Developmental Dysplasia of the Hip Research

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Introduction

Over the summer of 2021, I performed over 300 hours of research on Developmental Dysplasia of the Hip at Montefiore Medical Center in the Bronx NY.

Site Information:

Montefiore Medical Center (Children's Hospital)-
Department of Orthopedics

111 E 210th street, Bronx NY 10467

Dr. Eric D. Fornari MD

Find early correlations in diagnosing DDH

Background

Radiographic diagnosis of developmental dysplasia of the hip (DDH) is widely based on ultrasound (US) morphology of the acetabular bony roof (alpha angle, α) and percentage bony coverage (%BC) of the femoral head. Radiologist observations of increased pulvinar prompted us to question how to incorporate this finding, particularly for otherwise radiographically normal hips. So, I was given the task to sift through all the preliminary data for the patients. I also was able to watch a few ultrasounds in babies' hips that explained exactly what we were looking for in the study.

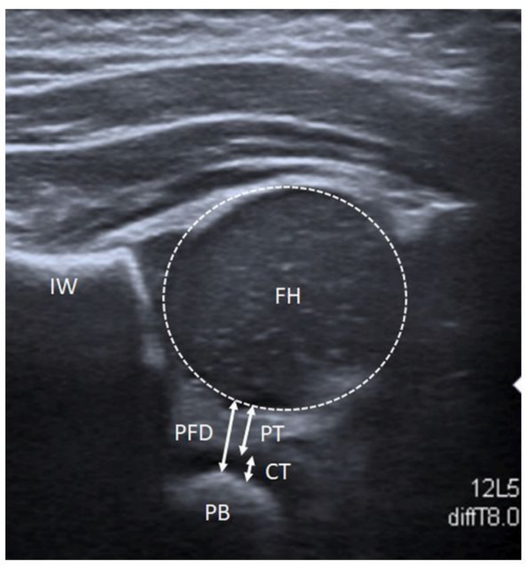

Fig. 1. Ultrasound section of the hip for DDH screening, using the Couture and Tréguier method. Normal hip at 1 month. IW: Iliac wing. FH: Femoral head. PB: Pubic bone. PFD: Pubofemoral distance (4.4 mm). CT: Pubic cartilage thickness (0.9 mm). PT: Pulvinar thickness (3.5 mm).

Purpose:

My purpose in this study was to determine every patient that could be used in this study. To do so, I was given a list of all the patients that had a hip ultrasound in the last 6 years. From there, I filled out all their background information to determine if they would be used in the study.

Materials:

I spent time sifting through 1063 patients who had an ultrasound done to diagnose DDH. I filled out all the baseline data for these patients including background data such as ethnicity, family history, BMI, other medical conditions, as well as reading through doctor notes to check off any hip instabilities present. I used the database that Montefiore uses to store patient files and excel to record these findings to be further sorted.

Results:

A lot of what I did can be summed up in this table. Out of the 1063 patients total, 130 qualified for the study.

Characteristic	Number of Patients, N (%) Total=130
Sex	
Female	100(76.9)
Male	30(23)
Family History	
Yes	4(3)
No	126(96.9)
Breech	
Yes	47(36)
No	83(63)
First Born	
Yes	59(45)
No	49(37)

This is a photo of me in the lab practicing drilling for a closed reduction surgery with other residents.

Discussion:

Measurement of PFD may refine US screening of DDH but requires radiologist experience in this method. PFD significantly correlates with α (alpha) and % bony coverage. A 21% false positive rate could lead to overtreatment of DDH, but measurement of CT and PT when PFD is abnormal can prevent this.

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