MIS Laminectomy in Patients with Compensated and Decompensated Sagittal Imbalance

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The primary goal of minimally invasive (MIS) laminectomy is to decompress the stenotic spinal canal in order to relieve neurogenic leg or back pain while minimizing trauma to surrounding parasapinal muscles.

However, the importance of sagittal balance is now well known as it relates to postoperative pain and function.

To date, no study has studied the effect of sagittal balance on outcomes after MIS laminectomy.

The purpose of this study was to determine the association of sagittal balance, either compensated or decompensated, with outcomes after MIS laminectomy.
Methods

• Multivariate analysis was used to determine the effect of sagittal parameters on ODI controlling for other confounding factors.

• Sagittal parameters (pelvic incidence-lumbar lordosis mismatch [PI-LL], pelvic tilt [PT], and sagittal vertebral axis [SVA]) were measured on early (2-3 week) postoperative imaging.

• Sagittal parameters were correlated with Oswetry disability index (ODI) at 2-, 6-, and 12-week postoperatively.
Results

• 31 patients undergoing MIS laminectomy with early postoperative EOS imaging were identified. All patients had a low operative time, hospital stay, and low rates of complications.

• At 2 weeks postoperative, there was a significant improvement in ODI in patients with elevated PI-LL (33.7 to 23.5, P < 0.05), PT (34.8 to 26.7, P < 0.05), and SVA (46.0 to 29.9, P < 0.05; Table 3).

• This significant difference from preoperative values was maintained at 12-weeks postoperative was maintained in patients with elevated SVA (46.0 to 31.0).

• In multivariate analysis elevated SVA was associated with a greater ODI at 2 weeks (+21.9, P < 0.05).

• Interestingly elevated PT and PI-LL were associated with relatively lower disability compared to baseline.(-22.7 and -22.5, respectively, P < 0.05).
Conclusion

• MIS laminectomy can produce good early outcomes and functional improvement in patients with mild to moderate sagittal imbalance.

• In patients with decompensated imbalance with SVA > 40mm, the absolute postoperative disability may be increased compared to well-aligned patients.

• But these patients do still see a statistically significant improvement in function after laminectomy.
Thank you