

A new parallel closing mechanism for the laminectomy rongeur makes it significantly more precise: a biomechanical and mechanical comparison study

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PURPOSE

To prove that a modified closing mechanism of the rongeur gives better precision compared to the old Kerrison rongeur.

METHODS

Forty persons from the departments of orthopaedic surgery, urology and neurosurgery (35 orthopaedic, 2 urology and 3 neurosurgery) took part in the study. All participants were asked to punch ten times in a first step with either the old Kerrison rongeur with the scissors-like handle or the modified punch with a new parallel closing mechanism. In a second step, they punched 10 times with the other instrument. Shaft movement in three dimensions was measured with a stereoscopic, contactless, full-field digital image correlation system.

RESULTS

The new rongeur is significantly more precise with less movement in all three dimensions. The mechanical model of the new rongeur shows that the momentum needed to keep the tip at the initial position changes only minimally during the closing act on the new model.

CONCLUSION

The new rongeur is more precise compared to the old Kerrison model. It is more robust against changes in the direction of the finger forces and may reduce soreness, fatigue and CTS in spine surgeons.

LEVEL OF EVIDENCE

Not applicable: technical study.

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