



CIRUGÍA ESPAÑOLA

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Editorial

Enhanced-view Totally Extraperitoneal Approach (eTEP) Access in Hernia Repair[☆]



Abordaje extraperitoneal de vista extendida (eTEP) para la reparación de hernias

Definition of the eTEP Approach

The enhanced-view totally extraperitoneal approach (eTEP) involves a series of surgical maneuvers and strategies aimed at enhancing an extraperitoneal work space for minimally invasive hernia repair and other procedures. These maneuvers include remote access of the defect, creation of a large extraperitoneal space, and flexible placement of surgical trocars. This is complemented with the excision of the natural limits of the space, such as the arch of the transverse abdominal muscle, medial edge of the posterior lamina of the rectus abdominis muscle and the posterior fascia of the internal oblique muscle and transverse abdominal muscle. Most of these maneuvers are initiated medial to the semilunar line, although it is possible to access the extraperitoneal space directly lateral to the semilunar line (lateral eTEP), to repair a lateral lumbar hernia or to perform a high triple neurotomy.

The eTEP approach is more a concept than a technique. It has provided us a better understanding and use of the extraperitoneal space beyond the limits of the Retzius and Bogros spaces with which we are so familiar, rendering it unlimited once its divisions are dissected.

Origin of the eTEP Concept

The most frequently used minimally-invasive technique to access the extraperitoneal space is perhaps the TEP for inguinal hernia repair, which has remained unchanged for almost 25 years.

Inspired by its limitations, including a reduced surgical space, restrictions for trocar placement, low tolerance to

accidental pneumoperitoneum, poor ergonomics and the difficulty to teach and learn the technique, we conceived the enhanced-view totally extraperitoneal approach, or eTEP. The first procedures using the eTEP technique for inguinal hernia repair were carried out in 2009, and the first publications appeared in 2011.^{1–4} Since then, it has been progressively standardized.

A short time later, we described direct access using the eTEP approach outside the semilunar line for the repair of lumbar hernias.⁵ In describing the crossover maneuver, Igor Belyansky implemented the Rives-Stoppa eTEP technique and the eTEP-Transversus Abdominis Muscle Release, which have been evaluated in several hospitals in various countries around the world.⁶ Marc Miserez also deserves special mention for his description of an extraperitoneal endoscopic approach for the repair of small ventral hernias, without primary closure of the defect, in 15 patients in 2002.⁷ Although the technique did not obtain much relevance or diffusion, it was ahead of its time.

Advantages of the eTEP Approach

The general advantages of this approach are those of any extraperitoneal surgery, including:

- Reduced risk of intestinal injury
- Less need for visceral retraction
- Less frequent postoperative ileus
- Fewer intraperitoneal adhesions and associated complications
- Fewer adverse hemodynamic effects than with the intraperitoneal approach

[☆] Please cite this article as: Daes J. Abordaje extraperitoneal de vista extendida (eTEP) para la reparación de hernias. Cir Esp. 2020;98:249–250.

Advantages in inguinal hernia repair

The advantages of the eTEP approach for inguinal hernia repair include:

- Quick and easy creation of a large surgical workspace
- Flexibility in the placement of surgical ports, which can be adapted to many circumstances and body types
- Tolerance to accidental pneumoperitoneum
- Good ergonomics

The importance of these advantages lies in their facilitating the steps necessary to achieve a critical view of the myopectineal orifice. These steps, which should be implemented in any minimally invasive technique for the repair of inguinal hernias, have been shown to reduce complications and recurrence, and allow the technique to be standardized.⁸

The eTEP approach is indicated when the surgeon's training and experience, hospital conditions and resources, hernia type, and patient characteristics are suitable. Our group routinely performs the eTEP approach in most inguinal hernias. It is especially indicated when the navel-pubis distance is short, in obese or post-bariatric patients, when there is a history of previous pelvic surgeries, and in inguinoscrotal, sliding or incarcerated hernias. The technical details of the eTEP approach for inguinal hernia repair, including pros and cons of the procedure, have been described in other publications.⁹

Advantages in the repair of ventral and lumbar hernias

The main advantage of the eTEP approach for the repair of ventral and lumbar hernias is that it allows all the current principles for the reconstruction of the abdominal wall to be applied. These include: primary closure of the defect and the reconstruction of the *linea alba* under physiological stress; extensive prosthetic reinforcement of the visceral sac (Stoppa); placement of a conventional mesh (without a surface allowing contact with the viscera) in a retromuscular position (reducing the complications associated with its exposure to intra-abdominal content, with better integration, less need for fixation, and at a lower cost); and finally, the minimally invasive approach, when indicated.¹⁰

It is reasonable to initiate the experience with small primary central hernias associated with diastasis of the rectus muscles or with pelvic hernias located on the midline. With experience, it is possible to continue with more complex hernias, such as incisional or lateral hernias (LI–L4).

There are a multitude of possible maneuver combinations for the eTEP approach for ventral hernia repair, which go beyond the scope of this publication. The results of studies carried out in several countries show that the technique is safe, effective and has great advantages for patient quality of life.⁶ However, it is a laborious technique that requires detailed knowledge of the anatomy of the extraperitoneal space, including its natural divisions and its neurovascular structures, as well as and formal training, which should ideally include practice on fresh corpses, under a mentor.¹¹

Although rare, complications inherent to this approach have been described, such as internal hernia due to dehiscence of the posterior closure, injury to the *linea alba* during crossover, and large bruises.

Although with common surgical steps, the different maneuvers of the eTEP technique vary for inguinal, ventral and/or lumbar hernias.¹¹ The pending tasks are to refine the indications of the procedure, evaluate its reproducibility, its aesthetic results and the possible overuse of the subsequent separation of components-TAR.

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2173-5077/

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