

Iliolumbar ligament ossification: what research with this finding?

Abstract

The iliolumbar ligament is described as a biomechanically important ligament for the lumbopelvic region; it extends from the transverse processes of the 4th and 5th lumbar vertebrae to the iliac crest. Alterations of the iliolumbar ligament are attributed to trauma and assumed to be an important source of low back pain syndrome having a great economic impact. Changes in iliolumbar ligament morphology relating to the low back pain syndrome have not been deeply studied.

The iliolumbar ligament (IL) is a culpable ligament of reducing sacroiliac joint movement, due to its cranial margin. The IL engages in body weight transmission to the lower extremity, stabilizing the vertebral spine and the pelvis, as the major ligament responsible for that. Besides that, the spinal flexion is a consequence movement, unleashed by the anterior band of the IL.

Keywords: ligaments, anatomy & histology, female, adult, radiography

Volume 5 Issue 4 - 2018

Márcio Luís Duarte,¹ And Yara Particelli Gelmini,² Élcio Roberto Duarte³

¹Radiology, Webimagem, São Paulo, Brazil

²Radiology, Prevent Senior, Santos, São Paulo, Brazil

³Radiology, Hospital Irmã Dulce, Praia Grande, São Paulo, Brazil

Correspondence: Márcio Luís Duarte, Webimagem, Avenida Marquês de São Vicente 446, São Paulo, Brazil, Email marcioluisduarte@gmail.com

Received: April 04, 2018 | **Published:** July 17, 2018

Abbreviations: IL, iliolumbar ligament; MRI, magnetic resonance imaging; CT scan, computed tomography scan

Introduction

The iliolumbar ligament (IL) is a culpable ligament of reducing sacroiliac joint movement, due to its cranial margin.¹ The IL engages in body weight transmission to the lower extremity, stabilizing the vertebral spine and the pelvis, as the major ligament responsible for that.¹ Besides that, the spinal flexion is a consequence movement, unleashed by the anterior band of the IL.¹

The ligaments that afford to lumbosacral spine being stable with the pelvis include the interosseous, ventral and dorsal sacroiliac, sacrospinous, sacrotuberous, and iliolumbar ligaments.² IL is one of the main references in the counting of the vertebrae, especially lumbar, and transition vertebrae.³

Case presentation

83 years-old female patient complains of a progressive backache pain for five years. She denies trauma or previous disease. Her parents were healthy. Lumbar spine and pelvis X-ray were performed, and demonstrated:

- Ossification of the left iliolumbar ligament.
- Degenerative changes in the lumbar spine and pelvis-hip osteoarthritis.
- Calcified atherosclerotic plaques in the abdominal aorta.

The patient did not present hyperparathyroidism, ankylosing spondylitis or Idiopathic skeletal hyperostosis, having a degenerative disease or a variation of normality as a probable etiology of the iliolumbar ligament ossification (Figure 1) (Figure 2).



Figure 1 Anteroposterior X-Ray of the pelvis that demonstrates the ossification of the left iliolumbar ligament from the left transverse process of the fifth lumbar vertebra to the iliac crest (black arrow).



Figure 2 Anteroposterior lumbar spines X-Ray demonstrating the same ossification of the left iliolumbar ligament (white arrow).

Discussion

The IL is a part of the three vertebropelvic ligaments.⁴ The other two are the sacrotuberous and the sacrospinous ligaments and are characterized as being linked to the hip and the inferior anterior part of the transverse process of the fifth lumbar vertebra with, sporadically, a fragile attachment to the transverse process of the fourth lumbar vertebra.⁴ The ligament is settled to course laterally and lightly posteriorly and to attach into the top of the iliac crest.⁴

Luk et al.,³ demonstrated that there's no iliolumbar ligament at birth. However, the iliolumbar ligament develops continuously in the first decade and reaches complete separation in the second decade of life.³ They also stated that with advancing age, the intervertebral discs degenerate and iliolumbar ligaments undergo gradual hyalinization, fatty infiltration, and myxoid deposition.⁴

There is also described a lower band of the ligament, often denominated the lumbosacral ligament, which courses from the lower aspect of the fifth lumbar transverse process to the anterior part of the all of the sacrum.⁴ Along with a robust L5-S1 intervertebral disc, the iliolumbar ligament stabilizes the lumbosacral junction.⁴

Image tests that detect the ossification of the ligament iliolumbar are radiography, as our case, CT scan, and MRI.⁵ In one case it was detected on bone scintigraphy.⁶ In degenerative spondylolisthesis, it is recognized that the sliding of the fourth lumbar vertebra on the fifth vertebra is six times more common when compared to the slide between the fifth lumbar vertebra on the sacrum.⁷

The possible causes of ligament iliolumbar calcification or ossification, include:

- a. Hypoparathyroidism.^{5,8}
- b. Ankylosing spondylitis - seropositive inflammatory spondylarthropathies in general.^{7,8}
- c. Idiopathic skeletal hyperostosis – DISH.⁹
- d. Degenerative diseases.¹⁰
- e. Normal variation.¹¹

There is one case report of iliolumbar ligament ossification in a patient with ankylosing spondylitis, but seronegative for HLA-B27.⁷

Conclusion

In cases of iliolumbar ligament ossification, seropositive inflammatory spondylarthropathies should be promptly investigated, especially when there are symptoms.

This finding should only be taken as a normal variation when the symptoms do not exist and possible pathologies are discarded.

Acknowledgements

Not applicable.

Conflict of interest

The author declares that there is no conflict of interests regarding the publication of this paper.

Patient consent

The written informed consent of the patient was obtained, for the publication of her case.

References

1. Hammer N, Steinke H, Bohme J, et al. Description of the iliolumbar ligament for computer-assisted reconstruction. *Ann Anat.* 2010;192(3):162–167.
2. Navallas M, Ares J, Beltrán B, et al. Sacroiliitis associated with axial spondyloarthritis: new concepts and latest trends. *Radiographics.* 2013;33(4):933–956.
3. Carrino JA, Campbell PD Jr, Lin DC, et al. Effect of spinal segment variants on numbering vertebral levels at lumbar MR imaging. *Radiology.* 2011;259(1):196–202.
4. Luk KD, Ho HC, Leong JC. The iliolumbar ligament. A study of its anatomy, development and clinical significance. *J Bone Joint Surg Br.* 1986;68(2):197–200.
5. Jakkani RK, Sureka J, Mathew J. Spondyloarthritis occurring in long-standing idiopathic hypoparathyroidism. *Radiol Case Rep.* 2011;6(4):545.
6. Sohn MH, Lim ST, Jeong HJ, et al. Iliolumbar ligament ossification demonstrated on bone scintigraphy: a normal variant. *Clin Nucl Med.* 2009;34(8):512–514.
7. Wiltse LL, Newman PH, Macnab I. Classification of spondylolysis and spondylolisthesis. *Clin Orthop.* 1976;(117):23–29.
8. Azad KAK, Hossain MZ, Hussain T, et al. Skeletal manifestations of hypoparathyroidism & spondyloarthropathic features in hypoparathyroidism. *J Dhaka Med Coll.* 2013;22(1):72–76.
9. Olivieri I, Padula A, Pierro A, et al. Iliolumbar ligament ossification in undifferentiated seronegative spondyloarthritis. *Clin Rheumatol.* 1997;16(2):212–214.
10. Taylor JAM, Hugles TH, Resnick DL. *Skeletal Imaging.* 2nd ed. Buffalo, New York: Saunders; 2009:1088.
11. Keats, TE, Anderson MW. Atlas of normal Roentgen variants that may simulate disease. 9th ed. Charlottesville, Virginia, USA: Saunders; 2013:816.