

Short Communication

Laparoendoscopic Repair of Bilateral Inguinal Hernia: State of the Art and New Insights

Chiari Damiano*, Veronesi Paolo, Platto Marco, Borroni Giacomo and Zuliani Walter

Department of General Surgery, Humanitas University, Italy

Short Communication

Inguinal hernia is a wide spread disease and has a significant socio-economic impact. Patients are often young or in working age. Surgery is the only treatment option. The minimally invasive technique has become a fundamental element in the treatment of this pathology. In particular, the laparoendoscopic approach is generally considered the gold standard technique for bilateral inguinal hernia. The choice between the Transabdominal Preperitoneal (TAPP) or the Totally Extraperitoneal (TEP) repair remains an open question. The biomaterial of the implanted mesh is another important element for patient outcome. Currently, polypropylene is the most frequently used biomaterial in inguinal hernia repair. In recent times, semi-absorbable meshes have become available in order to reduce the foreign body reaction. We want to describe the state of the art in the laparoendoscopic repair of bilateral inguinal hernia. Moreover we want to express some considerations about the potential benefits of the new semi-absorbable meshes.

Inguinal hernia is a widespread disease and has a significant socio-economic impact. This disorder mainly affects the male population and patients are often young or in working age. Surgery is the only treatment option for inguinal hernia. Since it is a benign pathology that affects young and sporting patients, attention to avoid complications must be at the highest level. The utmost care must be taken to avoid any long-term problems related to the mesh placement.

In this regard, minimally invasive techniques for the treatment of inguinal hernia have been introduced and many efforts have been made to find the most tolerable prosthetic material. In this context, we want to express some considerations about the state of the art in laparoendoscopic bilateral inguinal hernia repair.

The laparoendoscopic approach is generally considered the gold standard technique in the treatment of bilateral inguinal hernia.

The choice between the Transabdominal Preperitoneal (TAPP) or the Totally Extraperitoneal (TEP) repair remains an open question. Literature regarding this point is heterogeneous and weak. The overall complication rate after TAPP is lower than after TEP in the Swiss Hernia registry, whereas a German registry showed less complications after TEP. Visceral lesions and port-site hernias are considered more common after TAPP, on the other side TEP is characterized by more vascular lesions and higher conversion rate. No significant differences were found with regard to recurrence rates, post-operative pain and length of hospital stay. Moreover, from a socio-economic perspective, the endoscopic treatment of bilateral inguinal hernia is more cost-effective than traditional surgery. But a large population-based study in German hospitals found no differences in TAPP and TEP costs. In the absence of clear evidence in favour of one of the two techniques, we consider this conclusive statement of The HerniaSurge Group to be decisive: “operative team ease and experience are important factor in the decision to use one technique preferentially”. In our opinion, the TAPP technique facilitates the surgeons with experience in advanced laparoscopic surgery. In this context, anatomy is easier to identify with a laparoscopic approach and the procedure should be safer. Operative time and learning curves are shorter for TAPP approach. However, attention to patient selection is required in order to minimize the risk of complications from a TAPP repair. We recognize that in some particular conditions, such as previous abdomen-pelvic surgery or contraindication to general anaesthesia, TEP approach could be better to perform a minimal invasive hernia repair.

The choice of the prosthetic material is another very important aspect to obtain the best outcome from the mini-invasive repair of the bilateral inguinal hernia. Polypropylene is the most frequently used biomaterial in inguinal hernia repair.

This material is considered non-immunogenic, non-toxic and inert both physically and chemically. Anyway polypropylene can sometimes induce a foreign body reaction. A too strong and long-lasting foreign body reaction could contribute in the development of chronic groin pain. Moreover, an excessive inflammatory reaction with subsequent fibrosis could induce a dysfunction of the spermatic cord and, eventually, fertility problems because the mesh is located in contact with vas deferens and testicular vessels during endoscopic inguinal hernia repair. The weight of the mesh, corresponding to the amount of polymers, and the pore size of the material can determine the degree of inflammation. For this reason, Light-Weight Meshes (LWM) were developed. These meshes have a reduced content of

Citation: Damiano C, Paolo V, Marco P, Giacomo B, Walter Z. Laparoendoscopic Repair of Bilateral Inguinal Hernia: State of the Art and New Insights. *Endosc.* 2019; 1(1): 1001.

Copyright: © 2019 Chiari Damiano

Publisher Name: MedText Publications LLC

Manuscript compiled: January 14th, 2019

***Corresponding author:** Chiari Damiano, Department of General Surgery, Humanitas University, Italy, Tel: 39-0331476545;

E-mail: damiano.chiari@icloud.com

non-absorbable foreign material with a wider pore size (>1 mm). Data from the literature show significant benefits of light-weight mesh respect to heavy-weight mesh laparoendoscopic treatment of inguinal hernia. In a recent meta-analysis, light-weight mesh was associated to a reduction in chronic groin pain, groin stiffness and foreign body sensation. The rate of hernia recurrence is not statistically different between light-weight mesh and heavy-weight mesh.

Despite the minimal invasive approach and the use of LWM, the patient's complaint about the sense of a foreign body remains a problem in some cases. In a low rate of patients the discomfort persists even several years after surgery. For this reasons, bioengineers are researching new meshes that are stiff enough to be easily positioned with laparoendoscopic technique and that reduce foreign body reaction. In this prospective, the semi-absorbable composite PLLA–polypropylene mesh was introduced. The Hybridmesh[®] by Herniamesh[®] PLLA/PP mesh is a macroporous mesh knitted by quadriaxial technology with an initial weight of 80 g/m². The PLLA component constitutes the 75% of the mesh and confers more stiffness, useful during laparoscopic placement. PLLA is an absorbable material.

Consequently, at the end of the period of reabsorption it is expected that an ultralight network (20 g/m²) will remain implanted. This material should reduce the risk of foreign body reaction with the consequent clinical benefit.

The laparoendoscopic technique gave a significant improvement in the treatment of bilateral inguinal hernia and gave an advantage from socio-economic prospective. In particular, the Transabdominal Preperitoneal (TAPP) repair seems to be the most favourable technique from a clinical point of view. It will be interesting to evaluate if the robotic technique can further improve these results while maintaining a favourable cost-benefit ratio. Regarding the mesh, at present, the published data do not show a material that is certainly better than polypropylene in the long term. The new semi-absorbable meshes present an interesting potential benefit to reduce the foreign body reaction and thus improve the clinical outcome [1-11]. Clinical data confirming the long-term effect of this biomaterial are waited.

References

1. Bittner R, Arregui ME, Bisgaard T, Dudai M, Ferzli GS, Fitzgibbons RJ, et al. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal Hernia [International Endohernia Society (IEHS)]. *Surg Endosc.* 2011;25(9):2773-843.
2. The HerniaSurge Group. International guidelines for groin hernia management. *Hernia.* 2018; 22(1):1-165.
3. Simons MP, Aufenacker T, Bay-Nielsen M, Bouillot JL, Campanelli G, Conze J, et al. European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia.* 2009;13(4):343-403.
4. Miserez M, Peeters E, Aufenacker T, Bouillot JL, Campanelli G, Conze J, et al. Update with level 1 studies of the European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia.* 2014;18(2):151-63.
5. Poelman MM, Van den Heuvel B, Deelder JD, Abis GS, Beudeker N, Bittner RR, et al. EAES Consensus Development Conference on endoscopic repair of groin hernias. *Surg Endosc.* 2013;27(10):3505-19.
6. Gass M, Banz VM, Rosella L, Adamina M, Candinas D, Güller U. TAPP or TEP? Population-Based Analysis of Prospective Data on 4,552 Patients Undergoing Endoscopic Inguinal Hernia Repair. *World J Surg.* 2012;36(12):2782-6.
7. Kockerling F, Bittner R, Jacob DA, Seidelmann L, Keller T, Adolf D, et al. TEP versus TAPP: comparison of the perioperative outcome in 17,587 patients with a primary unilateral inguinal hernia. *Surg Endosc.* 2015;29(12):3750-60.
8. Sajid MS, Kalra L, Parampalli U, Sains PS, Baig MK. A systematic review and meta-analysis evaluating the effectiveness of lightweight mesh against heavyweight mesh in influencing the incidence of chronic groin pain following laparoscopic inguinal hernia repair. *Am J Surg.* 2013;205(6):726-36.
9. Klosterhalfen B, Junge K, Klinge U. The lightweight and large porous mesh concept for hernia repair. *Expert Rev Med Devices.* 2005;2(1):103-17.
10. Shin D, Lipshultz LI, Goldstein M, Barmé GA, Fuchs EF, Nagler HM, et al. Herniorrhaphy with polypropylene mesh causing inguinal vasal obstruction: a preventable cause of obstructive azoospermia. *Ann Surg.* 2005;241(4):553-8.
11. Hollinsky C, Sandberg S, Koch T, Seidler S. Biomechanical properties of lightweight versus heavyweight meshes for laparoscopic inguinal hernia repair and their impact on recurrence rates. *Surg Endosc.* 2008;22(12):2679-85.