

Benefits of minimally invasive spine surgery (MISS) vs open surgery

BENEFITS FOR PATIENTS

REDUCED

- Damage to surrounding tissue^{1,2}
- Scarring¹
- Complication rates³
- Infections¹

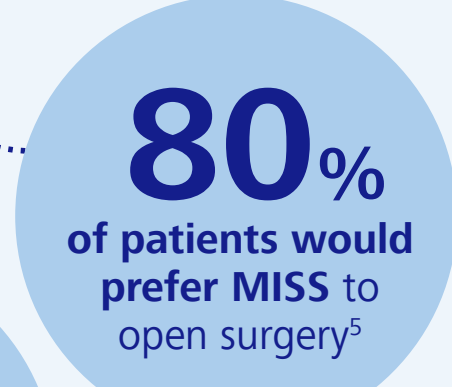
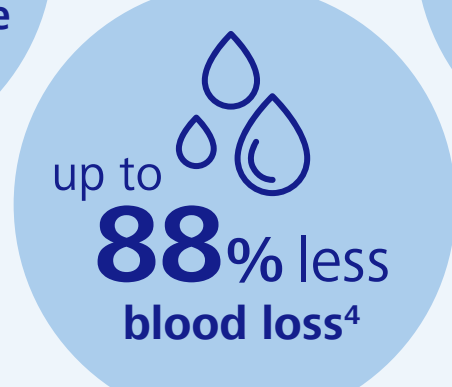


FASTER

■ Recovery, e.g., **22 hours** (n=36) vs **31 hours** (n=29) for mobilization in fusion surgery³

PREFERRED

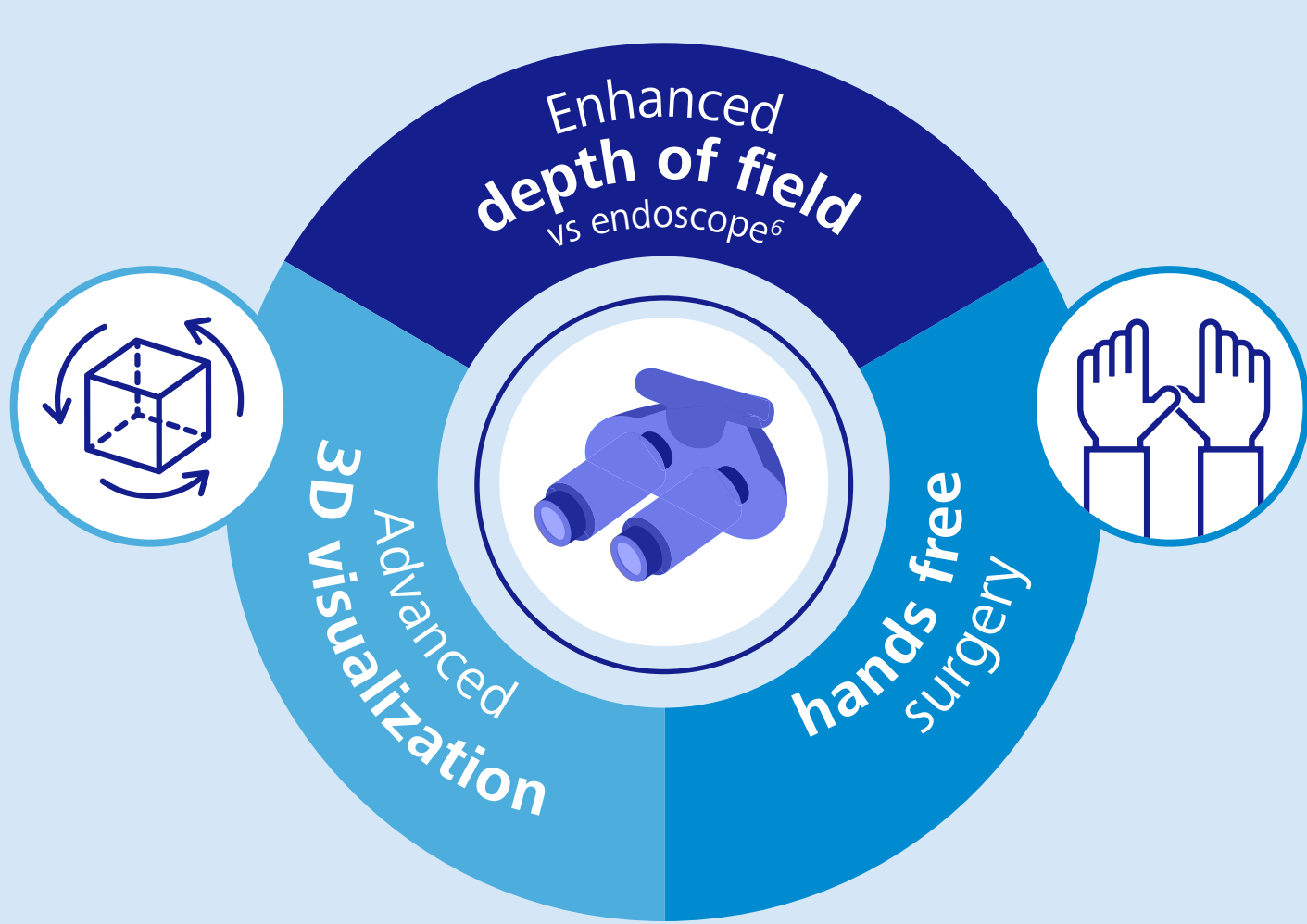
- **Better pain management**, e.g., post-operative IV morphine use 86 mg (n=37) vs 169 mg (n=26)³



Microscopes vs Endoscopes

Lower incidence of dural tears in MISS⁶

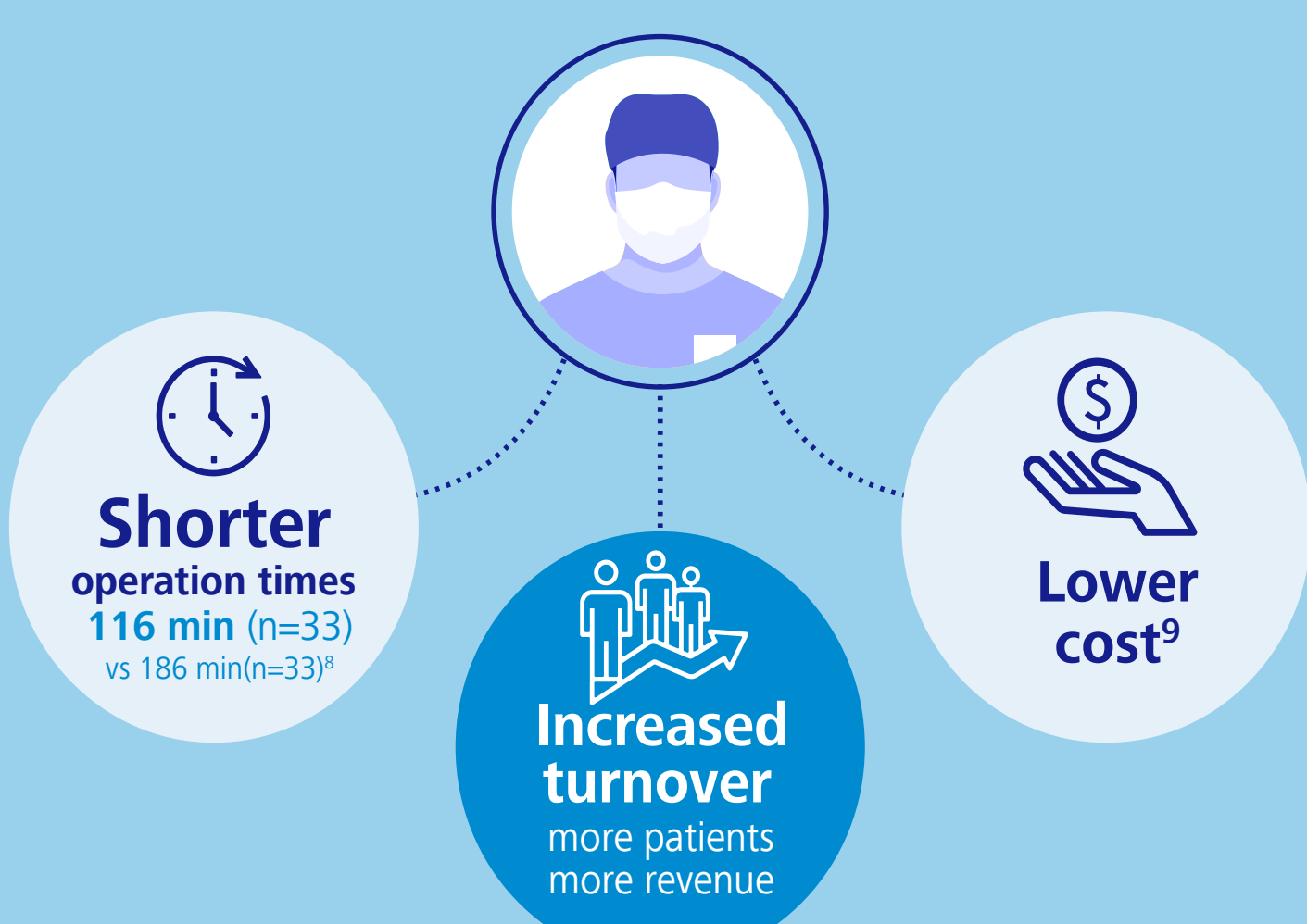
VITAL ROLE OF MICROSCOPE USE IN MISS



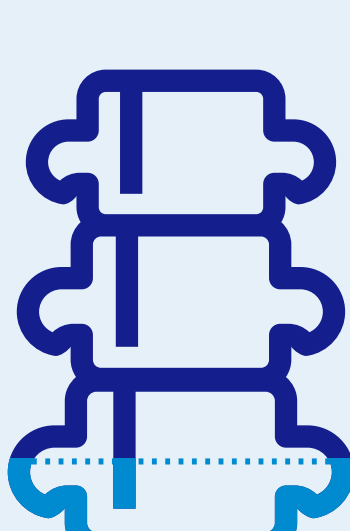
LONGER OPTICS
LONGER WORKING DISTANCE⁷

“ I THINK IT ALLOWS YOU TO PERFORM SURGERY IN A LIMITED SPACE **MUCH SAFER & MUCH MORE EFFICIENTLY**⁷ ”

BENEFITS FOR SURGEONS/HOSPITALS



A GROWING OPPORTUNITY



Underutilization¹⁰: only **10–20%** of spine surgeries in the US use **minimally invasive techniques**¹¹

¹ Douglas G. Orndorff, M.D. et al., "Minimally Invasive Approaches For Spine Surgery", Journal Of The Spinal Research Foundation 8, no. 1 (2013): 49–55.

² Jian Wang et al., "Comparison Of One-Level Minimally Invasive And Open Transforaminal Lumbar Interbody Fusion In Degenerative And Isthmic Spondylolisthesis Grades 1 And 2", European Spine Journal 19, no. 10 (2010): 1780-1784, doi:10.1007/s00586-010-1404-z.

³ Ralph J. Mobbs, Praveenan Sivabalan and Jane Li, "Minimally Invasive Surgery Compared To Open Spinal Fusion For The Treatment Of Degenerative Lumbar Spine Pathologies", Journal Of Clinical Neuroscience 19, no. 6 (2012): 829-835, doi:10.1016/j.jocn.2011.10.004. Prospective study comparing open surgery to MIS for fusion for degenerative lumbar spine pathologies (N=82).

⁴ Christina L. Goldstein, Frank M. Phillips and Y. Raja Rampersaud, "Comparative Effectiveness And Economic Evaluations Of Open Versus Minimally Invasive Posterior Or Transforaminal Lumbar Interbody Fusion", SPINE 41, no. 8 (2016): S74–S89, doi:10.1097/brs.0000000000001462.

45 studies with 3,472 patients undergoing MISS and 5,925 undergoing open spine surgery. Patients undergoing MISS demonstrated less blood loss, ranging from 16.1% to 88.7%.

⁵ Ankur S. Narain et al., "Patient Perceptions Of Minimally Invasive Versus Open Spine Surgery", Clinical Spine Surgery 31, no. 3 (2018): E184-E192, doi:10.1097/bsd.0000000000000618. 326 patients scheduled to see either MIS or OS spine surgeon filled out questionnaire about their perceptions of MIS vs OS.

⁶ Marco Teli et al., "Higher Risk Of Dural Tears And Recurrent Herniation With Lumbar Micro-Endoscopic Discectomy", European Spine Journal 19, no. 3 (2010): 443-450, doi:10.1007/s00586-010-1290-4.

⁷ Megan Wood, "The Role Of The Surgical Microscope In Modern MISS", Becker's Spine Review, 2017.

⁸ Kern Singh et al., "A Perioperative Cost Analysis Comparing Single-Level Minimally Invasive And Open Transforaminal Lumbar Interbody Fusion", The Spine Journal 14, no. 8 (2014): 1694-1701, doi:10.1016/j.spinee.2013.10.053.

Non-randomized, non-blinded prospective review to determine the differences in hospitalization costs and payments for 66 patients treated with primary single-level MIS versus open transforaminal lumbar interbody fusion (TLIF).

⁹ Michael Y. Wang et al., "Acute Hospital Costs After Minimally Invasive Versus Open Lumbar Interbody Fusion", Journal Of Spinal Disorders & Techniques 25, no. 6 (2012): 324-328, doi:10.1097/bsd.0b013e318220be32.

¹⁰ M. A. Cooper et al., "Hospital Level Under-Utilization Of Minimally Invasive Surgery In The United States: Retrospective Review", BMJ 349, no. 088 (2014): g4198-g4198, doi:10.1136/bmj.g4198.

¹¹ MedStar Center, "Six Myths About Minimally Invasive Spine Surgery", Medstar Washington Hospital Center, Last modified 2018, <https://www.medstarwashington.org/our-services/neurosciences/treatments/minimally-invasive-spine-surgery/six-myths-about-minimally-invasive-spine-surgery/>.