

Initial experience in laparoscopic bilateral inguinal hernia repair (TEP) with new anatomical mesh with large pore and low weight (Dynamesh Endolap) in short stay (6 months follow-up)

Juan Manuel Suárez Grau^{1,2}, Isaias Alarcon del Agua^{2,3}, Juan Antonio Bellido Luque^{1,2}, Julio Gómez Menchero^{1,2}, Juan Francisco Guadalajara Jurado¹, Fernando Docobo Durántez^{2,3}

Abstract

Introduction: Laparoscopic surgery for inguinal hernia remains a controversial issue. Its use for surgery of bilateral inguinal hernia is the most established and indicated. The anatomical 3D meshes have a major role in the development of the technique. Today meshes with large pores and scarce materials are used in order to obtain low pain rates and faster recovery with the similar recurrence rates.

Material and methods: We present an initial series of 20 bilateral TEP inguinal hernia repairs using PVDF anatomical 3D macroporous mesh (Dynamesh) fixed with fibrin glue with 6 months follow-up. The patients' mean age was 43 years. Inclusion criteria were: male, bilateral inguinal hernia diagnosed, ambulatory surgery criteria, type of hernia: L1-2, M1-2. The follow-up was determined at discharge, a week, first month and 6 months after surgery. Visual analogue scores for pain was conducted in all the patients at follow-ups.

Results: The results have been positive, with follow-up of all patients without recurrence at 6 months after surgery. No surgical infection or

other major complications in the series were detected. Seromas were detected in medial hernias (9%), disappearing at one month. The mean surgical time was 35 min (20–45 min range), with a mean time of 3 min for each mesh placement. No conversion was made to TAPP in any case. The rates of pain were decreasing to 0 at 6 months with no chronic pain in any case.

Conclusions: The laparoscopic technique is still showing its great advantages, especially in the bilateral inguinal hernia. Using new generation meshes with large pores and low quantity material with atraumatic fixation is positioned as a good choice for laparoscopic surgery for inguinal hernia in ambulatory surgery.

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Keywords: Inguinal hernia, short stay, laparoscopic surgery, mesh, TEP.

Authors' addresses: 1. Hospital of Riotinto, Huelva, Spain 2. Clinic Quirón Sagrado Corazón, Seville, Spain 3. University Hospital Virgen del Rocío, Seville, Spain.

Corresponding Author: Juan Manuel Suárez Grau Hospital of Riotinto, Avda. La esquila N15, 21660, Huelva, Spain.
Email: graugrau@gmail.com

Introduction

Laparoscopic surgery is still controversial, yet its use in the surgery of bilateral inguinal herniae is the most established and undisputed. There are few publications on bilateral inguinal hernia surgery specifically, as results in most cases are intermingled with unilateral inguinal hernia. This makes it difficult to arrive at definitive conclusions regarding their clinical management. Today we have multiple studies in inguinal hernia but the issue of bilateralism is approached from several perspectives: bilateral inguinal hernia diagnosed, hidden or incipient and “future”.

Clinical examination for bilateralism should be performed in every patient who presents with a detected inguinal hernia. Sometimes inguinal ultrasound is necessary, but most of the time it is physical exploration that reveals the existence of bilateral inguinal herniae.

Anatomical 3D meshes help much to its development with decreased operative time. Today increasingly, meshes with large pores and scarce materials are used, which may favour the absence of chronic pain and can improve recovery in the immediate postoperative period. In this study, we analyzed the results (recurrences, pain, surgical time and

complications) using this type of approach and this type of mesh with atraumatic fixation (fibrin glue).

Objective

To evaluate the results after 6 months after the intervention of bilateral inguinal hernia by TEP using new 3D anatomical large pore mesh (Dynamesh Endolap, Cardiolinek, Germany) fixed with fibrin glue.

Material and Methods

Patients: We selected 20 patients with bilateral primary inguinal herniae, who completed 6-months follow-up after bilateral TEP hernia surgery. All patients were male with a mean age of 43 years (Range 28–77yrs). All patients were operated on an ambulatory basis.

Selection: Patients with primary bilateral inguinal hernia L1-2 and/or M1-2 (European Hernia Society classification). (In recurrent hernias and hernias bigger than L2 and M2 we used absorbable

tackers, and these patients were not included in the actual study).

Inclusion criteria: hernias L1-2, M1-2, non recurrent hernia with previous hernioplasty, suspected or confirmed primary bilateral inguinal hernias, male gender (in women we perform systematically TAPP), with normal weight, and suitable criteria for ambulatory patients.

Exclusion criteria: Recurrence with previous mesh, female (we performed TAPP), unilateral hernias (we performed only unilateral TEP), no possibility of ambulatory patients (in such patients we planned a laparoscopic inguinal hernia repair with overnight and no more than one day hospital stay).

Technique: We performed bilateral totally extraperitoneal inguinal (TEP) using anatomical Dynamesh Endolap large pore mesh and fixation with fibrin glue in all the cases analyzed. (Figures 1 and 2)

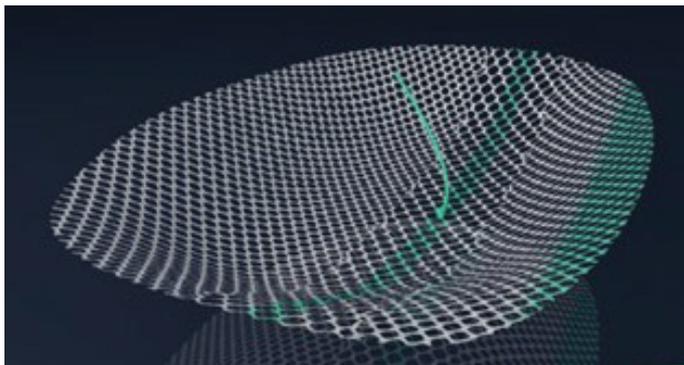


Figure 1 3D anatomical PDVF mesh (Dynamesh Endolap) for inguinal laparoscopic repair.



Figure 2 TEP using Dynamesh Endolap fixed with fibrin glue.

Parameters analyzed:

1. Recurrences after 6 months.
2. Analysis of postoperative pain (Visual analogue scale: VAS): before surgery, at discharge, at one week, one month and 6 months after surgery.
3. Physical examination: seroma, hematoma, wound infection and other complications.
4. Surgical Time: Duration of surgery and duration of the placement of the mesh.

Results

Twenty male patients with bilateral inguinal herniae were operated upon in ambulatory care, with laparoscopic extra-peritoneal repair (TEP). A total of 40 hernioplasties were performed (20 bilateral) with a distribution of: 22-L2, 4-L1, 12-M2, 2-M1 types.

The results have been excellent, with no recurrence after follow-up of all patients at 6 months after surgery. No surgical wound infection or other major complications were noted in the series. The mean surgical time was 35 min (20-45 min range); the mean surgical time placing the mesh was 3 min (1-8 min range). Seroma rates were over 9% at week (only in four M2 cases) and no seroma were detected at one month. No conversion was made to TAPP in any case. Discharge took place at less than 24 hours in all patients (mean of 12 hours).

The analysis of Pain during stress (VEA-s) and at rest (VEA-r): prior to surgery: 3-4 VEA-s / 2 VEA-r, at discharge: 3-4 VEA-s / 2 VEA-r, at week: 1-2 VEA-s / 1 VEA-r, at month: 1 VEA-s / 0.5 VEA-r, at six months: 0 VEA-s / 0 VEA-r. (Figure 3).

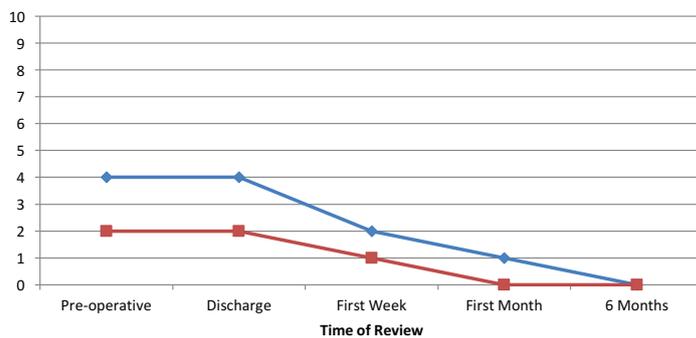


Figure 3 Visual analogue pain scores for patients at rest (■), and under stress (◆).

Return to normal lifestyle occurred after 6 days post-operatively (Range 5–10 days).

Discussion

Only 10-15% of papers about interventions on bilateral inguinal herniae are uniquely collected in the literature with most studies referring to such hernias secondarily. One of the main indications where laparoscopic surgery is more appropriate is in the field of repair of bilateral inguinal hernia and recurrent inguinal hernia. In a patient with bilateral inguinal hernia, unless a specific contraindication for laparoscopic or general anesthesia exists, laparoscopic repair can be currently considered the gold standard according to clinical guidelines of the European Hernia Society (EHS) and Americas Hernia Society (AHS).[1,2]

The use of laparoscopic surgery in bilateral inguinal hernia has great advantages, saving the time involved to perform both interventions through a unique approach as well as the possibility offered to explore both inguinal regions, bearing in mind that for 11–20% of cases of unilateral hernia, there is a subclinical contralateral hernia.[3]

McCormack et al. analyzed the effectiveness and economic cost of laparoscopic surgery versus open surgery, having an economic advantage for open surgery for the treatment of primary inguinal hernia, but a clear economic advantage in the use of laparoscopy for the treatment of recurrent inguinal hernias and bilateral inguinal hernias.[4]

The advantages of the laparoscopic approach in relation to the reduction in postoperative pain and accelerated return to work, make this minimally invasive approach a socio-economically cost effective option compared with the open approach for bilateral inguinal hernias.

With regard to the other two types of bilateral inguinal hernia (hidden / incipient and “future”) stands out concerning the occult or incipient contralateral hernia, Koehler et al. found hidden contralateral hernias in 13% of patients undergoing unilateral TAPP [5], Thumbe et al. found 22% of contralateral inguinal hernia also hidden in TAPP [6] while Bochkarev et al. reported 22% occult contralateral hernias in TEP in 100 patients.[7]

Therefore, we assume there are almost a quarter of patients undergoing surgery for unilateral inguinal hernia have at that time a bilateral inguinal hernia. It is logical to apply the laparoscopic approach in patients with contralateral discomfort to the intervention area or any sign, both exploration and complementary tests.[8]

As for “future” bilateral inguinal herniae, Zendejas and co-workers conducted a study in 409 patients with a negative exploration using TEP for the contralateral inguinal region, to review the risk of occurrence. They found that for a median review time of 5.9 years (0–14), 33 patients (8.1%) developed a hernia on the previously healthy side. The incidence rates at 1, 5 and 10 years was 1.6, 5.9 and 11.8% respectively. The median time to hernia development was 3.7 years.[9]

Prophylactic contralateral repair area has advantages in avoiding future interventions, but has the disadvantages of increasing the surgical time and the possibility of minor injuries (being mainly chronic pain, which is currently very low with laparoscopic techniques and new materials such as self-adhesive mesh, wide-pore and atraumatic fixation incorporated or by adhesives)

The use of the new meshes with large pores and less quantity of material fixed with adhesives is one of the most interesting fields in the advances in laparoscopic inguinal hernia repair because at present good results are reported in terms of less pain and faster recovery in short stay or ambulatory surgery.[10]

Conclusions

The laparoscopic technique is still proving its great advantages, especially in bilateral inguinal herniae. Using this new mesh (which allows reduction of the amount of repair material and has large pores) and atraumatic fixation (fibrin glue), we are able to reduce the aggressiveness of the technique which might explain the excellent results about postoperative pain that we analyzed in our series of patients. The future of these materials is the key to getting better results and achieves ambulatory surgery of the laparoscopic hernioplasties process.

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