* **Indications, Management and Tricks for the Pavlik Harness in DDH**
* **Lori Karol, M.D.**
* **SLAOTI**
* **Baby C**
	+ **4 week female**
	+ **Born Cesarean section due to breech presentation**
	+ **Normal examination**
	+ **Ultrasound 4 weeks**
* **Should we treat???**
	+ **Observation or treat with Pavlik**
	+ **I chose to repeat the ultrasound due to the normal physical exam and age less than 6 weeks**
	+ **Followed with ultrasound**
* **Baby C-18 days later improving**
* **Baby C: 6 mos old and age 2 yrs
No treatment needed**
* **ULTRASOUND**
	+ **Very sensitive: always shows instability or dysplasia when present**
	+ **TIP: defer ultrasound until 6 weeks when the physical exam is normal!**
	+ **“Outcome of Ultrasonographic Hip Abnormalities in Clinically Stable Hips”**
		- Journal of Pediatric Orthopaedics 1999
		- Sucato et al.
* **Baby ST**
	+ **6 week old female**
	+ **Sister of patient who has had open reduction of DDH after presentation at age 2 years**
	+ **Repeat Cesarean section**
* **Baby ST: physical exam**
	+ **Negative Galeazzi and Barlow signs**
	+ **Symmetrical full abduction of hips**
	+ **Left hip feels “loose”**
* **Ultrasound: Compare these…**
	+ **The hip is moving laterally and superiorly with stress, indicating laxity, and acetabulum dysplastic.**
* **PAVLIK HARNESS**
	+ **Age < 6 months**
	+ **Hip flexion 90-100 degrees**

**Limits extension and adduction**

**Loose across chest**

* **Pavlik Position**
	+ **No forced abduction! (3 fingers)**
	+ **Hips fall into abduction**
	+ **This drops the femoral head into the acetabulum**
* **My Pavlik Protocol**
	+ **Fit at initial visit if hip unstable (93% success TSRH) or dislocated**
	+ **Or if dysplasia severe and baby 6 weeks old**
	+ **Nurse calls in one day**
	+ **See at 1 week with ultrasound in harness without stress**
	+ **See every other week to adjust straps**
	+ **Repeat ultrasound at 6 weeks with stress to see if normalized**
* **Baby ST**

**After 1 month of Pavlik treatment (harness removed at 6 weeks)**

* **Baby S**
	+ **2 month old female**
	+ **Birth weight 4 pounds 5 ounces**
	+ **History oligohydramnios**
* **Baby S: physical exam**
	+ **R hip: full abduction**
	+ **L hip: abduction 30 degrees less**
	+ **No feeling of instability (Barlow and Ortolani negative)**
	+ **Symmetric leg lengths**
* **Ultrasound Right Hip**
	+ **Dislocated Hip (with limited abduction)**
* **Ultrasound 1 week after Pavlik begun**
	+ **How long to treat this hip?**
		- **6 weeks usually adequate in hips that stabilize in 1 week**
		- **Longer periods of time for older children**
		- **Used to be 2x patient’s age at presentation + 6 weeks**
		- **Harness removal guided by stress ultrasound**
		- **Identifies residual instability which requires longer treatment**
* **CMM**
	+ **Presents at 5 weeks**
	+ **R hip: Ortolani positive**
	+ **L hip: Ortolani negative**
* **Ultrasound showed bilateral dislocated hips**
* **Harness started**
* **Sonogram 1 week in harness: still dislocated**
* **When to abandon treatment?**
	+ **Femoral nerve palsy**

**Remove harness and allow recovery**

* + **TIP: I find texted picture or video from phone very helpful when parents unsure**
* **Harness Induced Femoral Nerve Palsy**
	+ **“Femoral Nerve Palsy in Pavlik Harness Treatment for DDH”**
	+ Murnaghan et al.
	+ Journal of Bone and Joint Surgery (Am) 2011
		- Incidence 2.5%
		- 87% present in first week
		- More likely in older, bigger babies with dislocated hips
		- Always recovers
		- Success decreases from 94% to 47% if palsy occurs
		- TIP: refit harness as soon as palsy resolves
* **2.5 months old**
	+ **In harness for 2 weeks after nerve palsy recovered**
	+ **L Ortolani negative**
	+ **R shallow Ortolani positive**
	+ **Hips are not responding**
* **Pavlik abandoned and scheduled for closed reduction**
	+ **“Developmental Hip Dysplasia Potentiated by Inappropriate Use of the Pavlik Harness”**
		- Jones, Schoenecker and Dias
		- Journal of Pediatric Orthopaedics 1992
		- Persistance with harness in light of dislocation worsens the posterolateral acetabular development
		- Decreases likelihood of closed reduction
		- IHDI study from 2016 questions this
* **CMM age 10**
	+ **10 years s/p medial open reduction of left hip and closed reduction of right hip**
	+ **TIP: Continued harness use (>4wks) with dislocated hip worsens likelihood of closed reduction**
* **DC: 3 wks old**
	+ **Left hip stable**
	+ **Right hip dislocated**
	+ **Pavlik begun**
	+ **Out for baths?**
		- I do when hip stabilizes
* **EXAM p 2w in harness**
	+ **Still feels like reducible**
	+ **Falls out with “any adduction”**
	+ **Shallow feel to reduction**
	+ **Femoral nerve intact**
	+ **Rx???**
* **DC**
	+ **Transitioned to abduction orthosis**
	+ **Ultrasound 11 days later…reduced!**
* **Abduction Orthosis**
	+ **Can successfully reduce SOME hips when Pavlik fails**
	+ **Sankar described 83% success (JBJS 2015)**
	+ **San Diego advises using if hip still unstable after 3 weeks**

**“Use of Abduction Brace for Developmental Dysplasia of the Hip after Failure of Pavlik Harness Use”**

* + Hedequist et al
	+ Journal of Pediatric Orthopaedics 2003