Inclusion criteria:

- Patients performed the FPAW first. They walked 20 feet at baseline foot progression, and then again with 15º of internal rotation and 15º of external rotation, measured by a goniometer. Pain at baseline was documented. A positive test was defined by an increase in hip pain with internal rotation or external rotation during the 'Internal FPAW' test.

- Imaging exhibited FAI in 72 patients, instability in 42 and normal anatomic variants in 14.

Exclusion criteria:

- Patients with a history of previous surgery
- Associated back/knee pain
- Foot progression
- Imaging exhibited FAI in 72 patients, instability in 42 and normal anatomic variants in 14.

Impressive finding was described as 'FAI', 'dysplasia' or 'neither' by the primary surgeon. 'External FPAW' and ABER tests were equally compared for their precision in diagnosing instability.

FADIR and internal FPAW combined testing for FAI had the highest area under the curve (AUC=0.591) when compared to FAIR alone (AUC=0.511) or internal FPAW alone (AUC=0.585). Area under the curve values (AUC) were 0.69 and 0.74 for External FPAW test alone and ABER test alone, respectively. The AUC increased to 0.80 when we combined External FPAW and ABER testing.

With pain at baseline, Internal FPAW was more sensitive and less specific in detecting FAI compared to patients with no pain at baseline (p=0.005). External FPAW was also more sensitive and less specific in diagnosing instability compared to patients with pain at baseline (p=0.005)

FADIR test had a significantly better sensitivity and a significantly worse specificity than Internal FPAW to diagnose FAI (p=0.0001) for both specificity and sensitivity. ABER test had a worse but not significant sensitivity (p=0.317) and a better specificity than External FPAW to diagnose instability (p=0.005).

Foot Progression Angle Walking Test: A novel dynamic assessment for diagnosing FAI and hip instability

Ranawat A1, Slullitel P2, Satalich J1, Taylor R1, Licatesi, T1 & Gaudiani, M1
1 Hospital for Special Surgery, 2 Hospital Italiano de Buenos Aires

Objectives

Considering the need for a reliable dynamic test, we prospectively evaluated the Foot Progression Angle Walking (FPAW) test as a novel diagnostic tool for the detection of FAI and hip instability.

Methods

Inclusion criteria:
- Symptomatic unilateral hip pain
- Updated imaging (X-Ray – CT – MRI)

Exclusion criteria:
- Associated back/knee pain
- Previous surgery
- Use of cane or other device
- Tönnis > 1

Patients performed the FPAW first. They walked 20 feet at baseline foot progression, and then again with 15º of internal rotation and 15º of external rotation, measured by a goniometer. Pain at baseline was documented. A positive test was defined by an increase in hip pain with internal rotation or external rotation during the 'Internal FPAW' test for FAI and the 'External FPAW' test for hip instability respectively. Conversely, FADIR, FABER, ABER and sub-spine impingement tests were done. Imaging findings were described as 'FAI', 'dysplasia' or 'neither' by the primary surgeon. 'Internal FPAW' and FADIR tests were compared for their accuracy for FAI diagnosis. 'External FPAW' and ABER tests were equally compared for their precision in diagnosing instability.

Discussion & Limitations

- A systematic review of the accuracy and validity of physical tests in diagnosing FAI and labral pathology was conducted and found none of them were reliable to confirm or discard FAI (Tijssen et al., 2009).

- Walking reproduces very accurately pelvic kinematics at in vitro studies (Kennedy et al). Therefore, FPAW may provide the examiner with a reliable diagnostic tool for FAI and instability. In our series, we found internal FPAW more sensitive than FADIR and external FPAW more specific than ABER.

- Limitations: Asymptomatic patients were not included. Results were not compared to patients without radiological FAI and/or instability. In addition Our diagnosis of our cohort was only based off radiographic parameters which has a degree of error associated with that, and inter-observer reliability.

Conclusions

- FPAW test was an effective dynamic tool to diagnose hip pathology in patients with FAI and instability. It also proved more beneficial when used in conjunction with FADIR and ABER.

- FPAW should be considered a useful adjunct to help the diagnosis of various hip pathologies during examination.

References


Abbreviations:
- FAI: Femoroacetabular impingement
- ABER: Abduction Interval Rotation