

Morphometric analysis of the surgical corridor in the anterior to psoas approach: an MRI study in the Brazilian population.

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Introduction: Advances in spinal surgical techniques and surgical instruments have allowed minimally invasive surgical approaches to become a safe alternative to traditional open techniques and often the preferred choice for many surgeons. A clear understanding of the anatomical characteristics of the surgical corridor of the anterior to psoas, or pre-psoas, approach can be an effective measure to avoid intraoperative complications. The aim of this study is to perform a morphometric analysis and explore the characteristics of the surgical corridor of the anterior to psoas approach in the Brazilian population. **Materials & Methods:** Two hundred lumbar spine magnetic resonance imaging (MRI) scans were evaluated. The exams were chosen randomly from patients who sought medical attention with a complaint of low back pain/sciatica between January 2018 and June 2020 at Hospital Vera Cruz, in Belo Horizonte/MG, Brazil. The relationship between the left psoas muscle and the abdominal aorta or the left common iliac artery were retrospectively analyzed. L2-3, L3-4 and L4-5 axial and sagittal images were studied, and morphometric parameters associated with anterior to psoas approach were measured and recorded. The anterior to psoas corridor was defined as the shortest distance between the posterolateral aspect of the aorta or inferior vena cava or the nearest iliac vessel and the anteromedial aspect of the ipsilateral psoas muscle. **Results:** There were 104 females and 96 males with a mean age of $49,68 \pm 2.04$ (range 18–80) years. Surgical corridors anterior to psoas at the L2-L5 discs levels were found in most magnetic resonance imaging scans studied. The surgical corridor had its largest size at the most cranial level and decreased in size until the most caudal level. The mean anterior to psoas distance at the L2-L3 level was $14,17 \pm 0.75$ mm; at the L3-L4 level was $12,08 \pm 0.77$ mm and at the L4-L5 level was $9,12 \pm 0.77$ mm. The surgical corridors at all levels were found to be larger in older population. **Conclusions:** The anterior to psoas approach can be a good alternative for lumbar intervertebral fusion in most Brazilian patients. Elderly population has a larger surgical corridor in the anterior to psoas approach and thus is more likely to have an easier access without the need to retract the psoas muscle. As a routine in preoperative examination and surgical planning, lumbar MRI has a fundamental importance in preoperative evaluation for anterior to psoas approach surgery.