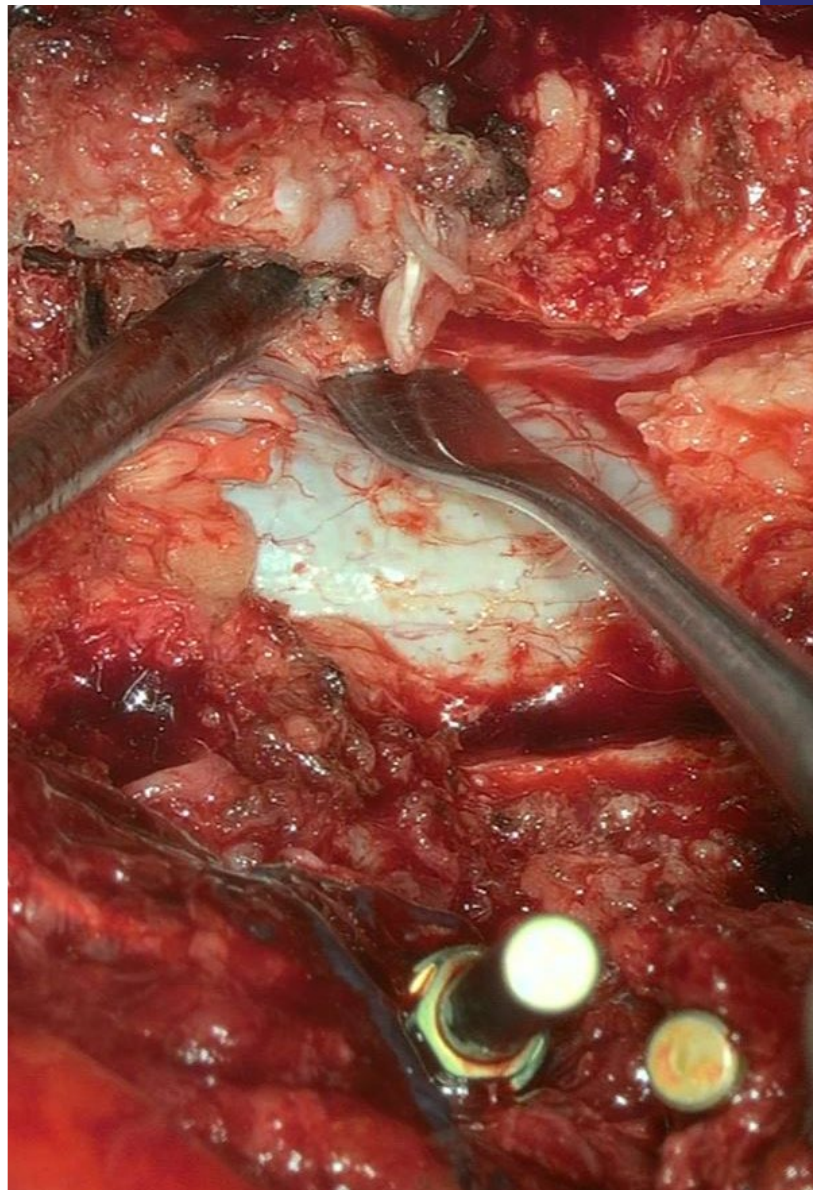


# ORBEYE® in Spine Surgery

Advanced Visualization for Entire Spectrum of Spinal Procedures



# ORBEYE in Spine Surgery



## Spine Procedures:

- Microdiscectomy
- Laminectomy
- ACDF: Anterior Cervical Discectomy and Fusion
- PLIF: Posterior Lumbar Interbody Fusion
- TLIF: Transforaminal Lumbar Interbody Fusion
- MIS Spine (Minimally Invasive Spine Surgery)
- Open Lumbar Spine Decompression
- Direct Lateral (OLIF & XLIF)
- Spondylolysthesi Deformity Correction
- Spinal Cord Stimulator Placement
- Spinal Cord Tumor Resection
- And more...

[Click here to learn more about the ORBEYE Fair Balance Statement.](#)

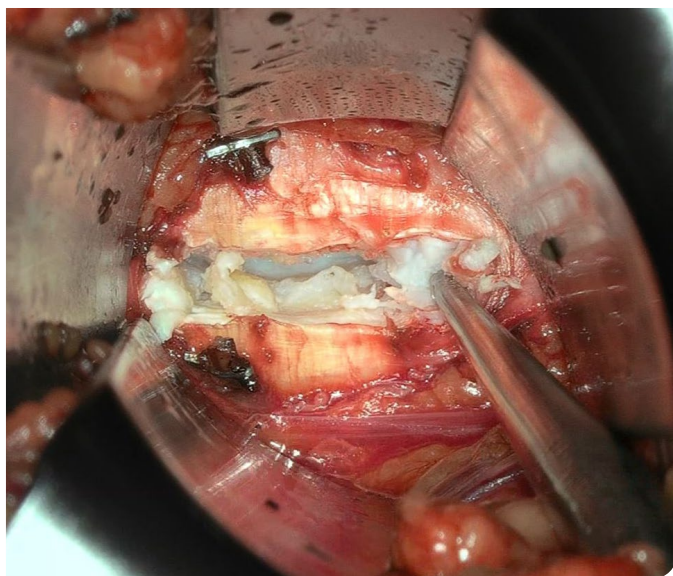
# ORBEYE in Spine Surgery

## Spine Surgery

The ORBEYE Exoscope provides advanced visualization for the entire spectrum of spinal procedures, while allowing ample room for the use of all necessary tools such as retractors, spacers, screws etc.

Untethered magnification and easy change of focus length with a simply press of a button allows for sharp 4K 3D display of anatomical structures through all stages and moments during the surgical procedure. Adjustments can be achieved seamlessly, even under very high magnification, using autofocus and optical and digital zoom. Manual adjustments can be made with the touch of a button or hands-free using the programmable foot pedal.

The small footprint of the ORBEYE allows for comfortable positioning and easy room set up, with the opportunity for surgeons to face each other, each having their own monitor for ergonomic heads-up surgery, including image rotation to provide anatomical correct orientation and uninterrupted view in true 4K and 3D.



*4K 3D visualization allows for sharp display of anatomical structures with seamless autofocus, optical and digital zoom capabilities.*



“ A 4K 3D exoscope as the ORBEYE represents for that a new era, a new way in visualization in surgery through the beginning of a new way to do spinal surgery. ”

**Dr. Stefano Peron**

*Department of Neurosciences – Neurosurgical Unit, Legano Hospital Milan Italy*

[Click here to learn more about the ORBEYE Fair Balance Statement.](#)

# ORBEYE in Spine Surgery

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## ORBEYE Exoscope

The ORBEYE untethers the surgeon from the traditional lens-based microscope and offers a more ergonomic and comfortable heads-up posture during these many hour-long procedures.

The ORBEYE exoscope has been designed and developed to be used to provide magnified observation and recording of surgical sites with revolutionary true 4K 3D in ergonomic heads-up fashion. In addition, it allows the entire surgical team to participate in real time and provides an immersive experience. The ORBEYE offers natural depth perception and visualization with high magnification in true 4K 3D—without any time delay.



### Agile Autofocus and Optical and Digital Zoom

The very agile autofocus keeps your surgical field in focus at all times, reducing the need for manual focusing. The optical zoom function allows you to quickly zoom in and out as needed. Digital zoom provides fast, additional magnification for extra-detailed surgical work.

Experience with the ORBEYE exoscope agile autofocus and optical and digital zoom — up to **26 times magnification**, providing ample magnification flexibility.

[Click here to learn more about the ORBEYE Fair Balance Statement.](#)

# ORBEYE in Spine Surgery

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## Greater Positioning Flexibility for Various Approaches

Observe the surgical field from various angles that could not be achieved with a traditional microscope. ORBEYE's small and flexible optical unit can facilitate multiple surgical positions without compromising the surgeon's posture or creating positional discomfort. The compact design of the optical unit allows ample space to operate while maintaining sufficient distance from the surgical field as not to obstruct the surgical site.



“ I have found the ORBEYE to be a major addition to the surgical technology in my operating room. It provides value to our surgical team, the learners who are in and about, but above all, I believe, to the patient because this superior visualization and the ergonomic benefit to the surgeon, and then ultimately the educational value that is of value to patients in the future, all reach our teams both inside and outside of the operating room. I've actually used the ORBEYE in over 500 spine cases, and almost exclusively use the ORBEYE and have almost stopped using a microscope. Our system has three ORBEYE units. I believe that a major advantage is that everyone in the OR can now see what's occurring in the surgical field. This is really critical for education and workflow with assists or scrub techs or nurses, and even with the manufacturer's representatives who are assisting in the case, as it gives them the opportunity to help the surgical team anticipate what equipment will be needed next, and it helps them prepare. It's a great asset to everyone in the room. ”

**Dr. Charles Branch**

*Professor and Chairman of the Department of Neurological Surgery at Wake Forest University School of Medicine, and Director of Spine Services at Wake Forest Baptist Health, Winston-Salem, NC*



“ With our two years using the ORBEYE system in the neurosurgical OR we are clearly convinced that this system has the potential to replace the microscope. ”

**Dr. Jan Regelsberger**

*Chairman—Neurosurgical Department, DIAKO, Krankenhaus Flensburg, Germany*

[Click here to learn more about the ORBEYE Fair Balance Statement.](#)

## ORBEYE in Spine Surgery



### Freedom from the Ocular Lens

Unrestricted angles and exoscope head positioning

### More Comfortable and Natural

Facilitates multiple surgical positions



“ You change the ease of access for the surgeon, just physically, and you actually allow intraoperative navigation and surgery simultaneously with picture and a picture. And this just has really changed the nature of these operations. I know where I am, I’m comfortable. I can see, and that makes me a better spine surgeon. So, and this honestly was not in my wildest dreams. I was thinking more about aneurysms and microvascular surgery and skull based tumors, which is really the benefits of microscopes, but what happened is the ORBEYE, because of its nature, has this great benefit in spine as well. That really was probably the biggest unanticipated benefit along with navigation that we experienced. And I would encourage every spine surgeon to consider using an exoscopic platform, right from the beginning of their career. ”

**Dr. David Langer**

*Department Chair of Neurosurgery at Lenox Hill Hospital, VP of Neurosurgery Western Region at Northwell Health, and Professor of Neurosurgery and Radiology at Hofstra University, New York, NY*

# ORBEYE in Spine Surgery

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## **Big Screen 4K 3D Visualization**

See anatomical details with four times the resolution of standard HD imaging. Experience true depth perception with natural 3D visualization. Reliably identify tissue boundaries, blood vessels and lesions via a larger color range and light modes, such as infrared.

## **Wireless Foot Controlled Camera Unit**

The ORBEYE camera unit can be controlled via a wireless foot switch. Adjustments to the position on the x- and y-axes can be achieved seamlessly, even under very high magnification. The programming of six custom buttons allows for best possible focus and magnification customization.

## **Plug and Play**

ORBEYE eliminates preprocedure balancing or center-of-gravity adjustment that was once needed for traditional surgical microscopes. The ORBEYE system boots up and provides a surgical 4K 3D image in under 15 seconds. Combined with its easy setup, the system is ready to be used within minutes.

## **No Image Latency**

ORBEYE offers precise instrument placement and visualization. Fast image processing achieves zero delay between the movement of your instruments and the 4K 3D image.

[Click here to learn more about the ORBEYE Fair Balance Statement.](#)

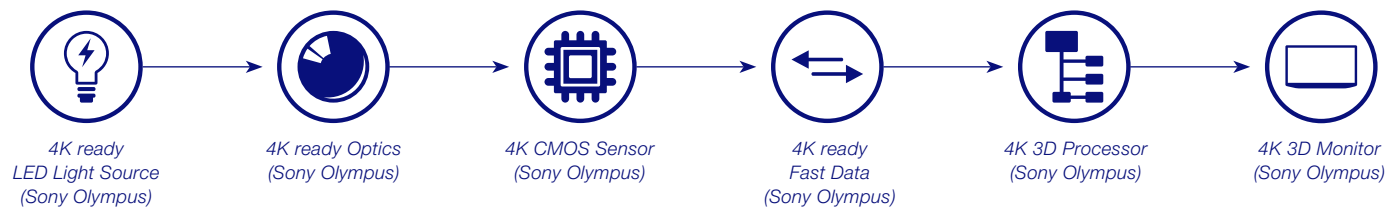
# ORBEYE in Spine Surgery



## 4K 3D Imaging Chain

ORBEYE proprietary imaging components form a harmonious chain that are fine-tuned to work together seamlessly to deliver the best possible 4K 3D image.

### From the Light to the Monitor:



“ Due to optical and digital zoom options, as well as the 4K 3D imaging, we consider the system a clear advancement over traditional microscopic surgery. ”

**Dr. Jörg Flitsch**

Neurosurgeon, University Hospital, Hamburg, Germany

[Click here to learn more about the ORBEYE Fair Balance Statement.](#)



# ORBEYE in Spine Surgery

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## Spine Paper

### Lessons Learned Using a High-Definition 3-Dimensional Exoscope for Spinal Surgery

Kevin Kwan, Julia R Schneider, Victor Du, Lukas Falting, John A Boockvar, Jonathan Oren, Mitchell Levine, David J Langer

There are probable advantages to using the ORBEYE for spinal surgery. The ORBEYE placed the primary and co-surgeons in an ergonomically advantageous position with a horizontal gaze throughout the microscopic portions of the operations.

Horizontal gaze is especially hindered when using loupe magnification, with the surgeon required to spend the majority of the case with the neck in flexion. Over the course of a long case, the associated decrease in ergonomics-related exhaustion is necessary to preserving high-level surgeon performance.<sup>1-4</sup>

<https://pubmed.ncbi.nlm.nih.gov/30124929/>

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1. Berguer R. Surgery and ergonomics. Arch Surg. 1999;134(9):1011-1016.
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3. Bourne SK, Walcott BP, Sheth SA, Coumans JV. Neurological surgery: the influence of physical and mental demands on humans performing complex operations. J Clin Neurosci. 2013;20(3):342-348.
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### Minimally Invasive Navigated Foraminal Discectomy via Contralateral Approach Using a 3-Dimensional 4K High-Definition Exoscope: 2-Dimensional Operative Video

Jonathan Oren, MD<sup>1</sup>, Kevin Kwan, MD<sup>2</sup>, Julia Schneider, BS<sup>2</sup>, Mitchell Levine, MD<sup>1-2</sup>, David Langer, MD<sup>1-2</sup>

<sup>1</sup> Department of Orthopedic Surgery, Lenox Hill Hospital, Zucker School of Medicine at Hofstra/Northwell, New York, New York

<sup>2</sup> Department of Neurosurgery, Lenox Hill Hospital, Zucker School of Medicine at Hofstra/Northwell, New York, New York

This surgical video is the first to demonstrate a novel minimally invasive technique of utilization of surgically navigated foraminal discectomy using a 3-dimensional 4k high-definition exoscope (ORBEYE). Visualization from the 4k high-definition exoscope also allows for an unparalleled view of the narrow operative corridor and allows for participation from the operative team.

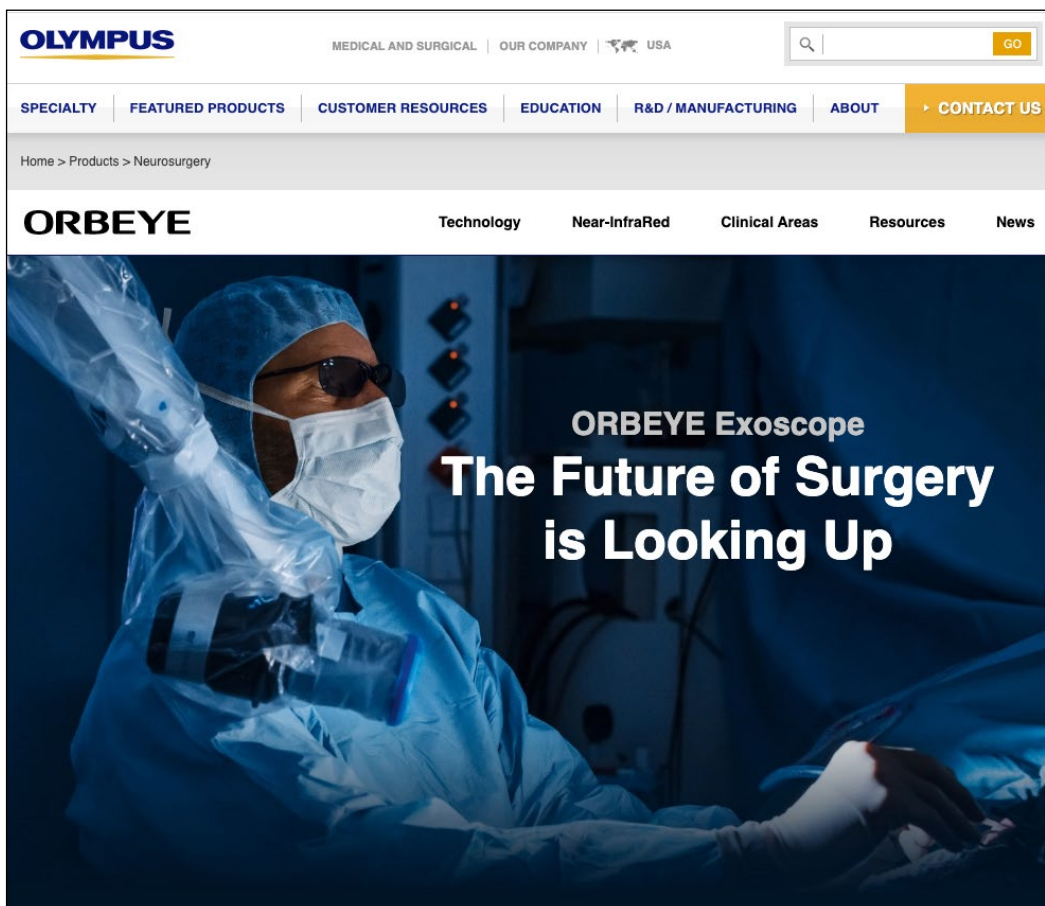
<https://academic.oup.com/ons/article-abstract/19/2/E188/5686217?redirectedFrom=fulltext>

# ORBEYE in Spine Surgery

## ORBEYE Resources

The ORBEYE delivers three-dimensional video imagery that is four times more detailed than standard HD imagery and can be magnified to the power of 26X. Providing a larger and wider color range, which is more natural and realistic, the ORBEYE helps physicians reliably identify tissue boundaries and see blood vessels and lesions. With no delay in image processing, the ORBEYE delivers this information in real time, allowing for smoother surgical procedures.

It is recommended to customize the ORBEYE exoscope to the needs of each specialty, with features such as Auto Focus, Near Infrared Imaging Capabilities and more. Individual user profiles offer enhanced customization to detailed settings on the ORBEYE, the camera head and foot pedal. Near Infrared Imaging Capabilities are only available for neuro-vascular procedures in adult patients.



**Website:** <https://medical.olympusamerica.com/products/orbeye>

**Brochure:** <https://medical.olympusamerica.com/orbeye-brochure-download>

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