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RESEARCH ARTICLE

ASSESSMENT OF HIP INSTABILITY IN HIGH RISK DELIVERIES IN NEWBORN BY CLINICAL EXAMINATION AND ULTRASONOGRAPHY

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Abstract

Background: Developmental dysplasia of hip (DDH) is one entity which occasionally comes across in orthopaedic or paediatric outpatient department. The knowledge of risk factors and awareness of the condition is must for every orthopaedic surgeon and paediatrician so that the diagnosis won't be missed. An early diagnosis can alter the prognosis of the disease and prevent late disabilities.

Material And Methods: Diagnosis of instability in the neonatal period can be easily assessed with the Barlow and Ortolani manoeuvres. Sonography is valuable in the first months of life. Graf et al established a method to evaluate the infant hip according to morphology.

Result: It has been found that first born female with breech presentation has more chances of this hip instability as compare to male born with left side more affected assessed by clinically and graf et al method.

Conclusion: Neonatal hip instability is common and a screening programme should be initiated to detect its incidence and prognosis can be better if diagnosed early.

Introduction:-

Acetabular dysplasia, subluxation (partial dislocation) of the femoral head, and total separation of the femoral head from the true acetabulum are the most common features of developmental (congenital) dysplasia of the hip (DDH). Hippocrates was the inventor of the phrase "congenital dislocation of the hip" (CDH). Significant advancements in the diagnosis and therapy of DDH[1,2] have been accomplished. Congenital hip dislocation has increasingly been superseded by the more recent term developmental hip dysplasia (DDH), which was created to include in the disease infants who were healthy at birth but who later acquired hip dysplasia or dislocation, or vice versa. [3]Thus, the phrase "developmental dislocation of the hip" refers to a dynamic disease that may improve or worse as a child grows, depending on the multidisciplinary treatment given. [4]. It alludes to a range of hip issues, from stable hips with modest acetabular dysplasia to more severe types with outright hip dislocation. Early detection allows for successful treatment using less complex methods that are easily accessible, agreeable to the family, and have a favourable prognosis[5]. Surgery is necessary for the difficult treatment of DDH in late-presenting cases. This raises morbidity, treatment costs, and the total healthcare burden [5,6].

Risk Factors:

In India, the incidence has been reported to be 1.0-9.2 per 1000 in various studies with the incidence being more in northern region.[8-10.] 2% of DDH cases may have teratologic dislocation which is generally not reversible.This comes to about 1-2 patients per 1000 which have a true DDH and which will go on to produce the pathological changesof

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DDH. The left hip is dislocated more often than the right and 20% of cases are bilateral. It is more common in cultures that use swaddling of babies, a manoeuvre that forces the hips into extension and adduction.[11] There is a 9:1 female predominance.Of children with DDH, approximately 60% are firstborn and about 20% are born breech. In breech presentation, the hip position tends to force the hip out of the socket, predisposing to dislocation after birth. Highest risk is with extended breech position with the hips flexed and the knees extended and feet reaching the shoulders.

Material and Methods:-

This is a cross sectional study done in tertiary care institute from April 2021.The Barlow and Ortolani movements make it simple to diagnose instability in newborns.While the Barlow manoeuvere tries to dislocate the femoral head with hip adduction and posterior translation,[12]the Ortolani manoeuvere tries to relocate a dislocated femoral head with hip abduction and anterior translation.[13,14]Examining the newborn's hip is crucial to excluding the possibility of hip instability. Instability manoeuvere should be done universally as a part of the physical examination of the newborn. It is important to remark that isolated 'clicks' do not have clinical importance, in comparison with positive manoeuveres of instability.[15]Although instability is the main sign of DDH in the neonatal period, it rapidly diminishes as muscle strength increases, which occurs after the first week of life. After that, abduction asymmetry is the main clinical sign.[11] Hip abduction in a newborn is about 80° to 90°; asymmetrical limitation of abduction must lead to the suspicion of a possible dislocated hip.[16,17]

Inclusion Criteria –

All 1st born female and male child delivered by caesarean section or normal deliveries having: Breech presentation and positive family history of hip dysplasia.

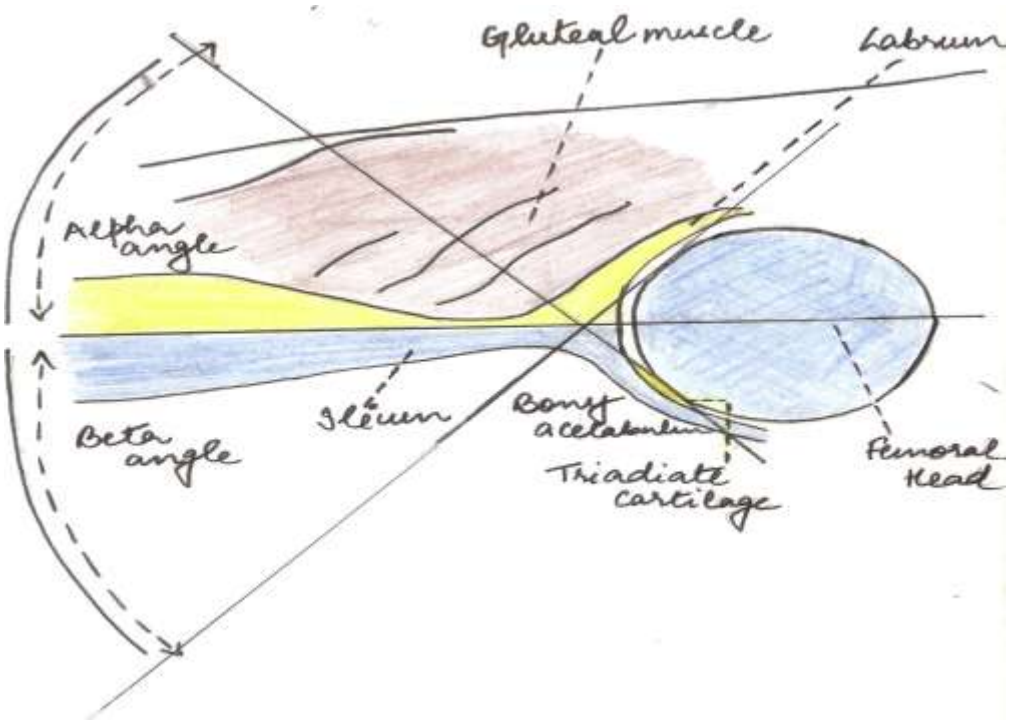
Exclusion Criteria –

All other low risk deliveries will be excluded.

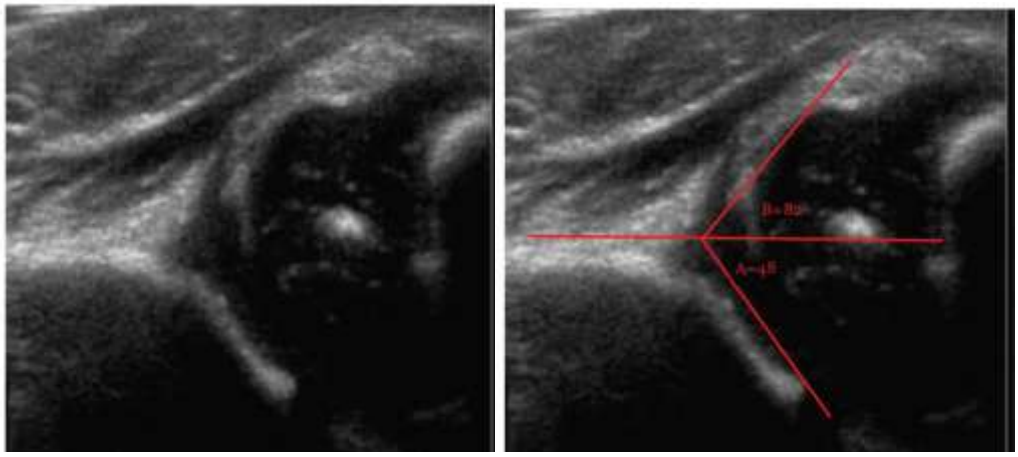
Manoeuveres

Ortolani Manoeuverebarlow Manoeuvere

Sonography is valuable in the first months of life[18-22.] Graf et al[23]established a method to evaluate the infant hip according tomorphology. Two angles were described: α angle, formed between the ilion and the osseous wall of the acetabulum; and β angle, formedbetween the ilion and the cartilaginous labrum.

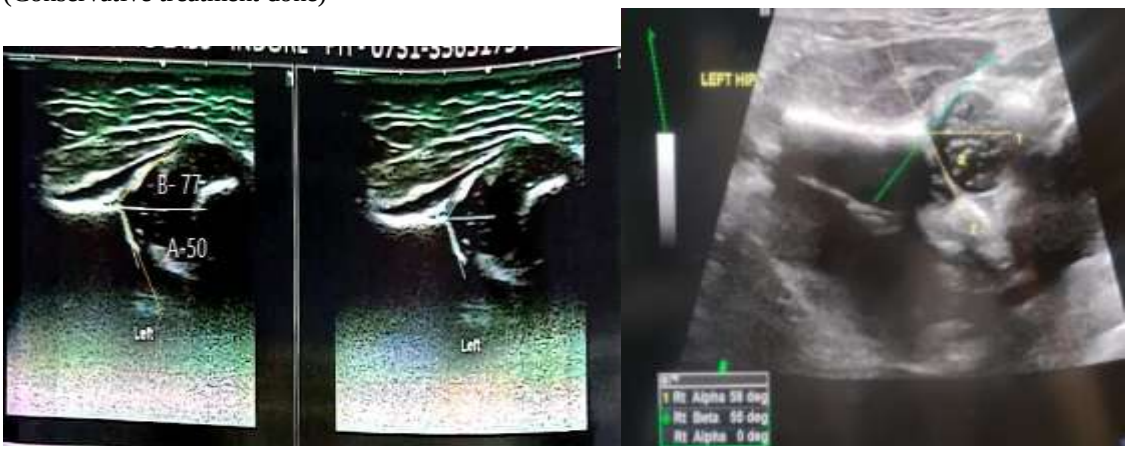


CASE



AT BIRTH
GRAF GRADE II C
PAVLIK HARNESS

(Conservative treatment done)



2 WEEKS FOLLOW UP6 WEEKS FOLLOW UP

Observationsandresults:-

The study found that, out of 30 subjects, 14 were between the ages of 3 and 6 days, where 1 (7.1%) had DDH, and 4 were between the ages of 7 and 10, where 2 (50%) had DDH. The affected individuals averaged 6.00 1.73 days in age (range: 4-7 days). Similarly, there were 17 women (56.7%) and 13 men (43.3%) in this study. Two (17.7%) of the 17 females had DDH, and one (7.6%) of the 13 males had DDH. DDH was more prevalent in females than in males, in comparison. In all three instances, the affected side was the left. In a similar vein, none of these subjects had any other conditions like metatarsus adductus, torticollis, or clubfoot. The Barlow and Ortolani test was positive in three (10%) subjects at two weeks and after birth. At four weeks, two of the three subjects—or 6.7%—were still positive, and one of the subjects who had been positive changed their Barlow and Ortolani test results. At 12 weeks, neither the Barlow nor the Ortolani tests were positive for any of the subjects. From 46.50 to 67, the left-side mean Graf Angle (Alpha) improved. Over the course of 12 weeks, Graf Angle (Alpha) left side improvement occurred, but it was only statistically significant at 2 weeks. Compared to after birth, there was no statistically significant improvement at 12 weeks (P=0.097). The left-side mean Graf Angle (Beta) increased from 66.00 to 49.50. After birth, there was no significant improvement in the mean Graf Angle (Beta) left side at 12 weeks (P=0.289). Over the course of 12 weeks, Graf Angle (Beta) left side improvement occurred, but it was only statistically significant at 2 weeks. 27 subjects (90 percent) were Graf Type I, 1 subject (3.3 percent) was Graf Type IIB, and 2 subjects (6.7 percent) were Graf Type IIC. Three (10%) subjects required the use of the Pavlik Harness for treatment.

Discussion:-

The initial Indian studies primarily contributed to the comprehension of the prevalence of DDH in the Indian population, which was found to range from 0.16 to 0.96 per 1000 live births[24-26].

Gupta and co. clinically screened 6029 newborn hips and found an incidence of 18.7 per 1000 live births [27.] after universal clinical and selective USG screening at birth, an incidence of 4.87 per 1000 live births was reported. All of these studies agreed that more research with a larger sample size and from other parts of the country is needed to figure out the true prevalence of DDH [27-29].

Because we ruled out both high-risk patients and the general population in our study, our incidence is slightly higher than that of other non-specific studies. Due to the small sample size, we concluded that the female gender, first born child, breech delivery, and prematurity are reported as potential risk factors for DDH. However, the data is statistically insignificant.

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