ASP1-1

The 8 fold path to attain laparoscopic TEP Nirvana

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Laparoscopic surgery is now being increasingly being done for inguinal hernias due to its advantages of decreased pain and early return to daily activities. Inguinal hernias can be repaired either trans-abdominal pre-peritoneal (TAPP) or totally extra peritoneal (TEP). Both repairs are acceptable; however, TEP has some advantages with decrease in incidence of bowel injury and post operative adhesions. TEP repair, however, has a steeper learning curve. This learning curve can be shortened by standardizing the procedure. The new high definition 3D systems may also play a role in decreasing learning curve in laparoscopic surgery. The 8 steps in lap TEP repair is one way of standardizing hernia surgery to decrease learning curve so that minimal access surgery can be adopted more easily.

ASP1-2

Three-dimensional endoscopy improves operative time and hospital stay in laparoscopic inguinal hernia surgery: Evidence from 189 cases

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Background: Three-dimensional (3-D) endoscopy has been developing remarkably and has become quite useful. Its efficacy has been reported in endonasal surgery, but has not been reported in laparoscopic surgery enough.
Objective: To evaluate the efficacy of 3-D endoscopy in laparoscopic inguinal hernia surgery.
Methods: The subjects were 312 patients who were diagnosed with inguinal hernia and received trans abdominal preperitoneal procedure (TAPP) between May 2013 and August 2015. TAPP using 2-D endoscopy was performed in 123 patients and TAPP using 3-D endoscopy, in 189 patients. We evaluated factors which may influence operative time, such as age (>65), sex, BMI (>25), episode of illness, size of distension (>6 cm), left or right, and type of hernia by univariate analysis. We used multivariate analysis to find out the most influential factor to operative time. We also compared the duration of the procedures, the number of complications, and length of hospital stay between the 2D endoscopy group and 3D endoscopy group.
Results: Operative time was significantly reduced in the 3D endoscopy group compared to the 2D endoscopy group (131.6 vs. 89.8 min, $p<0.001$) and the most influential factor for operative time was 3D endoscopy ($p<0.0001$). The duration for dissection and repair in the procedure using 3D endoscopy was significantly shorter compared to that using 2D endoscopy, and the length of hospital stay was significantly shorter (2.5 vs. 2.9 days, $p<0.01$).
Conclusion: 3-D endoscopy is useful in TAPP with improvement in operative time and hospital stay.

ASP1-3

Three-dimensional endoscopic surgical systems facilitates the safety and rationality in laparoscopic inguinal hernia repair

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Introduction: Since its advent in the clinical practice, accumulating evidence verifies the significance of three-dimensional (3D) endoscopic surgical systems in various laparoscopic surgeries. The improvement of surgical skills in the manipulation of deep structures as well as suturing in 3D endoscopic surgical systems possibly facilitates the safety in laparoscopic surgeries. Herein we describe the advantage of 3D endoscopic surgical systems in totally extraperitoneal endoscopic repair (TEP) for adult inguinal hernia, which consequently improves the rationality in TEP.
Procedure: The extraperitoneal space was reached by the optical method using a 10 mm flexible scope from the infraumbilical incision and dissected through additional two 5 mm ports placed in the midline lower abdomen under pneumoperitoneum. The 3D images clearly showed the depth of extraperitoneal space, facilitating the detection and dissection of hernia sac and security of enough space for mesh placement. The myopectineal orifice was covered with the mesh trimmed in trapezoid shape. A self-gripping mesh was also expanded immediately under the 3D images.
Results: There was neither serious intra- nor postoperative complications in the period of 2 years since the introduction of 3D endoscopic surgical systems in TEP in our hospital.
Conclusions: 3D endoscopic surgical systems secures clear vision of fine anatomical structures in the groin region, contributing to the safe and rational repair for adult inguinal hernia.

ASP1-4

TAPP procedure: performed by surgeons in Japan certified by the Endoscopic Surgical Skill Qualification System

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The transabdominal pre-peritoneal (TAPP) procedure is a rational surgical treatment for inguinal hernia. Few postoperative complications, such as chronic pain, mesh infection and so on, are experienced when this procedure is used. TAPP use has rapidly become widespread in Japan in recent years, but the technical level has not advanced with equally rapidly. The Japan Society for Endoscopic Surgery has established an endoscopic surgical skill qualification system which allows surgeons to master the skills necessary to become supervisory doctors. The inguinal hernia pass rate is approximately 20% annually. Surgeons will not be able to obtain the TAPP qualification unless they have very high technical skills. We will share a 3D video of an operation performed by a qualified surgeon. This form of 3D laparoscopy avoids anatomical misconceptions with the use of stereoscopic vision and is also useful in terms of manipulating forceps. However, if a surgeon has high technical skills for 2D laparoscopy, there would be no difference in outcomes between 2D and 3D laparoscopy. Therefore, 3D laparoscopy may not be needed. It is considered to be highly advantageous for beginners to perform laparoscopic hernia repair.

ASP1-5

Advantage of three dimensional visualization in TAPP

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TAPP is looked on as technically demanding procedure and its successful repair relies on the grasp of the anatomy of the anterior abdominal wall and inguinal region from the intra-abdominal perspective. But especially pelvic structures are complicated due to their three dimensional location with depth which makes it difficult to understand.
In TAPP as a hernia repair, recurrence and intraoperative complication is to be avoided.
Against recurrence, it requires not only recognition of the main orifice but complete assessment of the potential hernia defects and co-existence type hernia with an orifice simultaneously. The potential defects is detected as "loosens", other than orifice, at the lateral triangle and the Hasselbach's triangle inside the groin. In addition a mesh should provide adequate coverage of the inguinal floor. The inferior edge of the mesh should lie flush against the retroperitoneum and not curl, so that the seminal duct and the umbilical artery is landmark for dissection of peritoneum.
Against intraoperative catastrophic complication, it is important to understand the location of the iliac vessels, genitofemoral and lateral femoral cutaneous nerves, and bladder.
3D visualization has been introduced into the laparoscopic surgery and commented as making big advantage especially in pelvic surgery. In TAPP, this will do at the relative recognition of vessels and prevesical space.
We will show and discuss the advantage through our surgical experience.

ASP1-6

Scar-less laparoscopic hernia repair under the view of 3D scope

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Introduction: To minimize the trauma in approach route of laparoscopic transabdominal preperitoneal hernia repair (TAPP) for adult inguinal hernia, wedeveloped a new operative technique with the use of two 2mm punctures. Moreover, we verified the safety of Needlescopic TAPP by using 3D scope.
Methods: We developed 6 kinds of new 2mm instruments including grasping forceps, hook shaped electrode, mesh pusher, needle driver, scissors and laparoscope. The needle scopic TAPP was performed with these instruments.
Results: Needlescopic TAPP was stably performed in 80 patients without significant morbidity. There was no recurrence and the operation time was 46.3 minutes in average.
Conclusions: Newly developed 2mm devices showed sufficient performance and durability in needlescopic TAPP. Each of these devices plays an essential role to enable this technique. On the other hand, a meticulous attention must be payed to manipulate these fragile devices. The view of 3D scope may be useful to understand the fine movement of needle devices.

ASP1-7

Impact of 3D laparoscopy on TEP hernia repair

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Introduction: Recent progress in technology introduced images of 3 dimension into laparoscopic gastrointestinal surgery. Additional sensation of depth greatly contributed to the quality of surgery. However, for TEP hernia repair, most procedure were still carried out by conventional 2D laparoscope. Here we will report our initial series of single incision TEP under 3D laparoscope.
Procedure: Single incision TEP procedure was carried out through 2cm skin incision made at umbilicus. Wound retractor and rubber glove was used to keep pneumatic pressure in the preperitoneal space. All dissection was carried out under laparoscopic observation and there was no blunt dissection. Due to the increased diameter and feature of 3D scope (Olympus 3D Flex Eye) dissection maneuver in the preperitoneal space was a little different from ordinary 2D TEP (Olympus 30 degree 5mm in diameter). Reduction of hernia and repair by mesh was carried out same fashion as original TEP.
Discussion: Adding sense of depth on conventional 2D scope gave us lot more information about boundary space of membrane, fat tissue, vessels, peritoneum, and muscle. Consequently, dissection was precise and easier than conventional 2D scope, while increased diameter of scope resulted more interference and limitation of forceps handling.
Conclusion: TEP under 3D laparoscopy introduced new sensation whereas devices trocar should be more sophisticates.

ASP2-1

Feasibility Of robotic-assisted Laparoscopic Repair Of Different Types Of Hernia: Early Experience Of A Single Center

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Background: Robotic-assisted laparoscopic hernia repair offers many advantages utilizing endowrist ergonomic movement, depth of perception, 3D magnified high definition images to identify anatomical structures to avoid nerve injury, which eliminate Groin and testicular pain.
Methods: Retrospective analysis of 19 hernia patients operated in AlWakra Hernia Center, Hamad Medical Corporation, Qatar in collaboration with Navicent Health systems Macon, Georgia USA in 2016; group I: 13 inguinal hernia patients, group II: 5 ventral hernia patients (2 para-umbilical hernia & 3 port site incisional hernia), & group III: 1 hiatus hernia patient. They were submitted to robotic-assisted laparoscopic mesh repair of the hernia by da Vinci System, Xi (Intuitive Surgical, USA) using Progrip mesh (Covidien, USA) in group I, Gore Dual mesh (WL Gore & Associates, USA) in group II, & Gore Bio-A mesh (WL Gore & Associates, USA) in group III.
Results: Mean age was 38.8, 52.2, & 54 years, mean operative time was 58.3, 74.4, & 146 minutes for group I,II, & III respectively. One patient (group I) was converted to laparoscopic TAPP due to extensive adhesions. No operative complications recorded. Post-operatively, 1 patient (group II) developed intra-abdominal bleeding from inferior epigastric vessels injury during mesh fixation using fascia closure device He was treated conservatively. Mean length of hospital stay was 1.26 days.
Conclusion: Our early experience revealed that robotic-assisted laparoscopic hernia repair is a safe approach offering better visualization, superior ergonomics, easier intra-corporal suturing. Longer follow up on wider patients range is needed.

ASP2-2

Robotic ventral hernia repair vs laparoscopic repair

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Robotic surgery for ventral hernia is evolving rapidly. Laparoscopic IPOM (Intra Peritoneal On-lay Mesh) repair has been the gold standard for ventral hernias. We present our early data of Robotic versus Laparoscopic IPOM repair.
We have recently started performing Robotic surgery for Ventral abdominal hernias. Since our follow up is short, we would be comparing the immediate and early (technical) differences between the two types of repair.
In our early experience of 12 patients undergoing Robotic IPOM repair we find that robotic repair is more costly and has longer operative time. The post-operative pain is considerably less on Visual analogue score compared to laparoscopic repair when suturing the mesh to the parities than using tackers and trans-fascial mesh fixation sutures during robotic surgery was done. The hospital stay and return to work showed no significant difference.