

Pelvic incidence is not correlated with pelvic mobility in non-arthritic patients with hip pain and positive impingement test

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Introduction

Pelvic mobility, calculated as the change (Δ) in pelvic tilt (PT) or sacral slope (SS) between extreme positions, is suggested to correlate with pelvic incidence (PI) in non-arthritic patients with femoroacetabular impingement (FAI). Furthermore, FAI symptomatology is suggested to depend on pelvic mobility, as the same cam lesion could be symptomatic in hip users ($PI < 40^\circ$), but asymptomatic in spine users ($PI \geq 40^\circ$). This study aims to assess pelvic mobility's repeatability (ΔSS and ΔPT) and its association with PI in non-arthritic hip pain patients with a positive impingement test.

Methods

The cohort comprised 82 patients aged 31.8 ± 7.4 , with hip pain and positive impingement test. Stereoradiographic images were acquired in three positions (neutral standing, neutral sitting, and flexed-forward sitting). PI, pelvic tilt (PT), and sacral slope (SS) were measured. Repeatability was evaluated. Pelvic mobility was calculated as ΔPT and ΔSS from i) standing to sitting, ii) neutral to flexed-forward-sitting, and iii) maximum to minimum values. Correlations of PI with PT, SS, ΔPT , and ΔSS were assessed.

Results

Repeatability was excellent for all pelvic mobility measurements (intraclass correlation coefficients, ICC > 0.97). ΔPT was $25.9 \pm 8.3^\circ$ from standing to sitting, $14.4 \pm 11.2^\circ$ from standing to flexed-forward-sitting, and $37.8 \pm 13.7^\circ$ from maximum to minimum values. ΔSS was $24.0 \pm 7.6^\circ$ from standing to sitting, $14.2 \pm 11.6^\circ$ from standing to flexed-forward-sitting, and $35.9 \pm 13.7^\circ$ from maximum to minimum values. PI was strongly correlated with PT in standing ($r=0.7$) and SS in standing ($r=0.7$), and moderately correlated with PT in sitting ($r=0.6$) and SS in sitting ($r=0.5$), but was not correlated with neither ΔPT nor ΔSS ($r < 0.3$).

Conclusion

Pelvic mobility, calculated as ΔPT and ΔSS , has excellent repeatability, and is not correlated with PI in non-arthritic patients with hip pain. Therefore, PI should not be considered for diagnosis and treatment of painful hips with positive impingement test, nor to distinguish hip users from spine users.