THUNDERBEAT OPEN EXTENDED JAW

Versatility, Speed, and Precision – Advanced Energy Solutions for Open Surgery
THUNDERBEAT DESIGN RATIONALE

Philosophy

Contemporary surgical instruments must be multifunctional. When the THUNDERBEAT Tissue Management System for laparoscopic surgery was introduced, the clear goal was to develop a multipurpose instrument in order to reduce instrument exchanges, surgical time, and blood loss.

This was achieved by creating an instrument that not only allows tissue cutting that is the fastest in its class as well as secure 7 mm vessel sealing but also functions as a true laparoscopic instrument – allowing the surgeon to grasp, manipulate, and bluntly dissect tissue.

Three Design Criteria Make This Possible:

1. Integration of Two Forms of Energy
   Only the THUNDERBEAT system delivers two well-established types of energy to the tissue simultaneously:
   - Ultrasonic energy, which is widely accepted for its fast tissue-cutting capability.
   - Bipolar energy, which provides fast and secure hemostasis to vessels up to and including 7 mm in diameter.

   The combination of both forms of energy is delivered through the unique SEAL & CUT mode that only the THUNDERBEAT system offers. Tissue bundles and vessels are safely sealed and rapidly cut, allowing the surgeon to reduce tissue-dissection time.

2. Secondary Hemostasis and Spot Coagulation with Advanced Bipolar Energy
   Advanced bipolar energy can be applied independently of ultrasonic energy with the THUNDERBEAT SEAL mode. This allows the surgeon to achieve secondary hemostasis and spot coagulation without the cutting effects of ultrasonic energy. This can help reduce instrument exchanges, which may streamline the surgical process further.

3. Superior Dissection with Optimal Temperature Control
   The THUNDERBEAT instrument tip is an essential feature of the instrument. Alongside the delivery of two different types of energy, it is designed to act as a fully functional grasping and dissecting instrument. This is achieved through atraumatic serrations of the edges of the upper jaw, the even compression-force distribution across tissue, and the high tip-opening forces that enable blunt tissue dissection.

For safe and streamlined operations, Olympus developed 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 new technology, called Intelligent Tissue Monitoring (ITM), decreases the residual temperature of the instrument and consequently reduces the risk of accidental tissue damage.

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

The ability to combine the proven advantages of ultrasonic and bipolar energy and the ability to provide finest possible tissue dissection makes the THUNDERBEAT one of the most versatile instruments on the market. This technology is now available for open surgery.

The THUNDERBEAT Technology in Open Surgery

Advanced energy devices in open surgery go beyond standard monopolar and bipolar applications. They allow for shorter procedure time, reduced use of hemostatic clips, sutures, or ligation ties, thus saving time and materials costs.

The THUNDERBEAT Open Extended Jaw* maintains the general philosophy behind the THUNDERBEAT technology, and the instrument design has been adapted and improved to make it highly suitable for the requirements of open surgical procedures. The result is a highly ergonomic instrument that cuts tissue fast, seals vessels safely and securely, and allows for extremely fine tissue dissection.

* THUNDERBEAT Open Extended Jaw, reddot design award winner 2015
BENEFITS OF THUNDERBEAT IN OPEN SURGERY

Ultra-Precise Tissue Dissection
Precise and fine tissue dissection even in hard-to-reach places, such as deep pelvic areas, achieved through the extended reach of the tip, the fine tip design, and the opening force of the jaw.

Fastest in Class Tissue Cutting Speed
Reduced time for dissecting and cutting through tissue achieved by combining ultrasonic energy and bipolar energy.

Proprietary Tip Design for Fine Dissection and Reduced Mist
Patented dual-hinged design for even tissue compression

Secure 7mm Vessel Sealing
Fewer vessel-ligation steps due to the ability to securely cut and seal vessels up to and including 7 mm, simultaneously using the combined energies of the THUNDERBEAT SEAL & CUT mode.
BENEFITS OF THUNDERBEAT IN OPEN SURGERY

Secondary Hemostasis with Advanced Bipolar Energy
Ability to immediately seal secondary bleeders through the precise application of advanced bipolar energy independent of the tissue cutting ultrasonic energy.

Ergonomic Handle Design
No hand fatigue due to ergonomic handle design and its angle adjustments.

Enhanced Tissue Grasping Capability
Securely grasps and holds tissue without traumatizing it due to the unique jaw design with atraumatic serrations and uniform tissue compression.

Optimized Handle Ergonomics; Comfortable for Various Surgical Situations
Olympus Energy Solutions Work Together to Provide:

- **Electrosurgery**
  **ESG-400 – A Fully Equipped, Latest-Generation HF Generator**
  Optimizing your state-of-the-art electrosurgery in all surgical disciplines for monopolar, bipolar, and advanced bipolar modes for open, laparoscopic, and endoscopic applications, as well as transurethral or transcervical resection (TURIs/TCRIs).

- **Ultrasonic Surgery**
  **USG-400 – Ultrasonic Energy for Advanced Tissue Management**
  The USG-400 Generator provides ultrasonic energy for the SONICBEAT Ultrasonic Dissector.

- **Combined Energy Surgery**
  **Surgical Tissue Management System (THUNDERBEAT Platform)**
  Both surgical energy generators combined provide a unique platform that delivers the most widely used energy requirements to the surgical suite, eliminating the need for multiple devices in the operating room.

- **Visibility**
  The Olympus Surgical Tissue Management System communicates intelligently with the Olympus insufflators (UHI-3 and UHI-4) in order to evacuate any smoke and mist whenever required during laparoscopic surgery. Coupled with the reduced mist production of the THUNDERBEAT laparoscopic instruments and Olympus imaging equipment, the surgeon enjoys the best possible visualization.

- **Utility**
  Olympus energy devices can be seamlessly integrated into the Olympus ENDOALPHA OR solutions. This enables clinical staff to easily select the desired function of THUNDERBEAT directly from the HomeScreen user interface of UCES-3. It also allows for intuitive navigation through the device using the touch screen or voice control. UCES-3 offers a centralized one-touch control for all sterile and/or nonsterile medical devices – for example, electrosurgical generators, surgical cameras, or surgical lights and tables, providing greater efficiency and improved ergonomics during procedures. Finally, the Scene Selection function, an intelligent combination of user- and procedure-specific actions operated using one-touch control, helps to standardize procedures, decreases turnaround time, and enhances quality and overall workflow.