OLYMPUS

ADVANCED LAPAROSCOPY

Procedural Benefits of ENDOEYE 3D and THUNDERBEAT in Laparoscopic Urology

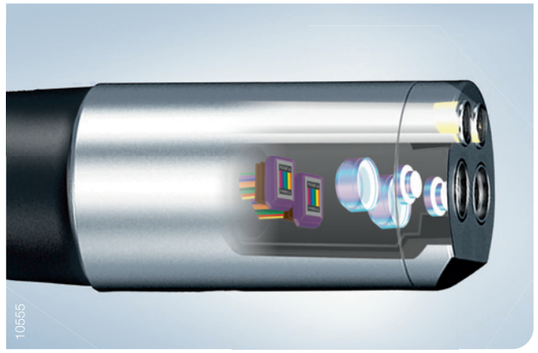
13632

INTRODUCING THE WORLD'S ONLY DEFLECTABLE-TIP LAPAROSCOPE DELIVERING HD VIDEO IN 3D

ENDOEYE 3D Is the Only Solution That Can Provide the Critical Clinical View While Maintaining Image Orientation. Greater Depth of Field and the Optimal Amount of Depth Perception Are Also Realized with the 3D HD Image. We Are Proud to Introduce This Innovative Solution for 3D Imaging.

100 Degree Angulation

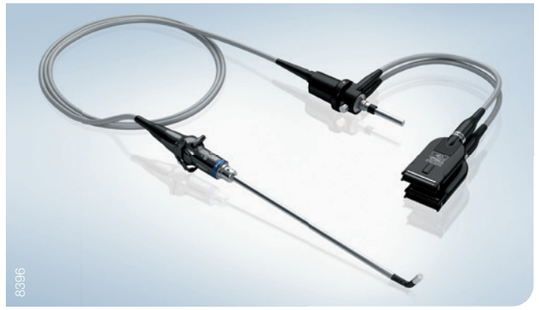
The ENDOEYE 3D can bend up to 100 degrees in four directions. This function provides the critical clinical view during surgery while maintaining optimal and correct visual orientation, which cannot be achieved with conventional rigid telescope and camera head 3D systems.



Chip-on-the-tip technology for 3D visualization

Focus-Free

ENDOEYE technology using distally located image sensors maximizes the 3D benefit by means of a brighter, more light-sensitive image with a greater depth of field while eliminating manual focusing.



Lightweight plug-and-play design

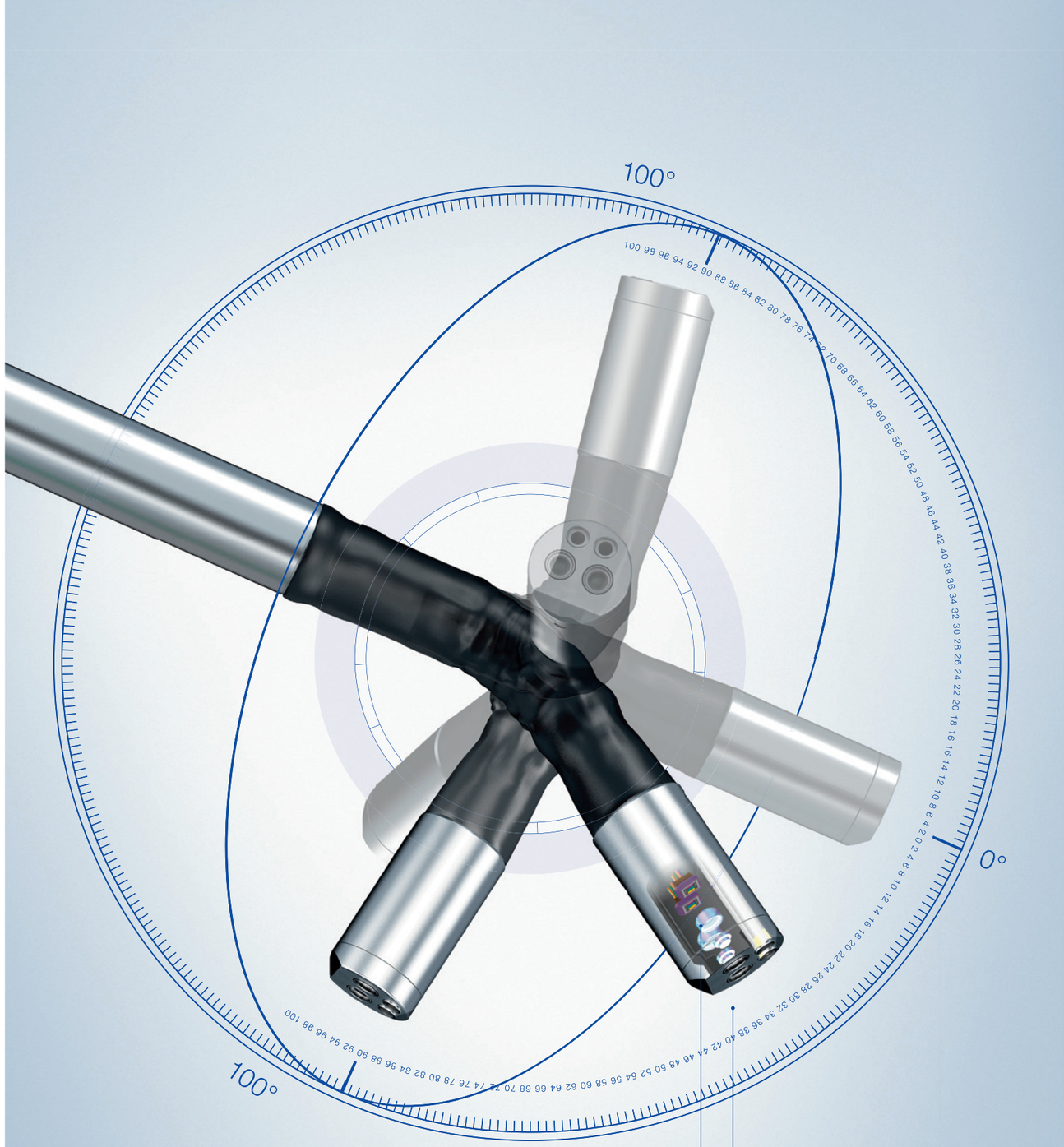
All-in-One Lightweight Ergonomic Design

An all-in-one integrated structure is adopted that provides a true plug-and-play solution. The device can thus be easily set up before surgery, and it also offers improved handling during surgery, even in 3D.

One versatile platform

Compatibility with Current 2D Scopes

Olympus 3D Imaging Solution ensures compatibility with our current 2D scopes to provide an economical means of upgrading your video system with minimal incremental cost. Our video platform supports over 100 different flexible and rigid camera heads, videoscopes, and endoscopes.



3D in HDTV

The ENDOEYE 3D utilizes high-density image sensors at the distal end of the videoscope providing 3D images in high definition.

Dual-Lens 3D Optical Structure

The dual-lens design is the key to creating the correct amount of depth in the image.

18732

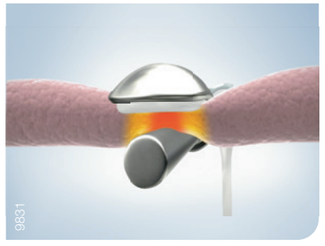
UNIQUE HYBRID TECHNOLOGY

Philosophy
Olympus aims to provide innovative energy solutions delivering surgical safety and instrument versatility for efficient and streamlined operations with optimal patient outcomes. This is why Olympus developed the unique hybrid technology THUNDERBEAT for open and laparoscopic surgery.

THUNDERBEAT is the world's first and only advanced energy system that delivers two well-established forms of energy to a tissue simultaneously:
· **Ultrasonic energy** for superior dissection and fast tissue-cutting capability
· **Advanced bipolar energy** for fast and secure hemostasis for vessels up to and including 7 mm in diameter

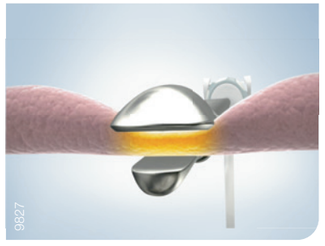
The combination doubles your energy – and sets new standards in the application of advanced energy in the operating room.

Ultrasonic Energy Only



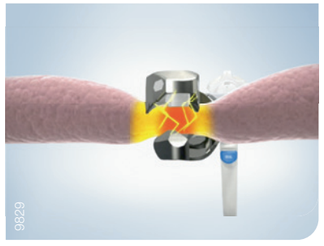
Rapid tissue cutting

Bipolar Energy Only



Reliable vessel sealing

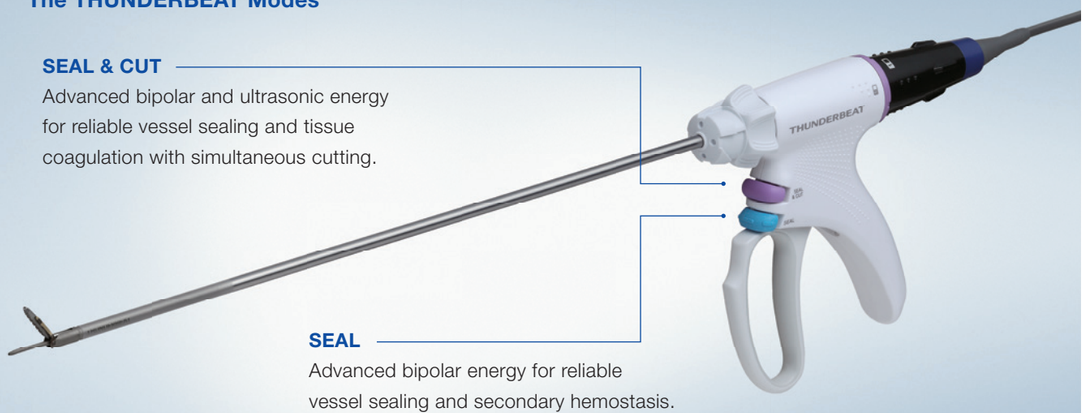
THUNDERBEAT



Rapid tissue cutting and reliable vessel sealing

The THUNDERBEAT Modes

SEAL & CUT
Advanced bipolar and ultrasonic energy for reliable vessel sealing and tissue coagulation with simultaneous cutting.

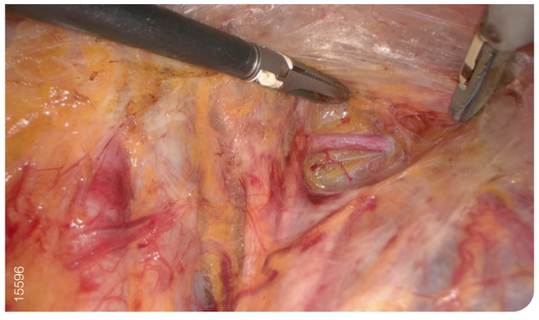


SEAL
Advanced bipolar energy for reliable vessel sealing and secondary hemostasis.

15434

SUPERIOR DISSECTION WITH OPTIMAL TEMPERATURE CONTROL

The precision of ultrasonic technology enables accurate preparation of the correct anatomic layers with the protection of vital structures.



Ultraprecise Tissue Dissection
THUNDERBEAT allows for sharp and blunt tissue dissection even in hard-to-reach places, such as deep pelvic areas. This is achieved through the wide reach of the tip, the high tip-opening force, and the slim tip design to enter planes most accurately.

Optimal Temperature Control
THUNDERBEAT Type S with Intelligent Tissue Monitoring (ITM) offers accurate dissection close to vital structures thanks to minimal thermal spread and an accurately targeted application of energy to the tissue.[2] ITM is the world's first and only safety assist system for ultrasonic-driven technologies that automatically stops the energy output when the tissue transection is complete. This leads to a decrease in the residual probe temperature by 26.9%, which consequently reduces the risk of accidental tissue damage.[3] The result is a safer and more streamlined operation.

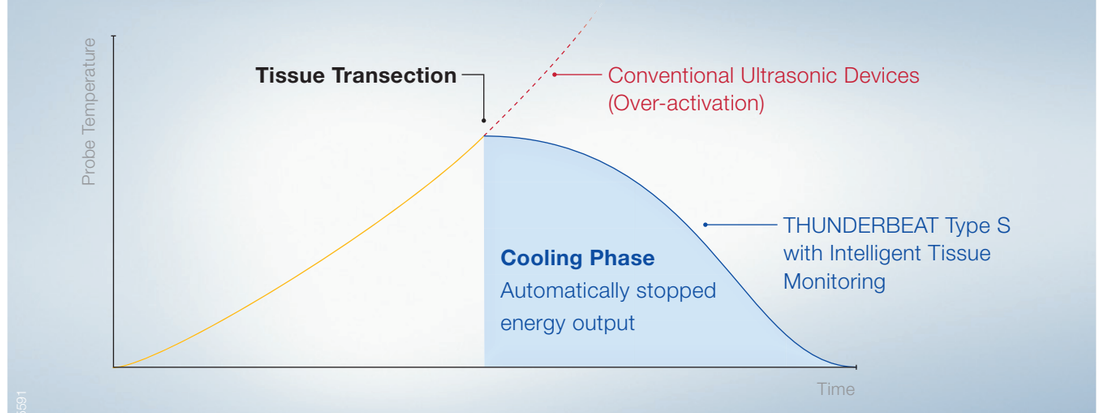
How Intelligent Tissue Monitoring Works

1. Detection of sudden pressure change on probe

2. Transmission of the information to the generator

3. Immediate stop of energy supply with audible feedback

4. Start of cooling phase



[2,3] Data on file, Olympus Corporation

PROSTATECTOMY – PROCEDURAL ENDOEYE 3D AND THUNDERBEAT BENEFITS

ENDOEYE 3D Benefits in Prostatectomy:

- Facilitated orientation for safe peeling of the fascia from the prostate
- Faster suturing, thanks to three-dimensional visualization of the needle at the point of entry
- Reduced risk of too large prostate incisions due to 100° angulation for clear identification of the dissection line
- Bird's-eye view beneficial in neurovascular bundle sparing

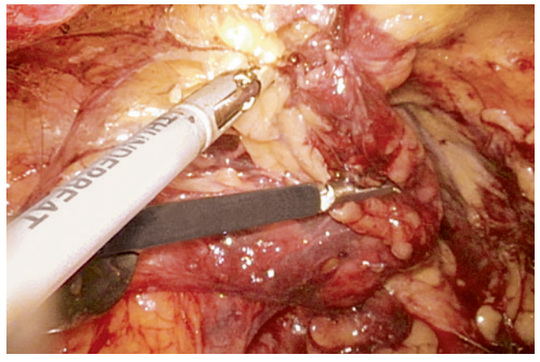
THUNDERBEAT Benefits in Prostatectomy:

- Simultaneous Seal & Cut provides a quick and secure freeing of the prostate
- Facilitated prevention of posterior bladder due to less bleeding & better vision
- Controlled preparation of all vessels around the prostate
- The very good hemostatic ability is highly beneficial during separation of seminal vesicles from the rectum (lots of small vessels here)

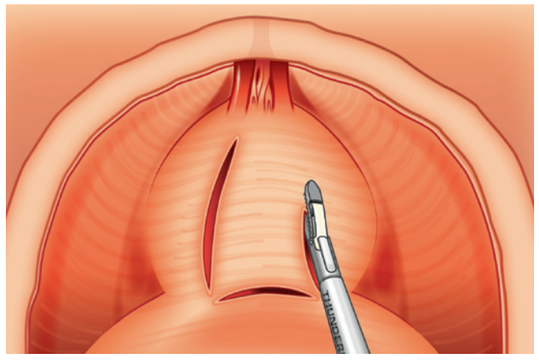
Incision of Overlying Fascia Surrounding the Prostate Gland

The **ENDOEYE 3D** depth perception facilitates orientation and allows for a finer angle of engagement, leading to more precise and safer peeling of the fascia from the prostate.

THUNDERBEAT creates less mist and supports better vision. It allows a quick and safe freeing of the prostate due simultaneous sealing and cutting. It enables controlled preparation of all vessels in this region.



13626

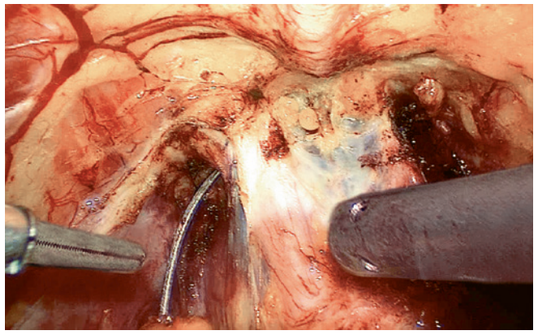


9898

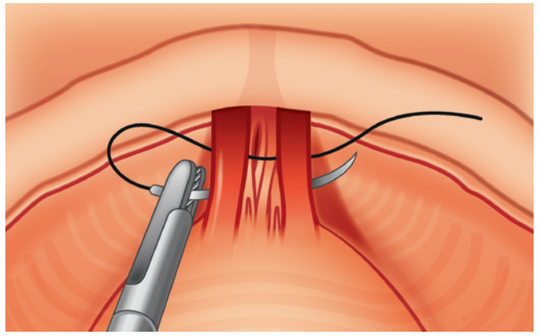
Incision of overlying fascia surrounding the prostate gland

Ligation of Dorsal Vein Complex

Urologists need to identify the plane between the urethra and dorsal vein complex. The **flexible tip** of the endoscope provides the front or side view without instrument confliction. It helps to prevent injury to the DVC and urethra during ligation. In addition, **ENDOEYE 3D** visualization helps in predicting the needle's point of entry and delivery, which allows for safer and faster suturing.



9901



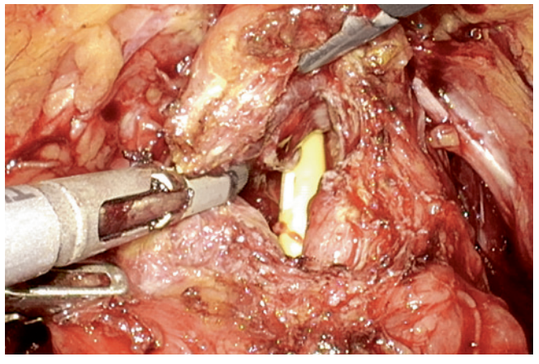
9900

Ligation of dorsal vein complex

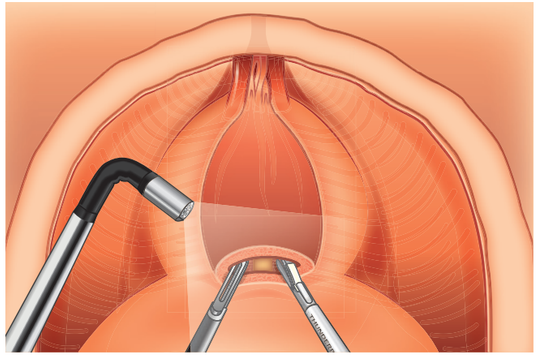
Bladder Neck Transection

When transecting the bladder neck, the fully **flexible** endoscope supports urologists in determining the dissection line easily. Thanks to better orientation and **ENDOEYE 3D** depth perception, the risk of too large bladder holes or prostate incisions is reduced.

THUNDERBEAT facilitates bladder neck prevention. Seal & Cut at once leads to less bleeding and ensures better vision at the posterior bladder neck; therefore, the risk of going into the bladder is reduced.



13631



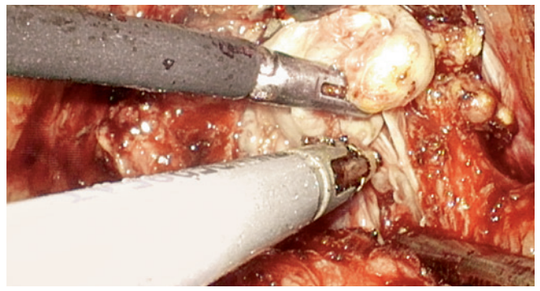
13623

Bladder Neck Transection

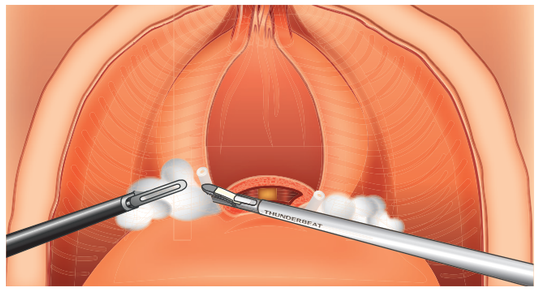
PROSTATECTOMY – PROCEDURAL ENDOEYE 3D AND THUNDERBEAT BENEFITS

Incision of Denonviellers Fascia and Separation of Seminal Vesicles

The **ENDOEYE 3D** visualization enables a controlled incision of the Denonvilliers fascia. The **flexible** scope helps to observe better the tip of the instruments and avoid damages to the rectum. With **THUNDERBEAT's** fine tip Denovilliers fascia can be opend precisely. **THUNDERBEAT's** Seal & Cut provides a controlled and secure seperation of the seminal vesicles and vas deference.



13628

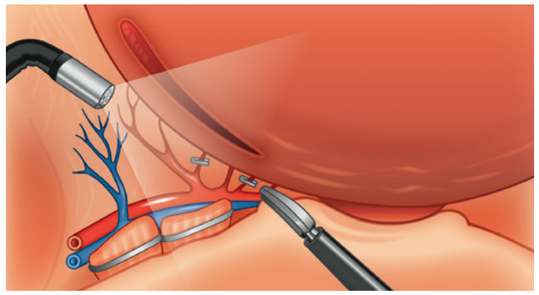


13622

3D visualization provides controlled incision of Denonvilliers fascia and separation of seminal vesicles

Neurovascular Bundle Sparing

The tip of the scissors for the apical dissection, which tends to be behind the prostate, can be observed from the front by creating the bird's-eye view with the **deflectable** endoscope. Depth perception by means of **ENDOEYE 3D** supports to reduce the risk of injury of the NVB.

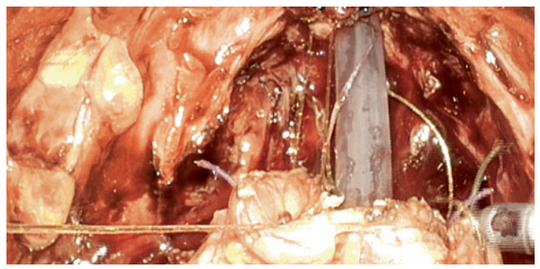


9902

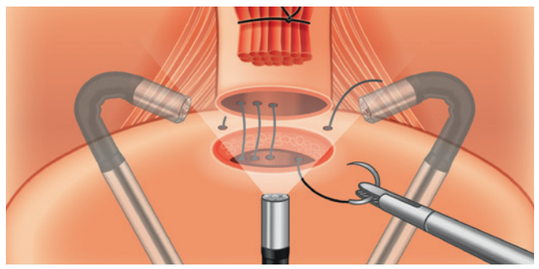
Neurovascular Bundle Sparing

Anastomosis of Urethra and Bladder

Pelvic space is very limited, so it is beneficial that the **flexible tip** of the endoscope provides the side view, allowing for anastomosis to be performed without instrument confliction. In addition, **3D** visualization facilitates suturing significantly and leads to time savings.



13629



9893

Anastomosis of urethra and bladder

(PARTIAL) NEPHRECTOMY – PROCEDURAL ENDOEYE 3D AND THUNDERBEAT BENEFITS

ENDOEYE 3D Benefits in (Partial) Nephrectomy:

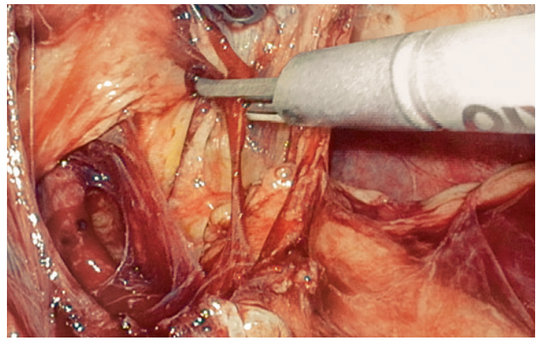
- Clear 3D visualization of the artery posterior to the vein for reduced risk of overlooking bleeders
- ENDOEYE 3D depth perception reduces the risk of leaving tumor a behind
- Suturing becomes more intuitive, thanks to the ENDOEYE 3D depth perception and leads to reduced ischemia time

THUNDERBEAT Benefits in (Partial) Nephrectomy:

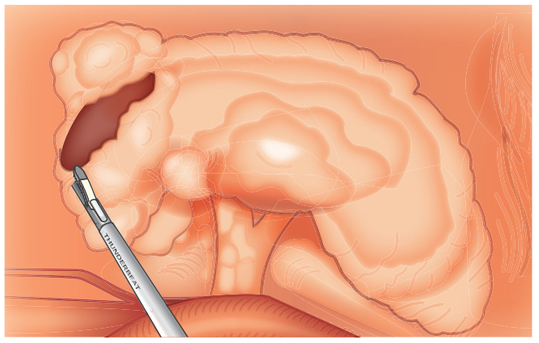
- Accurate dissection capability and grasping force helps to identify and mobilize the kidney
- Prompt sealing and cutting of new vessels linked to renal cancer with only THUNDERBEAT
- For partial nephrectomy, THUNDERBEAT's effective Seal & Cut leads to having one hand free and enables usage in conduction with clips or a sucker

Mobilization and Freeing of the Kidney

The **ENDOEYE 3D** vision facilitates better identification of the ureter, gonadel vein, etc. It helps to find the right plane for incision more easily and frees the kidney without injuring surrounding organs, such as the liver, the bowel, and the spleen. For mobilization, **THUNDERBEAT** grasps and fine dissects well. It enables freeing of the kidney from surrounding tissue significantly more quickly.



13630



13619

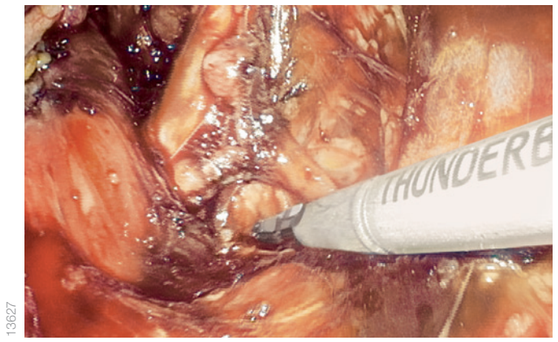
THUNDERBEAT enables effective and secure freeing of the kidney

(PARTIAL) NEPHRECTOMY – PROCEDURAL ENDOEYE 3D AND THUNDERBEAT BENEFITS

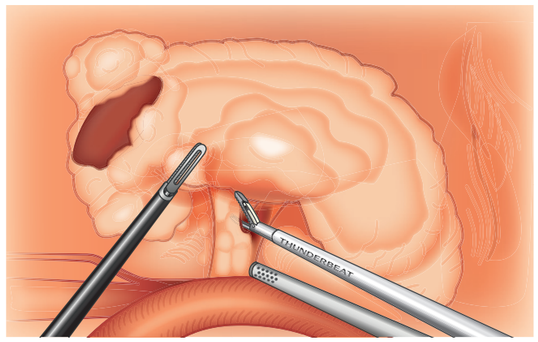
Hilum

The combination of **ENDOEYE 3D** and the **flexible tip** allows for a better visualization of the artery posterior to the vein. The risk of overlooking bleeders is reduced, thanks to being able to look at the hilum from the posterior aspect.

THUNDERBEAT effectively cuts and seals at once while one hand of the surgeon is free which provides confidence for a worst case scenario.



13627



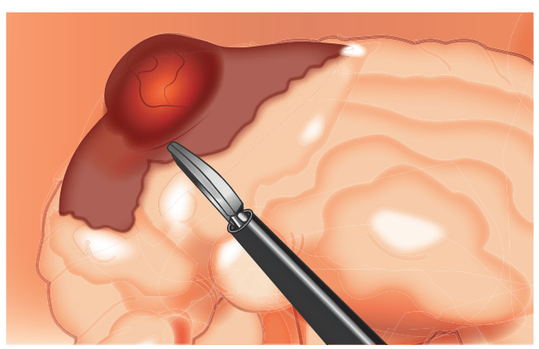
13618

Flexible tip allows postierior visualization of the hilum and thus minimize overlooking bleeders

Partial Nephrectomy

An important aim in partial nephrectomy is sparing as much healthy tissue as possible. In this respect, the surgeon needs to precisely locate the tumor. Intraoperative **ENDOEYE 3D** imaging provides the surgeons with the most possible realistic view and compensates the challenge of possible differences between the preoperative anatomical situations and the intraoperative situation.

13625



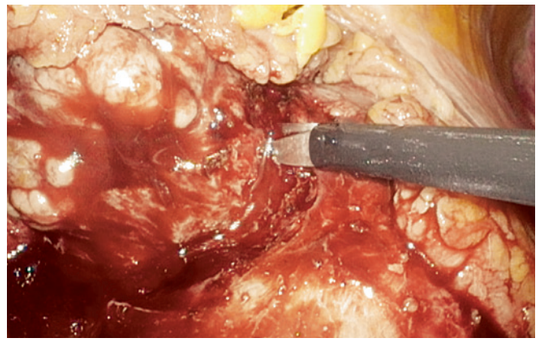
13620

Incision of the kidney

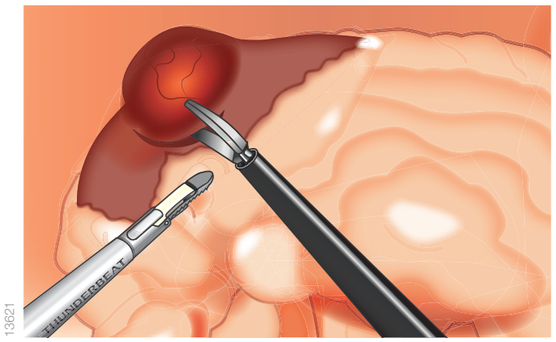
Tumor Growth

ENDOEYE 3D visualization also supports in the excision phase of the procedure. As the depth perception of **ENDOEYE 3D** helps to identify the point of entry and the cutting angle more precisely, the risk of leaving tumor behind is reduced.

THUNDERBEAT can be used as an effective grasping instrument. At the same time, a large bleeder due to new vascularization linked to renal cancer biology can be sealed by **THUNDERBEAT** promptly. There is no need of an extra sealing device.



13624

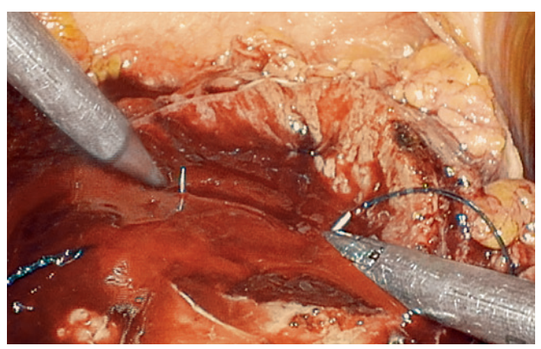


13621

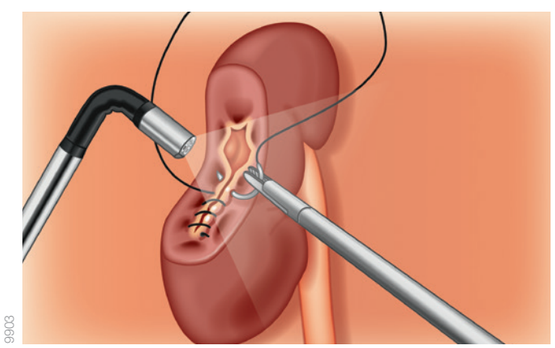
3D depth perception helpful for precise tumor cutting

Suturing

Similar to the advantages in prostatectomy, **ENDOEYE 3D** also facilitates suturing in partial nephrectomy, which is crucial in order to reduce ischemia time. By having better perception of where to stitch and grasp the needle, the result is time saved and less bleeding, which leads to a shorter ischemia time.



9904



9903

Use of 3D facilitates suturing for reduced ischemia time

www.olympus.eu/thunderbeat

E0492219 · 1.500 · 01/19 · ABC · HB

Specifications, design, and accessories are subject to change without any notice or obligation on the part of the manufacturer.

OLYMPUS

OLYMPUS EUROPA SE & CO. KG
Postbox 10 49 08, 20034 Hamburg, Germany
Wendenstrasse 14–18, 20097 Hamburg, Germany
Phone: +49 40 23773-0, Fax: +49 40 233765
www.olympus-europa.com