Journal of the Formosan Medical Association (2015) 114, 216–220

Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.jfma-online.com

ORIGINAL ARTICLE

The use of porcine small intestine submucosa implants might be associated with a high recurrence rate following laparoscopic herniorrhaphy

Chen-Hsun Ho [a], Pin-Wen Liao [b], Stephen Shei-Dei Yang [c,d], Fu-Shan Jaw [e], Yao-Chou Tsai [c,d,*]

[a] Department of Urology, National Taiwan University Hospital, Taipei, Taiwan
[b] Department of Neurology, Cathay General Hospital, Taipei, Taiwan
[c] Division of Urology, Department of Surgery, Buddhist Tzu Chi General Hospital, Taipei, Taiwan
[d] Department of Urology, College of Medicine, Tzu Chi University, Hualien, Taiwan
[e] Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

Received 1 March 2012; received in revised form 12 March 2013; accepted 15 March 2013

KEYWORDS
hernia;
laparoscopic;
small intestine submucosa;
total extraperitoneal

Background/Purpose: The efficacy of porcine small intestine submucosa (SIS) implants in hernia repair has rarely been reported and remained elusive. We herein report our experience to further elucidate the efficacy of SIS mesh in herniorrhaphy.
Methods: Between June 2008 and October 2009, a total of 82 patients with 125 inguinal hernias undergoing endoscopic total extraperitoneal (TEP) herniorrhaphy were included. Seventy patients (with 108 hernias) had traditional polypropylene and 12 patients (with 17 hernias) had SIS mesh repair. Postoperative complications and recurrence rates were compared between the two meshes.
Results: The demographics between two groups were similar. All operations were performed smoothly with laparoscopy, and the postoperative courses were uneventful. After a median follow-up of 18 months, five (7%) in the polypropylene group and three (25%) in the SIS group had chronic pain ($p = 0.09$). Five of 17 (29.4%) hernia repairs in the SIS group had an ipsilateral recurrence, compared to no recurrence in the polypropylene group. In the five cases, the

* Corresponding author. Division of Urology, Department of Surgery, Buddhist Tzu Chi General Hospital, 289 Jian Guo Road, Xindian District, New Taipei City 231, Taiwan.
E-mail address: tsai1970523@yahoo.com.tw (Y.-C. Tsai).

http://dx.doi.org/10.1016/j.jfma.2013.03.007

second laparoscopy revealed the SIS mesh had been totally degraded and there was no obvious fibrotic tissue in the previous mesh sites.
Conclusion: Our data suggest that the use of SIS mesh in endoscopic TEP herniorrhaphy might be associated with a high recurrence rate. The second look laparoscopy in these recurrent cases revealed slow and inadequate integration of host tissue. More evidence is still required to further evaluate the efficacy of SIS mesh in endoscopic TEP herniorrhaphy.

Introduction

Tension-free herniorrhaphy with meshes implanted has become the gold standard for inguinal hernia repair.[1] Currently, synthetic meshes (e.g., polypropylene) are the most widely used in tension-free herniorrhaphy, because they are easily handled, quickly integrated, and have an acceptable recurrence rate of $<$1%. Although it is highly effective in preventing recurrence, it raises the concern of a permanent implant; moreover, it could also cause chronic pain or, less frequently, groin infection in some patients.[2–4]

Surgisis inguinal hernia graft (IHG; Cook, Bloomington, IN, USA), is a biodegradable mesh made of purified porcine small intestinal submucosa (SIS).[5–7] It functions as a scaffold to allow the integration of human tissue, while the mesh is gradually degraded. Although it has been used in hernia repair for years, literature reporting its results in inguinal hernia repair is still very limited. Therefore, we reviewed our experience of using SIS mesh in total extraperitoneal (TEP) herniorrhaphy to further elucidate its safety and efficacy.

Patients and methods

Participants

At our department, all patients undergoing laparoscopic herniorrhaphy are registered in a database. Cases have been enrolled since January 2007, and all patients operated on are currently being followed. The present study is a retrospective cohort study, including 82 patients with 125 inguinal hernias who underwent TEP herniorrhaphy at our department between June 2008 and October 2009.

Procedures

All procedures were performed by a single surgeon (YCT). Briefly, three trocars were placed at the umbilicus, 1 cm above the pubic symphysis, and at the mid-point, respectively. The preperitoneal space was entered and dilated with a balloon dilator. Both sides, regardless of clinical presentations, were checked for the presence of obvious wall defects and patent processus vaginalis (PPV). A mesh was routinely placed on the symptomatic side; on the contralateral symptomless side, a mesh was placed only when an obvious wall defect was identified. The choices of mesh, polypropylene or SIS mesh (Surgisis IHG), were determined by the patients' preferences preoperatively. Both types of mesh were placed in the same fashion: a 10×15 cm mesh (either type) was inserted through the 10-mm trocar, and placed to cover the Hesselbach's triangle and the internal ring with a circumferential margin of at least 3 cm. Fixation of the mesh was achieved by the application of two to four titanium spiral tacks (ProTack, Auto Suture, Covidien Ltd, Norwalk, CT, USA) at the Coopers ligament and iliopubic tract.[8] Before implantation, SIS meshes were rinsed in sterile water for a minimum of 2 minutes.[9]

Postoperative care and follow-up

Postoperative complications, analgesics use, and time to return to activities were recorded. All patients received follow-up at our clinics. The frequencies of chronic pain and hernia recurrence were also assessed.

Statistics

Continuous variables were presented as means $\pm$ standard deviation and compared using the Wilcoxon-Mann-Whitney test. Differences in categorical and binary variables between the two groups were tested using a Chi-square test or Fisher's exact test. A p value of <0.05 was considered statistically significant. Statistical analyses were performed using SPSS for Windows (version 17.0; SPSS, Inc., Chicago, IL, USA).

Results

A total of 82 patients with 125 inguinal hernias undergoing endoscopic TEP herniorrhaphy were included in the analyses. Of these, 70 patients (with 108 hernias) had a posterior wall repair with polypropylene mesh, and the other 12 patients (with 17 hernias) had SIS mesh. The demographics and hernia characteristics between the two groups were not significantly different (Table 1). The operation time, blood loss, time of hospital stay, and time of return to daily activities were similar. The SIS group required a higher dose of acetaminophen (23.1 ± 27.3 vs. 5.5 ± 9.0, $p = 0.02$).

Table 2 shows the counts and percentages of postoperative complications. One patient in the SIS group had fever postoperatively. It subsided soon after supportive care. Five in the polypropylene and three in the SIS group had seroma; all spontaneously resolved after a short period of time. Five (7%) in the polypropylene and three (25%) in the SIS group had chronic pain ($p = 0.09$).