

## PRESS RELEASE

Future Advances in Minimally Invasive Surgery

### **LESS – is more!**

Florence, October 29, 2009. Minimally invasive procedures have dramatically changed the face of surgery in recent years. By offering safer and gentler operations for patients, laparoscopy has become the gold standard for many interventions. Now, another paradigm shift appears to have taken place: **LESS – Laparo-Endoscopic Single-Site surgery** is moving minimally invasive surgery (MIS) to the next level by being even less invasive. Compared with conventional laparoscopy that generally requires 3 to 5 incisions, in **LESS surgery**, the surgeon performs complex procedures through only one incision. If possible, the incision is made in the umbilicus so that the postoperative scar is hidden and virtually invisible. The success of this innovative surgical procedure has been dominated by technical progress. The key to the new technique was provided by innovative multi-instrument access systems like the TriPort from Olympus that allow multiple instruments to be inserted simultaneously through a single incision.

Today the number of **LESS** surgical operations is increasing daily and, so far, thousands of **LESS** procedures have been performed successfully in urology, general surgery and gynaecology. As one of the most promising minimally invasive techniques, **LESS** surgery was a dominating subject at the 18th Annual Congress of the European Society for Gynaecological Endoscopy (ESGE) in Florence. One highlight was the symposium “Laparo-Endoscopic Single-Site (**LESS**) Surgery – An evolution in Laparoscopy?” initiated by Olympus Medical Systems Europe GmbH. Renowned gynaecologists convened to discuss the status quo, and the future and technical development

**of the *LESS* method. The consensus was that *LESS* surgery holds enormous potential and will assume an important role in multiple surgical disciplines, but nevertheless needs to be established responsibly and safely.**

*LESS* surgery, an advancement on conventional multi-site laparoscopy, is currently one of the most promising minimal surgical techniques. Whilst contemporary laparoscopic interventions require several cuts in the abdominal wall – usually between 3 and 5 incisions – *LESS* surgery enables surgeons to perform complicated procedures through a single incision. By reducing the number of incisions in the abdominal wall, and confining the incision to the umbilicus, any surgical operation can result in less trauma to the patient, fewer complications and a far better cosmetic result by minimising or limiting injuries to internal organs, bleeding, infection and postoperative hernias.

Hospitals are also anticipating the advantages. A gentler, less traumatic procedure not only lowers the risk of postoperative infections, but could potentially reduce the use of pain medication and shorten hospital stays.

### **The new surgical technique required technical adjustments**

The success of *LESS* surgery as an innovative surgical method would not have been possible without technical advancements. Crucial for its success was the development of multi-instrument ports like the TriPort and QuadPort from Olympus.

The TriPort was launched by Olympus at the beginning of the year. It allows three instruments to be passed into the abdomen simultaneously via one small (10 mm to 25 mm) incision. The QuadPort, another multi-access port, will be released by Olympus later this year. It has an additional port, thus offering surgeons even more operating versatility.

Both multi-access ports feature unique designs that offer the easiest and safest way to access the abdomen. In general, they allow the surgeon the

greatest range of motion with optimal handling of instruments. More specifically, the flexible design of the TriPort and QuadPort self-adjusts to any abdominal wall thickness up to 10 cm, and exerts a powerful retracting force on the abdominal wall. This enhances the gas-tight seal, minimises the incision size and maximises access whilst providing greater control of the instruments. The TriPort has three inlets: two for instruments with diameters of up to 5 mm and one for instruments with diameters of up to 12 mm. The QuadPort is additionally equipped with a 15-mm inlet for larger suturing devices. Two additional connectors enable intraoperative insufflation and smoke evacuation. The upper valve of the TriPort and QuadPort are detachable for tissue removal.

### **Technical innovations overcome ergonomic obstacles**

Even though the TriPort and the QuadPort provided mobility within the surgical field, surgeons still faced considerable constraints when using conventional straight instruments. Due to the limited workspace and the resulting axial orientation of the instruments, the surgical procedure was impeded by missing triangulation, instrument clashing and impaired vision onto the instrument jaws.

Olympus, in cooperation with the surgeons, tried to find solutions by designing special, more accommodating hand instruments and optics that facilitate the *LESS* procedure and help overcome these ergonomic obstacles.

One solution is offered by the HiQ LS curved hand instruments – available from October 2009. Their design gives the surgeon the mobility and triangulation that he is used to in conventional laparoscopy.

Another solution complementing the *LESS* surgery set from Olympus is the EndoEYE LS optic. Its slim handle design incorporates a bendable section – called the “Swan’s neck” – that can be easily moved out of the surgeon’s proximal working area to avoid instrument clashing.

Prototypes of the curved HiQ LS hand instruments and the video laparoscope EndoEYE LS have demonstrated their superior suitability for *LESS* surgery over conventional laparoscopic instruments in laboratory settings and proved their ability to overcome the previously encountered ergonomic constraints in clinical application.<sup>1,2</sup>

## ***LESS* surgery is multidisciplinary with a vast application spectrum**

Even though *LESS* surgery was associated with some ergonomic shortcomings in the beginning, it has asserted its position in urology, general surgery and gynaecology. Since surgeons in *LESS* surgery generally use the same surgical procedure as in conventional laparoscopy, the approach can theoretically be employed for every standard laparoscopic procedure. In all three disciplines, *LESS* surgery has already been used in a wide range of applications.

In gynaecology, the application range currently includes procedures for benign ovarian diseases like ovarian cyst enucleations and adnexectomies, but also hysterectomies and laparoscopies for sterilisations. Experts forecast that *LESS* surgery will expand even more in the near future. “As gynaecologists gain experience and implement the new instruments, the application range will increase and we will probably be able to use *LESS* surgery in oncological diseases as well,” stated Professor Giovanni Scambia, MD, Rome, Italy.

Even though *LESS* surgery has proven its feasibility and found its way into clinical practice, long-term studies are still essential to prove its benefits and safety. In this context, Olympus supports clinicians in evaluating this new technique and responsibly establishing it as a potential standard procedure for the future.

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<sup>1</sup> Kleemann R et al. SAGES, Hand instruments with a curved shaft are suitable for *LESS* surgery, Olympus Winter & Ibe GmbH, Hamburg, Germany.

<sup>2</sup> Kleemann R et al., Laparoscopes with a bending section are suitable for *LESS* surgery, Olympus Winter & Ibe GmbH, Hamburg, Germany.

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