

Influence of surgical intervention at the level of the dorsal spinous processes on the biomechanics of the equine thoracolumbar spine

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Products

Computed Tomography (CT) for analyzing thoracolumbar spine biomechanics post-surgery.

Hospital / Authors

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Clinical Background

Surgical options for overriding dorsal spinous processes (ORDSPs) include ligament desmotomy and spinous process ostectomy. The biomechanical effects of these surgeries on equine spines remain unclear.

Aim of Study

To investigate the biomechanical impact of ligament desmotomy and cranial wedge ostectomy on thoracolumbar spines, focusing on interspinous distances, range of motion (ROM), and paraspinal musculature.

Cohort Study

Twelve equine thoracolumbar spine specimens underwent CTguided biomechanical testing in a custom mechanical rig before and after surgical interventions.

Results

- Interspinous distance increased significantly after ostectomy but not after desmotomy.
- Post-surgery ROM varied. Ostectomy increased flexion and extension, while desmotomy showed no significant change.
- Axial rotation and lateral bending remained unaffected by either procedure.
- Dissection revealed that desmotomy caused moderate trauma to deep paraspinal muscles, whereas ostectomy resulted in increased interspinous space and ROM.

Summary

- CT imaging enabled precise evaluation of spinal ROM and surgical effects, demonstrating significant biomechanical differences between desmotomy and ostectomy.
- Ostectomy improved interspinous flexibility and ROM, suggesting better outcomes for restoring spine mobility in ORDSP cases.
- Insights into musculature trauma and biomechanics will aid in refining surgical techniques and rehabilitation strategies.
- CT remains a critical tool for understanding equine thoracolumbar biomechanics and optimizing surgical outcomes.

<u>Link to paper</u>