



Aesculap Aeos[®] Robotic Digital Microscope

Immersive Visibility Meets Versatility

ENVISION THE EXTRAORDINARY[™]



AESCULAP[®]

Aesculap Aeos[®] Robotic Digital Microscope

Challenges of Traditional Optical Microscopes



40%
of surgeons reported
neck pain and
27%
reported
shoulder pain.³

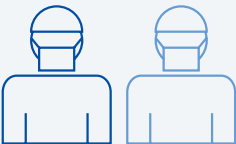
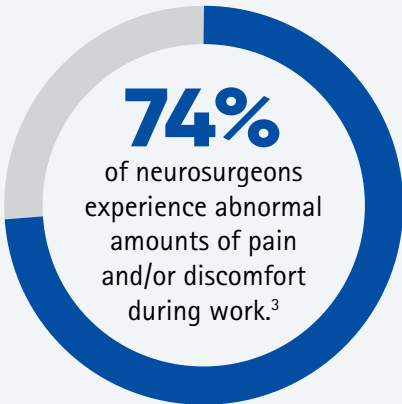
4.6%
reported surgical
intervention for
cervical disc disease
vs 0.35%
of cervical
radiculopathy
observed in the
general population.²

54%
experienced
significant cervical
and/or lumbar
discomfort while
operating.¹

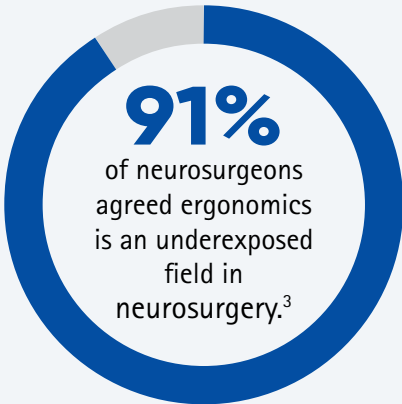
31%
reported lumbar disc
herniation and radiculopathy
with a 23% surgery rate,
versus up to 5% of the
general population.²

Neurosurgeons
have the
**highest ergonomic
risk factors**
compared to other
clinical specialties.¹

Flawed ergonomics take a toll on the health
and performance of surgeons.



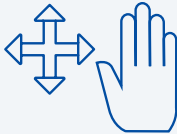
1 in 2
surgeons confirm
a negative
effect on their
performance.⁴



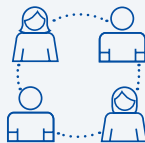
There are also technology challenges.



VISION
Small depth of field
and field of view



ADJUSTMENTS
Manual repositioning
and lack of robotic arm



WORKFLOW
Not everyone sees
what the surgeon sees



FLUORESCENCE
Inconvenient dark and 2D image



HEAT
Risk of burns from xenon light

Aesculap Aeos[®] Robotic Digital Microscope

Surgical Differentiators

**The immersive visibility you want.
The practicality you need.**

Traditional optical microscopes have remained materially unchanged for decades. Surgeons are tethered to oculars, often forcing them to choose between the view they need and a position that is comfortable to maintain. These constraints can interrupt focus and contribute to physical strain during complex procedures. The Aesculap Aeos[®] Robotic Digital Microscope reimagines surgical visualization with a heads-up, untethered design that allows ergonomics to be guided by the surgeon, supporting a more natural and comfortable surgical posture.

Surgeon-controlled robotic functionality and a fully digital visualization platform support consistent image quality, precise positioning and seamless workflow integration. Built on an upgradeable digital platform, the Aesculap Aeos[®] Robotic Digital Microscope delivers a modern visualization experience designed to support today's surgical demands and evolving clinical needs.



Improvements in

Comfort

Control

Clarity

Collaboration

Aesculap Aeos[®] Robotic Digital Microscope

Comfort



The Aesculap Aeos Robotic Digital Microscope provides heads-up positioning which frees the surgeon from the ocular tether. It's designed to deliver a highly comfortable experience—even in the most demanding procedures. Ergonomics are dictated by the surgeon, not the microscope.

Neurosurgery is hard enough. It doesn't need to be so hard on the surgeon.

- Visualize challenging viewing angles while maintaining a comfortable, upright posture without neck flexion^{5,6,7}
- Experience enhanced robotic controls with superior ergonomics and reduced fatigue compared to traditional microscopes⁸
- Agile repositioning via low profile, look-over design paired with robotic arm
- Option for hands-free, full functionality with wireless foot switch
- Handgrip and wireless foot switch controls are custom tailored for each user

Aesculap Aeos[®] Robotic Digital Microscope

Control



The Aesculap Aeos Robotic Digital Microscope features a fully robotic arm with six degrees of freedom for a range of manual and semi-automated repositioning options. These precise movements, including sub-millimeter micro movements, place the camera head exactly where it needs to be and when the surgeon needs it there.

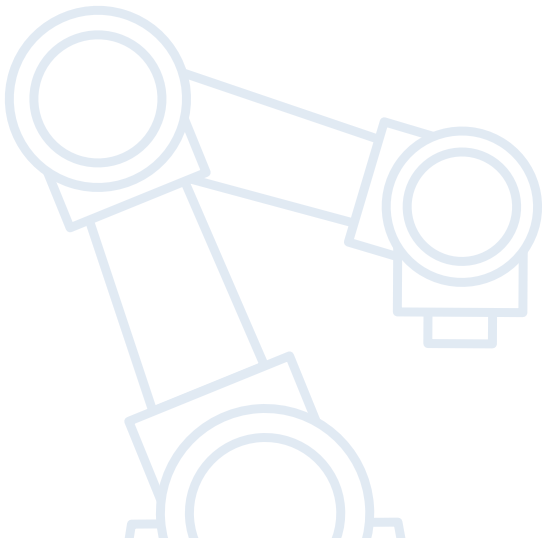
Handgrip, wireless foot pedal and touchscreen monitor present a wide range of customization and available hands-free control options.



Lock on Target
Pivot around a fixed focal point of interest



Waypoints
Seamlessly return to a previously saved location, including zoom and focus levels

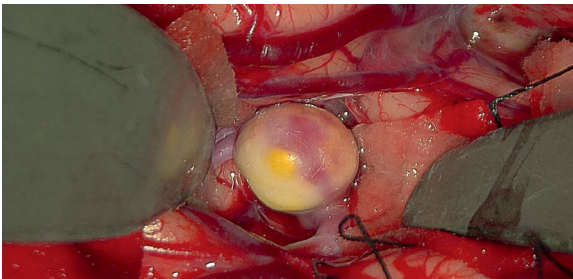


Aesculap Aeos[®] Robotic Digital Microscope

Clarity



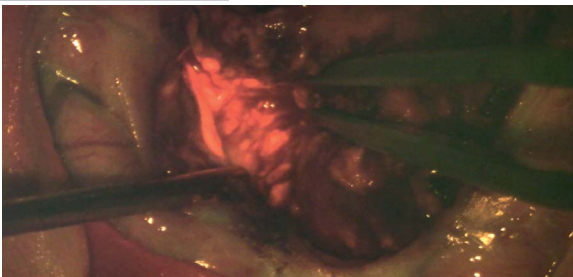
The Aesculap Aeos Robotic Digital Microscope offers full-time 3D visualization and 10x optical zoom so you can work heads up without sacrificing image quality.



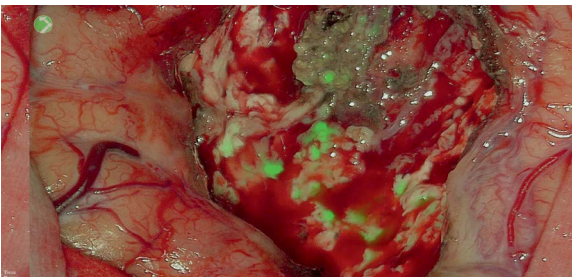
Aneurysm with white light



Aneurysm with DIR800



DUV400 higher intensity backlight



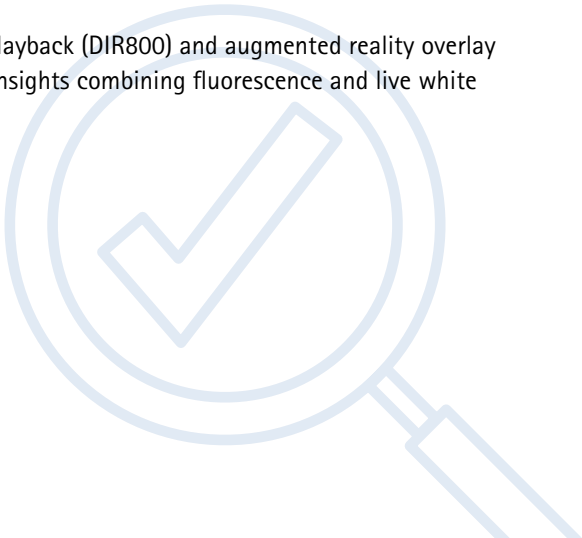
White light + DUV400 AR overlay

See More Details

- Experience the surgical field in complete focus with superior image quality and depth of field^{5,8}
- See in full resolution, regardless of magnification level, with 10x optical zoom
- Low heat co-axial LED illumination lights the entire surgical field, including deep and narrow cavities

See Beyond Tissue

- DUV400 Blue Light and DIR800 Infrared 3D digital fluorescence modes
- Adjustable backlit illumination aids visualization of fluorescing and non-fluorescing anatomy and instrumentation
- Available picture-in-picture playback (DIR800) and augmented reality overlay (DUV400) provide additional insights combining fluorescence and live white light images



Aesculap Aeos® Robotic Digital Microscope

Collaboration

The Aesculap Aeos Robotic Digital Microscope unlocks the power of the entire OR sharing the same high-quality, immersive images at the same time.



Immerse Yourself and Your Team in Procedures

- Entire operating room team has visibility with immersive 3D 4K imaging paired with High Dynamic Range (HDR) on 55" and 32" 4K 3D screens
- Optimizes collaborative communication and learning, and intraoperative teaching among assistants, trainees and anesthesiologists^{5,8,9}
- Optimizes intraoperative collaboration, communication and learning among assistants, trainees and anesthesiologists

Aesculap Aeos® Robotic Digital Microscope

Specifications

Robotic Arm

- Servo motors in each axis detect force/direction
- Six degrees of freedom (up/down, left/right, pitch, roll, yaw, forward/backward)
- Lock-on-target fixed-point orbit
- Waypoint mapping with saved zoom and focus levels and unlimited number of positions

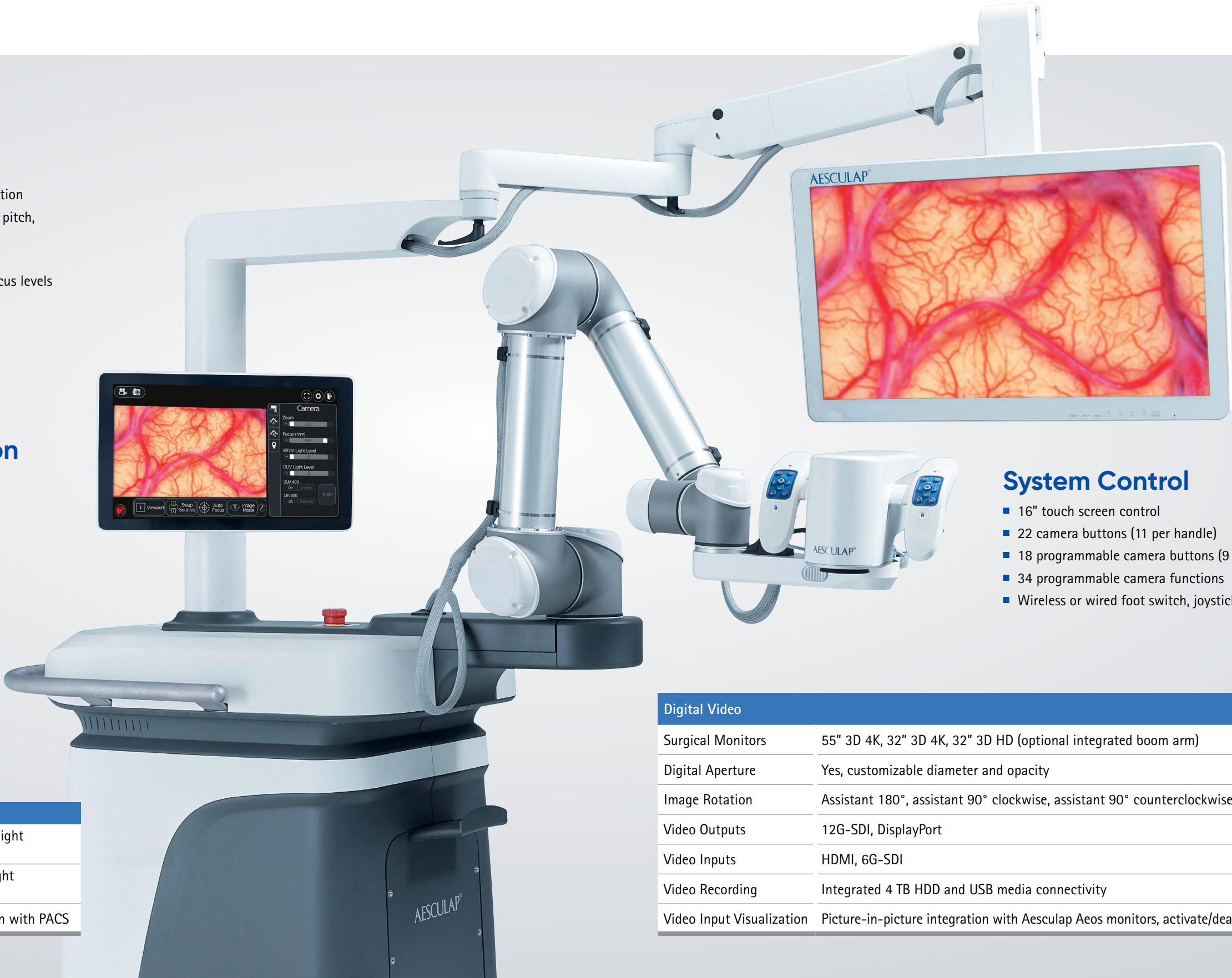
Optics and Illumination

- 3D visualization
- 10x optical zoom
- Automatic or manually focus with press of a button
- 200 mm to 450 mm working distance
- HDR imaging
- 2x coaxial LED illumination

Base dimensions – 25" x 48" x 78"

Weight – 454 lbs.

Software	
DUV400	3D blue light fluorescence, backlight illumination, AR overlay mode
DIR800	3D infrared fluorescence, backlight illumination
DICOM	Image and video data integration with PACS



System Control

- 16" touch screen control
- 22 camera buttons (11 per handle)
- 18 programmable camera buttons (9 per handle)
- 34 programmable camera functions
- Wireless or wired foot switch, joystick plus 10 programmable buttons

Digital Video	
Surgical Monitors	55" 3D 4K, 32" 3D 4K, 32" 3D HD (optional integrated boom arm)
Digital Aperture	Yes, customizable diameter and opacity
Image Rotation	Assistant 180°, assistant 90° clockwise, assistant 90° counterclockwise
Video Outputs	12G-SDI, DisplayPort
Video Inputs	HDMI, 6G-SDI
Video Recording	Integrated 4 TB HDD and USB media connectivity
Video Input Visualization	Picture-in-picture integration with Aesculap Aeos monitors, activate/deactivate/swap at press of a button

Aesculap Aeos® Robotic Digital Microscope

Ordering Information



PV010
Aesculap Aeos® Robotic Digital Microscope
Please note: PV648 and PV011 not included

PV014

AESCULAP

PRODUCT OVERVIEW

PV010 Aesculap Aeos® Robotic Digital Microscope	PV014 Footswitch, wireless	PV012SU Sterile Drape 5/box
--	--------------------------------------	--

SURGICAL MONITORS AND MONITOR STANDS

PV011 Upgrade kit for 3D monitor integration (PV648)	PV648 32" HD 3D monitor	PV016 Mobile monitor stand (for 55" monitor)
PV015 55" 4K 3D monitor	PV818 Mobile monitor stand (for PR050 and PV648)	PR050 32" 4K 3D monitor

SOFTWARE MODULES

PV022 DUV400 software	PV023 DIR800 software	PV024 DICOM software
---------------------------------	---------------------------------	--------------------------------

ACCESSORIES

PV030 White balance cards 5/box	PV032SU Test card for DUV400	PV033SU Test card for DIR800, 10/box	PV034 HDMI cable, 5 m	PV035 HDMI cable, 10 m
PV052 DP-HDMI cable, 5 m	PV053 DP-HDMI cable, 10 m	PV054 DisplayPort cable, 10 m	PV056 DP-DVI cable, 5 m	PV057 12G-SDI cable, 5 m
PV058 12G-SDI cable, 10 m	PV621 3D polarization glasses 15/box	PV622 3D anti-fog glasses 5/box	PV623 3D clip-on lens for normal glasses, 1/box	PV624 3D eye shield glasses kit 1 frame + 3 shields/box

PV969 HDMI to DVI cable, 3 m
--

References

1. Aaron KA, Vaughan J, Gupta R, Ali N-E-S, Beth AH, Moore JM, et al. (2021) The risk of ergonomic injury across surgical specialties. PLoS ONE 16(2): e0244868. <https://doi.org/10.1371/journal.pone.0244868>

2. Lavé, A., Gondar, R., Demetriades, A.K. et al. Ergonomics and musculoskeletal disorders in neurosurgery: a systematic review. Acta Neurochir 162, 2213 –2220 (2020). <https://doi.org/10.1007/s00701-020-04494-4>

3. Gadjradj PS, Ogenio K, Voigt I, Harhangi BS. Ergonomics and Related Physical Symptoms Among Neurosurgeons. World Neurosurg. (2020) 134:e432–e441. <https://doi.org/10.1016/j.wneu.2019.10.093>

4. Davis WT, Fletcher SA, Guillamondegui OD. Musculoskeletal occupational injury among surgeons: effects for patients, providers, and institutions. J Surg Res, 2014 in Surgeon News, "Shape Shifters". 2017 Sep;28-30.

5. Veldeman M, Rossmann T, Huhtakangas J, Nurminen V, Eisenring C, Sinkkonen ST, Niemela M, Lehecka M. Oper Neurosurg (Hagerstown). 2023 May 1;24(5):507–513. doi: 10.1227/ons.0000000000000602.

6. Gabrovsky N, Petrov M, Ilkov P, Iordanova I, Velinov N. Brain Spine. 2022 Aug 19;2:100928. doi: 10.1016/j.bas.2022.100928

7. Calvanese F, Auricchio AM, Vasankari V, Raj R, Gallè CLC, Niemelä M, Lehecka M. Digital 3D Exoscope is Safe and Effective in Surgery for Intradural Extramedullary Tumors: A Comparative Series. World Neurosurg. 2024 Apr;184:e1–e8. doi: 10.1016/j.wneu.2024.01.136. Epub 2024 Feb 1. PMID: 38307199.

8. Motov S, Bonk MN, Krauss P, Wolfert C, Steininger K, Picht T, Onken J, Shiban E. Sci Rep. 2022 Dec 29;12(1):22553. doi: 10.1038/s41598-022-27082-1.

9. Rossmann T, Veldeman M, Nurminen V, Huhtakangas J, Niemelä M, Lehecka M. World Neurosurg. 2023 Feb;170:e200–e213. doi: 10.1016/j.wneu.2022.10.106.



Through collaborative
excellence we will improve the
quality of a patient's life and
meet the needs of the changing
healthcare environment.

The complete Instructions for Use including, Indications, Contraindications, Warnings and Precautions, can be obtained by visiting our website at www.aesculapusaifus.com.

Aesculap, Inc. – a member of the B. Braun Group of Companies
Center Valley, PA | 800-282-9000 | aesculapusa.com

Rx only. Confidential and Proprietary. ©2025 Aesculap, Inc. All rights reserved. 26-0216_07/26
DOC1641