

Pelvic incidence-lumbar lordosis

Pelvic incidence-lumbar lordosis (PI-LL: PI minus LL)

The importance of **pelvic incidence-lumbar lordosis** (PI-LL: PI minus LL) mismatch is emphasized in long-segment fusion for adult spinal deformity; however, there are few studies evaluating the influence of PI-LL on surgical outcomes after short-segment fusion.

In degenerative disease of the lumbar spine a high pelvic incidence with diminished lumbar lordosis seems to predispose to **adjacent segment disease**. Patients with such pelvic incidence-lumbar lordosis mismatch exhibit a 10-times higher risk for undergoing revision surgery than controls if sagittal malalignment is maintained after lumbar fusion surgery ¹⁾.

Minimally invasive surgery (MIS) techniques are increasingly used to treat **adult spinal deformity**. However, standard minimally invasive spinal deformity techniques have a more limited ability to restore **sagittal balance** and match the pelvic incidence-lumbar lordosis (PI-LL) than traditional open surgery.

Than et al recommend that **spinal deformity** surgeons using MIS techniques focus on correcting a patient's PI-LL mismatch to within 10° and restoring sagittal vertical axis (SVA) to < 5 cm. Restoration of these parameters seems to impact which patients will attain the greatest degree of improvement in **ODI** outcomes, while the spines of patients who do the worst are not appropriately corrected and may be fused into a fixed sagittal plane deformity ²⁾.

¹⁾

Rothenfluh DA, Mueller DA, Rothenfluh E, Min K. Pelvic incidence-lumbar lordosis mismatch predisposes to adjacent segment disease after lumbar spinal fusion. Eur Spine J. 2015 Jun;24(6):1251-8. doi: 10.1007/s00586-014-3454-0. Epub 2014 Jul 14. PubMed PMID: 25018033.

²⁾

Than KD, Park P, Fu KM, Nguyen S, Wang MY, Chou D, Nunley PD, Anand N, Fessler RG, Shaffrey CI, Bess S, Akbarnia BA, Deviren V, Uribe JS, La Marca F, Kanter AS, Okonkwo DO, Mundis GM Jr, Mummaneni PV; International Spine Study Group. Clinical and radiographic parameters associated with best versus worst clinical outcomes in minimally invasive spinal deformity surgery. J Neurosurg Spine. 2016 Jul;25(1):21-5. doi: 10.3171/2015.12.SPINE15999. Epub 2016 Mar 4. PubMed PMID: 26943254.

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