

John J. Joyce Award First Place Winner

Vascular Safe Zones during Hip Arthroscopy

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Summary:

We describe vascular safe zones using anatomic and intra-capsular landmarks to provide a valuable intra-operative guide to reduce risk of damage to the femoral head blood supply.

Abstract:

Introduction:

Hip arthroscopy is growing in incidence and utility due to advances in technique, improved technology and increased demand. Identifying vascular safe zones using anatomic and intra-capsular landmarks provides a valuable intra-operative guide to reduce risk of damage to the femoral head blood supply during femoral neck osteoplasty and psoas tendon release.

Methods:

We analyzed 76 consecutive contrast enhanced magnetic resonance scans obtained for patients diagnosed with femoral acetabular impingement. High-resolution 3-dimensional scans were reconstructed to visualize the vasculature. We traced the medial femoral circumflex artery (MFCA) course from the anterior thigh to the femoral head. Specific attention was paid to its proximity to the psoas tendon at the site of release and the retinacular vessel course in relation to the femoral neck.

Results:

The MFCA was found inserting on the medial posterior superior femoral neck from 10:30 to 12:00 o'clock position on the femoral neck shaft, just posterior the lateral synovial fold, and progressed medially on the femoral neck via an average of 4 retinacular vessels (range 2 - 5) in the same 10:30 to 12:00 o'clock arc before diving subchondral a mean 5mm medial to the osteochondral junction. 97% of vessels were posterior to 12 o'clock. The MFCA passes posteriorly a mean distance of 50% (SD 8%) between the lesser trochanter and inferior femoral head/acetabular junction, a mean 15 mm (SD = 0.37mm) medial to the medial cortex of the femoral neck. 100% of our measurements found the MFCA within the middle third zone.

Conclusion:

We define the following safe zones: Femoral Neck Safe Zone is on the anterior half of the femoral neck; Psoas Tendon Release Safe Zone is proximal or distal to the middle third of the medial hip capsule between the lesser trochanter and inferior femoral head/acetabular junction.