age at presentation was 38.6 ± 28.9 months. Most patients (n = 76, 32.1%) presented in second year of their life. Females (n = 176, 74.3%) were affected more than males (n = 61, 25.7%). Out of total, 315 hips were managed surgically while three were treated without surgery. Average hospital stay was 2.7 ± 1 days. Reasons of late presentation were absence of screening at time of birth in 229 (95.6%), abnormal gait noted at time after child started walking in 213 (90%), no parents education regarding developmental dysplasia in 233 (98.5%) and unavailability of expert pediatric orthopedic surgeon at their locality in 24(10%).

Conclusion: We noted late presentation of the patients, and reasons were absence of screening, no symptoms before child start walking, no education of parents and unavailability of expertise in peripheries, which usually affect the outcomes of the treatment. Demographics showed that female gender and right hip were more affected than male gender and left hip.

Keywords: Hip dislocation, congenital, osteotomy, open reduction, fracture, closed reduction.

INTRODUCTION

Development dysplasia of hip joint (DDH) consists of spectrum of disease including neonatal instability, acetabular dysplasia, hip sublaxation and true dislocation of hip.[1,2] Instability is the laxity of the acetabulum.[3] In subluxated hip, there is contact between both articular surfaces but not concentric, while in a true dislocation there is no contact between the articular surfaces of proximal femur and acetabulum.[4] The incidence of DDH is 25 – 50 per 1000 births when universal ultrasound screening is applied and in 90% of these cases, the hip instability at birth resolve within the first 8 weeks of life.[5]

Those that persist are called persistent dysplasia of hip joint that will ultimately lead to osteoarthritis of the hip joint. DDH is one of the causes of total hip replacement (THR) in young people.[6,7] The higher the age of presentation, the poorer is the outcome of intervention, so that at the age of eight the outcome of intervention is no longer better than leaving the joint as such.[8-10]

The instability of hip joint of neonate can be assessed by Barlow and Ortolani maneuvers.[11,12] These tests should be done universally in all new-born examination and ultrasound hip in selected case.[13] There is no screening program for children who are at risk neither do we have a proper referral system in our country; that's why the frequency of neglected cases are high.[14] The purpose of this study was to determine the common age of presentation, side of presentation and gender wise distribution of DDH patient in our population and to find the areas of intervention in our health setup in order to improve early detection and timely referral.

METHODOLOGY

This cross sectional study was conducted at department of orthopedics, Khyber Teaching Hospital, Peshawar from January 2016 to December 2019. It included 237 patients by convenient sampling technique. All children age equal to or less than 12years of either gender who attended our outpatient department who were diagnosed as DDH were included in the study. Those having associated anomalies, cereberal palsy, meningocele, myelomeningocele and syndromic patients were excluded from the study.

Arthrography was performed under general anesthesia for patients attempting non-operative reduction in which under image control, a 22 G spinal needle was passed in the affected hip. We used the Ludloff approach by

making the plane between adductor longus and pectinous. Capsulorrhaphy was done followed by Spica for six weeks in all cases.

Statistical Analysis: SPSS version 20 was used for statistical analysis.

RESULTS

Total of 237 patients were managed accounting for 318 hips. Out of total patients, 84 (35.4%) had right, 72 (30.4%) left and 81 (34.2%) had bilateral developmental dysplasia of hip (DDH). Mean age of presentation to hospital was 38.6 ± 28.9 months(range 2 to 120 months) (Table 1). Gender distribution showed 176 (74.3%) females were affected and 61 (25.7%) males.

Out of total 318 hips only three hips (2 patients) were treated without surgery after undergoing arthrography, one was treated with pelvic Harness for 2 months with successful reduction. Second was 2 year old male with bilateral DDH, left side was treated with closed reduction while right side with Open reduction and femoral and pelvic Salter osteotomy.

Reasons of late presentation into health care units, showed that 229 (95.6%) had absence of screening at time of birth, in 213 (90%) abnormal gait was noted at time after child started walking, in 233 (98.5%) parents had no education regarding DDH and in 24 (10%) there was unavailability of expert pediatric orthopedic surgeon at their locality. Table 2 shows surgical procedures used in treatment. All patients were discharged without complications.Average hospital stay was 2.7 ± 1 days (range 1 – 8).

Table 1: Age at presentation to hospital (n = 237).

Age Group (Months)	Frequency	%
0 – 12	29	12.2
> 12 – 24	76	32.1
> 24 – 36	42	17.7
> 36 – 48	31	13.1
> 48 – 60	21	8.9
> 60 – 72	15	6.3
> 72 – 84	5	2.1
> 84 – 96	3	1.3
> 96 – 108	10	4.2
> 108 – 120	5	2.1

Table 2: Procedures used for surgical management of DDH.

	Right Hip	Left Hip	Mean Operative Time (Minutes)
Open Reduction	28 (11.8)	24 (10.1)	60 ± 6.5
Open Reduction, Femoral derotation osteotomy, Salter Osteotomy	36 (15.2)	28 (11.8)	124.5 ± 7.8
Open Reduction, Femoral derotation osteotomy, Pamberton Osteotomy	19 (8.1)	26 (10.1)	126.5 ± 8
Open Reduction, Femoral derotation osteotomy, Degga Osteotomy	08 (3.4)	11 (4.6)	187 ± 4.8
Open Reduction and Femoral derotation osteotomy	64 (27)	55 (23.2)	94.5 ± 6.8
Open Reduction, Degga Osteotomy	01 (0.4)	01 (0.4)	117.9 ± 8.3
Open Reduction, Salter Osteotomy	03 (1.2)	04 (1.6)	122.6 ± 4.9
Open Reduction and Pamberton Osteotomy	05 (2.1)	04 (1.6)	120 ± 7.5

DISCUSSION

Development dysplasia of hip is the most common pathology of pediatric hip. Eighty percent of the affected patients are female. Left hip is more commonly involve than right. The condition is more common in native Americans (who use swaddling that forces the hip into extension and adduction).[15,16]

Our study showed the common age of presentation in our population was 2 years, which is when the child starts walking with a limping gait. Few studies from our country reported mean age of presentation as 2.5 year,[17] 3 year,[18] and 3.5 year.[14] It means that there is no or very little concept of screening patients at birth.

Female gender was more commonly involved as 74.3% as compared to males, which was 25.7% in our study. This is similar to a previously reported percentage.[15] Right side was effected in 35.4%, left side in 30.4% and bilateral involvement was in 34.2% in our study. These results are slightly different from the previous study, which reported left side involvement to be more common about 60% of cases.[15]Open reduction and femoral derotation osteotomy was the most common procedure performed in 50.2% patients and average time was 94 minutes for this procedure.[19]

CONCLUSION

Female gender and right hip were commonly affected. Common presentation was late at age of around two years. Open reduction and femoral derotation osteotomy was the most common procedure performed. Common reasons of late presentation into health care units were absence of screening at time of birth, abnormal gait noted at time after child started walking, no education of parents regarding DDH and unavailability of expert pediatric orthopedic surgeon specially in peripheries.

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