

COMPARISON OF CLINICAL AND ULTRASOUND EXAMINATION FOR NEONATAL HIP SCREENING PROTOCOL FOR DETECTION OF DEVELOPMENTAL DYSPLASIA OF HIP – A HOSPITAL BASED CROSS-SECTIONAL STUDY

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BACKGROUND

Developmental dysplasia of hip (DDH) is a spectrum of disorders, including subluxation and dislocation, affecting proximal femur and acetabulum. If not diagnosed and treated in time, it can lead to severe disability/deformity. In the screening of neonates for DDH, clinical examination and hip ultrasonography (USG) are the two most frequently used methods. This, combined with the fact that breech presentation, which has a strong association with DDH, has a high incidence of 7% at 32 weeks of pregnancy in India (as of 2018) makes it a prerogative to establish a national screening protocol.

OBJECTIVE

To study the sensitivity and specificity of clinical examination for detection of DDH, with ultrasound as the reference standard, in order to establish a national screening protocol especially for breech presentations.

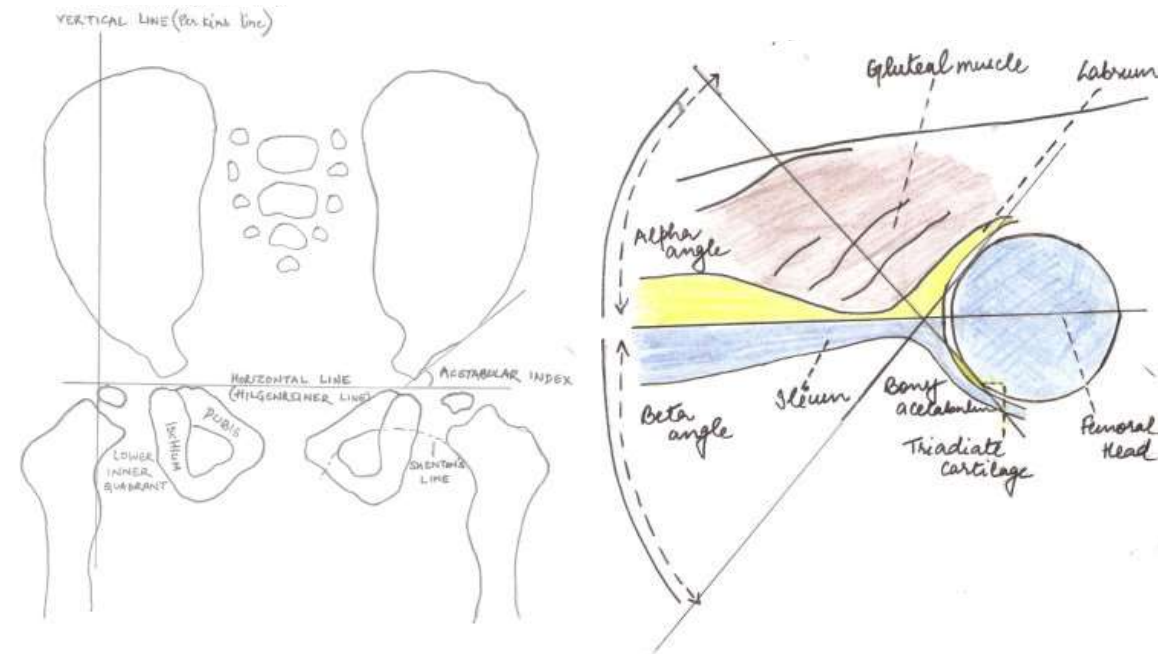


Fig. 1: X-ray and USG interpretation of DDH

METHOD

Sample
size= 75

Babies referred with risk factors of DDH
from January to December 2017

Repeated Clinical
Examination

If positive:
Included in
study

If negative but
USG positive:
Included

Repeated Ultrasound
examination

If positive: Included

If negative: Excluded

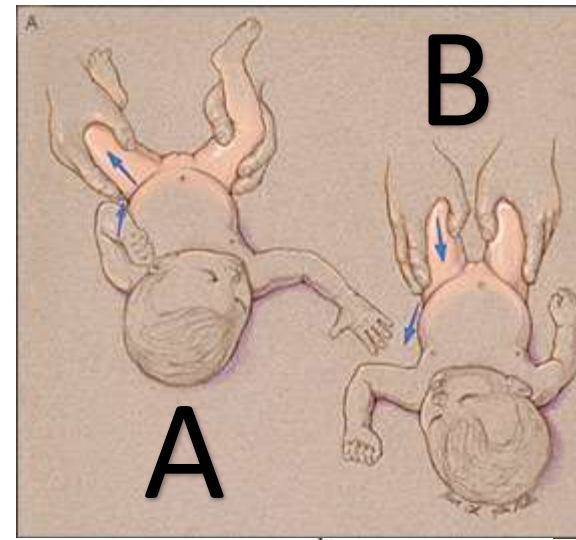


Fig. 2: (A) Ortolani
and (B) Barlow
maneuver

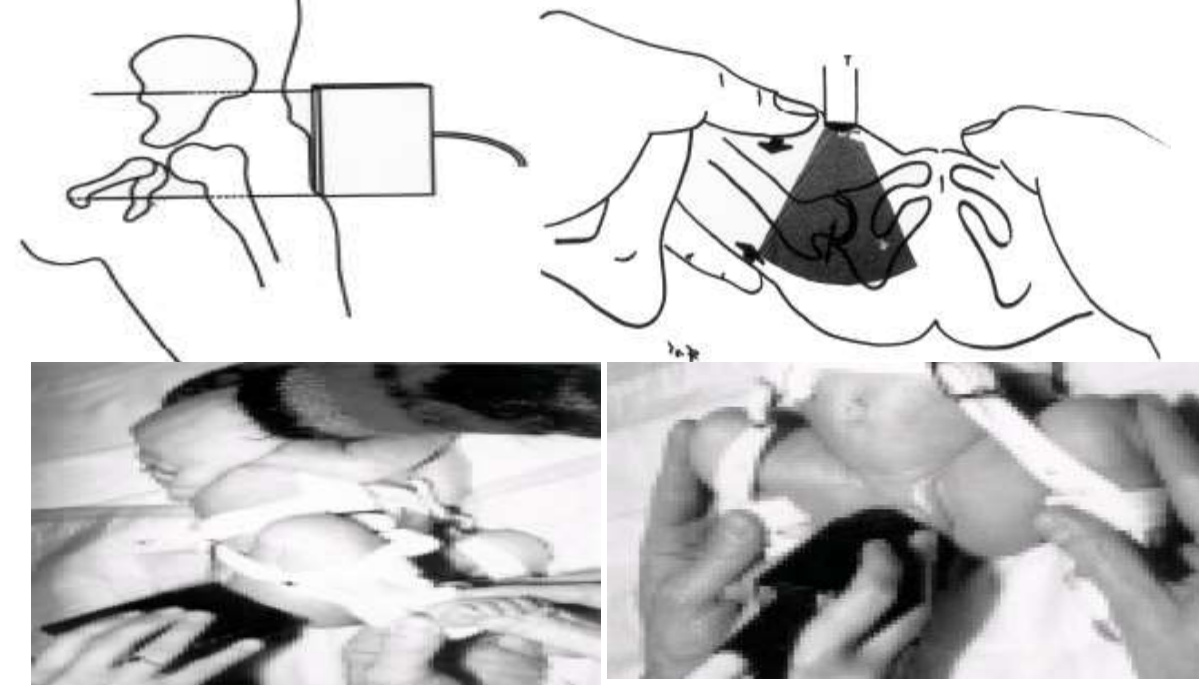
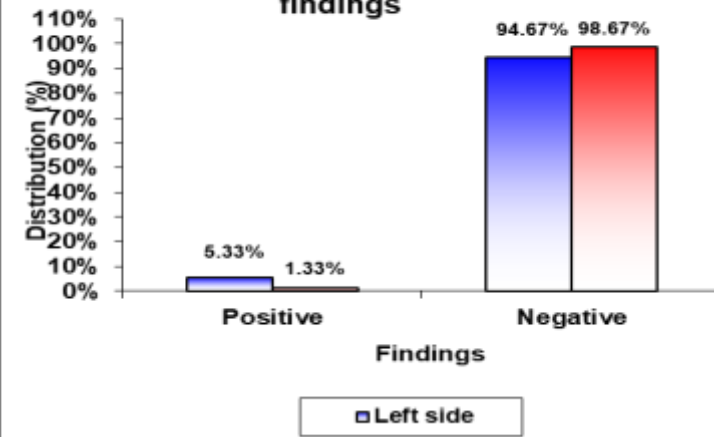
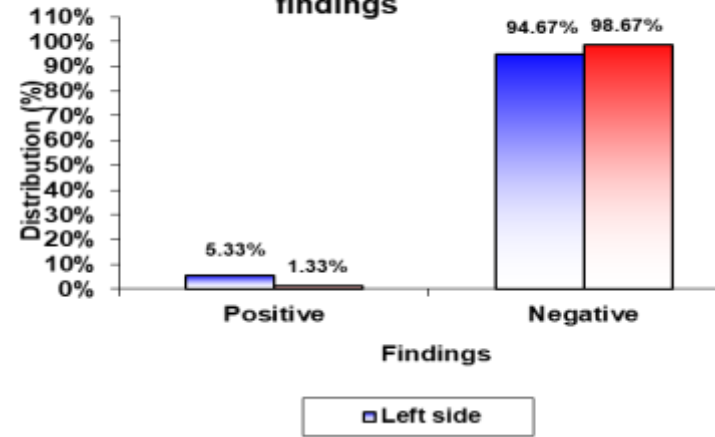


Fig 3: Position for USG scanning in coronal
and transverse planes

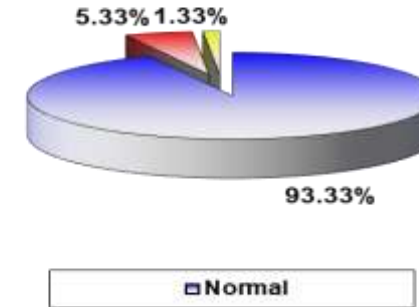
Graph 1. Distribution of children according to the Barlow's test findings



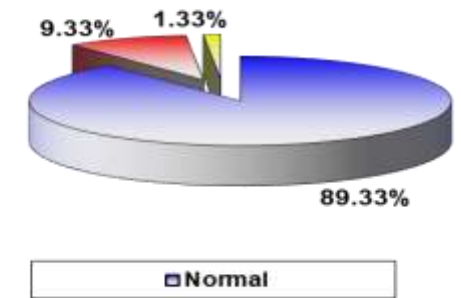
Graph 2. Distribution of children according to the Ortolani's test findings



Graph 3. Distribution of children according to the clinical diagnosis of DDH



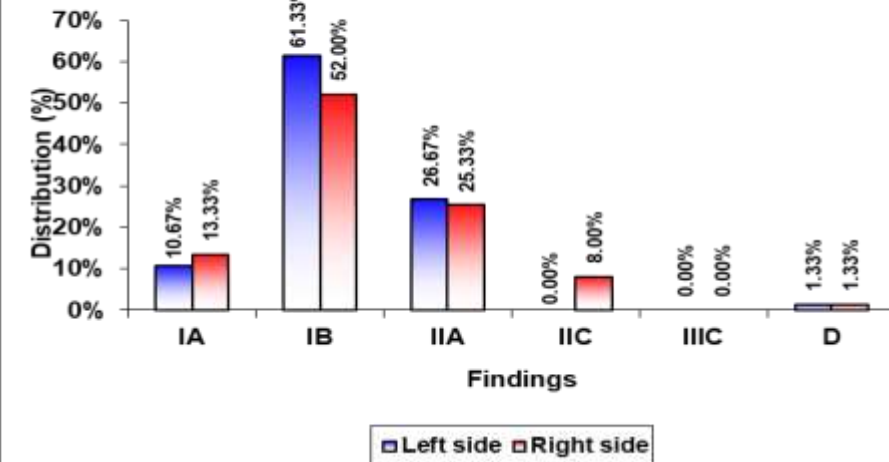
Graph 4. Distribution of children according to the diagnosis of DDH based on USG



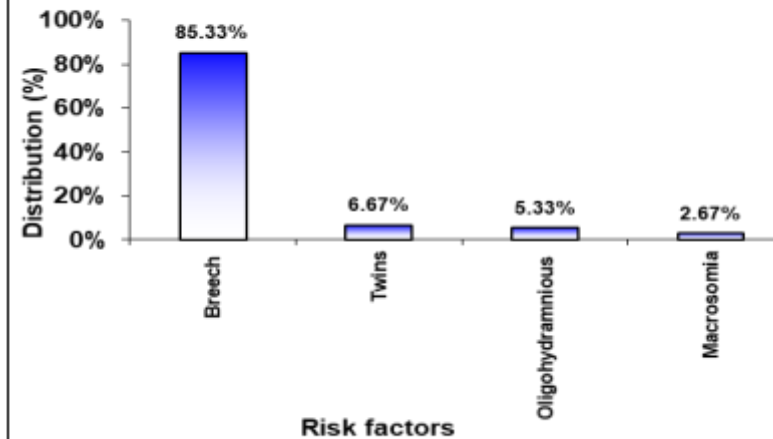
RESULTS

75 newborns were studied by clinical examination and USG (Graf's method). **85.33%** of these babies were born in breech presentation. **10 hips** of 10 babies were diagnosed to have DDH based on USG, out of which, **8 were breech**. Among these 10, **6 (all breech)** had a clinical diagnosis of DDH. Hence, **4 babies (2 breech)** went **undiagnosed** on clinical examination.

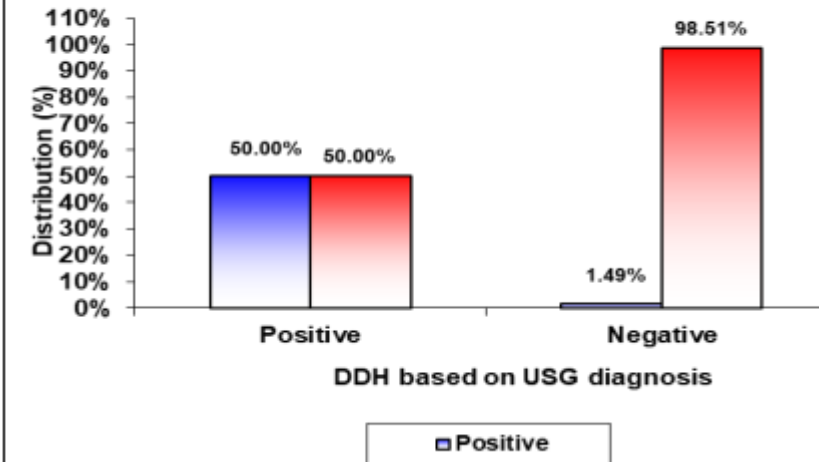
Graph 5. Distribution of children according to the Graf test findings



Graph 6. Distribution of children according to the risk factors



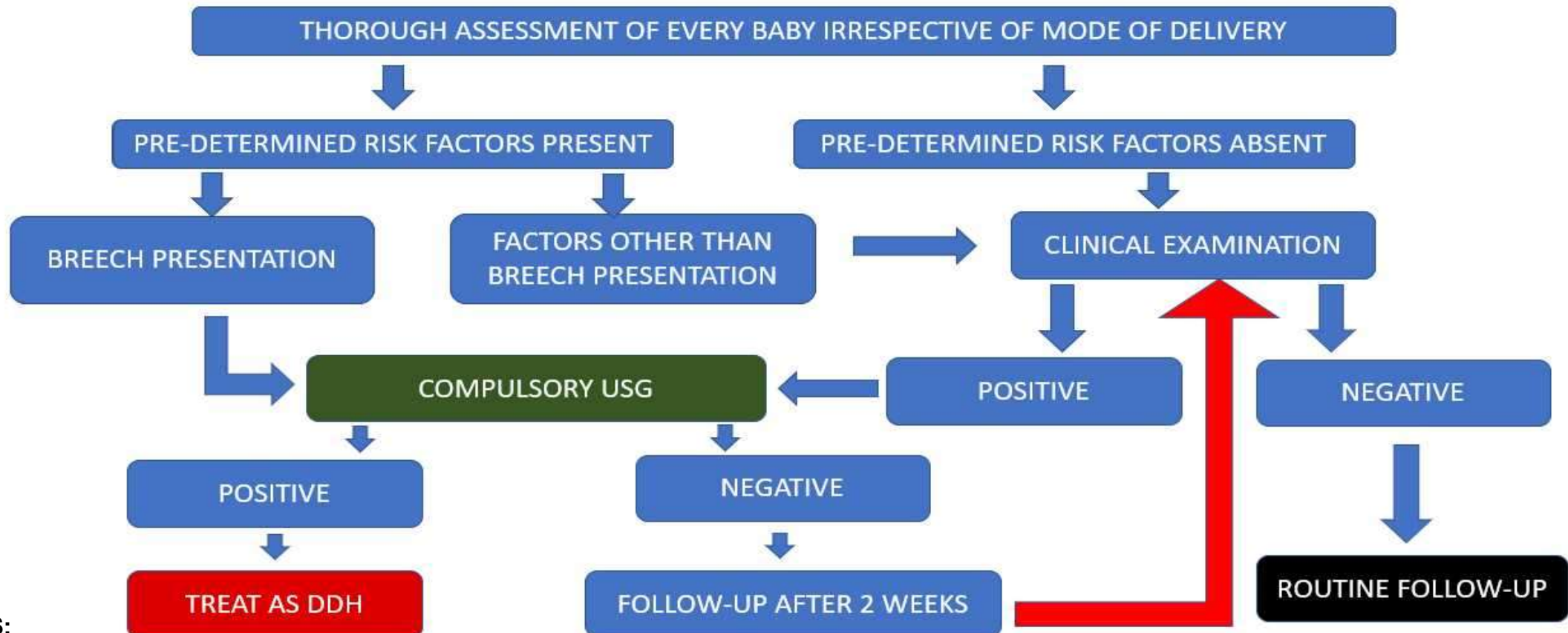
Graph 7. Accuracy of clinical diagnosis considering USG as standard of reference



CONCLUSION

The **sensitivity, specificity, Positive and Negative Predictive Value** of clinical examination, considering USG as gold standard, was found to be **50%, 98.51%, 80% and 4.29%**. Hence, despite the high specificity, the low sensitivity of clinical examination makes a strong case for the use of USG in neonatal hip screening for diagnosing DDH, at least in high risk cases such as breech presentation. A screening protocol was drawn up accordingly.

PROPOSED NATIONAL SCREENING PROTOCOL



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