



My TEP in primary uncomplicated inguinal hernia

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My journey through endo-laparoscopic inguinal hernia repair took 2 decades of learning, changes and understanding but was a worthwhile journey since my residency when most of hernia surger where open mesh repair under local anesthesia. In the late 90s, when the revolution of laparoscopic surgery appeared, I started to do TAPP repair, but, after few years, I switched to TEP as I found it more natural and without altering the natural anatomy of the abdomen. Since then, i refined continuously my technique, my steps, my indication and i continuously audit my results and outcome to verify the improvement and the benefits for the patients.

As today, we continue to talk about Quality Improvement and Quality Control in Healthcare as one of the main key process analysis (KPA) and indicator of efficiency and outcome, uncomplicated inguinal hernia as one of the most common surgical procedure that is always under scrutiny by the healthcare providers [1, 2]. And Inguinal hernia is one of the procedures under our Ministry of Health, a project of Value-Driven Outcome (VDO) of 15 common procedures. Through this project, data on inguinal hernias in our Hospital are monitored with the most common parameters and audited every 3 months. This allows us to have good clinical data, and monitor the outcome and the performance of the procedure and of the performing surgeon. 12,870 elective cases were enrolled since 2003 with 1312 patients (10.2%) operated for recurrent inguinal hernias.

Let us analyze the data of the patients with uncomplicated inguinal hernia that is the focus of this Forum.

A total of 11,558 patients with primary inguinal hernias (IH) were analyzed from 2005 to december 2018; among them, we have a 5% ($n = 578$) of inguinoscrotal hernia. The number of uncomplicated IH is 10,980. Interesting to note that we have a high rate of bilateral hernia compared to unilateral (7466 vs 3514; 68% vs 32%), while female patients are only 1.75% ($n = 192$) and most of them have bilateral hernia (82%; $n = 157$). In 95% of them ($n = 182$), an intraoperative finding of indirect inguinal hernia was reported. The overall mean age was 59 years for male and 62 for female patients.

All procedures were done under General Anesthesia (GA) except in 10 cases where a peripheral anesthesia (PA) was done. TEP is generally done under GA, even though, with an adequate experience and a proper technique that avoid the escape of the carbon dioxide inside the abdomen, it is possible to perform it under PA. Nevertheless, in our series the type of anesthesia do not affect the hospital stay or else. 75% of the cases are discharged the same day, while 15% within 23 h, only 10% are admitted as in-patient for several reasons either social or post-operative sequelae as urinary retention, post-operative ileus, or on anti-coagulant therapy that requires monitoring.

As far for the technique, majority of patients underwent TEP (9562; 87%), while 1418 (13%) underwent TAPP either for teaching or for need of diagnostic laparoscopy. There is no doubt that, between TEP and TAPP, the last is a much simpler operation to perform, with great visual field, good operative view, and less space challenge than TEP. It is in my opinion that TAPP, is a powerful teaching tool before embarking on TEP it is an easier approach to the anatomy of the posterior inguinal region, which is one of the challenges and difficulties to the proficiency of the endo-laparoscopic hernia repair. I believe this is one of the main factor affecting the spreading of both TEP and TAPP, even though several RCTs, metanalyses and more EBM studies [3], confirmed the tangible benefits of the technique. In fact, the Devil was in the longer procedure time and in the steep learning curve more than in the evidence of superior benefits and good clinical outcome, the Omen was the worldwide

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spread of endo-laparoscopic techniques, the improvement of technologies, and the embracement of them by the younger generation fascinating to minimize surgical trauma and offer a better experience to groin hernia patients.

Being proficient in both TEP and TAPP gives the surgeons the choice to select the best procedures in complicated cases where the old and absolute principle of one technique best and fit to all is not true and we should adopt in the modern world of hernia surgery, that a “*good hernia surgeon*” is the one *who can master both anterior and posterior repairs either by open or endo-laparoscopic approach and adapt it to the different situations.*

As far for the complications, our data show that we have a very low rate (1%) of return to hospital admission within 30 days: 112 patients for urinary retention, 4 (on warfarin) for late hematoma (4–6 day post-op), and 2 for intraabdominal collection for a total of 118 (1.07%).

The rate of SIS in all uncomplicated inguinal hernia was 3% ($n = 329$). Seroma was reported at the rate of 5% ($n = 550$). We analyzed this subgroup and we reported an 85% rate in $IH > M2$. Based on these data, we started to close by intracorporeal suturing all large direct defect since end of 2017; early results showed a not significant but lower rate of seroma. I believe, that seroma will be one of the next-challenging issues to tackle in IH repair because of the aging population and the higher rate of large direct hernia in the elderly. On the other side, seroma is only a temporary side-effect of the surgical repair that will solve spontaneously within 4–6 weeks. In our series, only in four patients (0.03%), an excision was required after more than 6 months. We do not have report of chronic pain, may be due that we are very selective in mesh fixation (only $M/L > 2$, bilateral), number of stapler used (max 4–5, on the Cooper’s Ligament and lateral to the inferior epigastric vessels) and adopting absorbable fixation since available. Similar, for mesh infection, a strict *no touch technique* is adopted where the mesh is handled in clean sterile environment that avoids any contact with skin, blood residual, or else.

In our VDO report, we have a recurrence of 0.6% with a formidable 98.5% follow-up, the benefits of living in a small Asian city–state. Low recurrence rate and post-operative complications of 6–7% were stable in the last 8–10 years for uncomplicated IH. Recurrence was mainly in large direct hernia and less in large indirect hernia (ratio 70:30), as learning point we now utilized larger than 10×15 cm mesh in all $IH > M2 \setminus L2$, we close the defect by suture in direct hernia ($M > 2$). Our ongoing study showed a much lower significant recurrence rate but a longer follow-up before a final statement is needed.

We do not adopt a post-operative policy of rest for the patients, but we suggest a restart of normal life as soon as they are comfortable. Refraining from activities is not a cure for recurrence or to prevent it. A good case selection, identification of risk factors, adequate pre-operative work-up, and surgical technique are the only factors that will bring your recurrence and complications as low as possible.

TEP is a wonderful technique with great results in experienced hands and in the right patients. It can be applied in more than 80% of the patients with an outcome superior to many other approaches, it must be part of the armamentarium of any hernia specialist because of the lower complications rate and benefits to the patients. Embark on your path to become a hernia specialist with passion for learning a different anatomy of the groin, new set of surgical skills that will benefit you in many other procedures, master different techniques of repair that will diversify your choice for the best indication in a today patient’s centered treatment.

Compliance with ethical standards

Conflict of interest The author declares that he has no conflict of interest and consent to the publication.

Ethical approval Ethical approval or human animal rights as this is just a personal experience on a surgical technique.

Human and animal rights This article does not contain any studies directly involving human participants.

Informed consent For this type of study formal consent was not necessary.

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