

Novel Approach to Open Inguinal Hernia Repair: Pre-peritoneal placement of absorbable Hernia Plug and PTFE Knit Mesh

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INTRODUCTION

Open inguinal hernia repair is associated with low recurrence rates but up to 43%¹ incidence of chronic pain. Laparoscopic inguinal hernia repairs also have low recurrence and complication rates, but up to 22% of patients may have chronic pain². Open repairs using the absorbable GORE® BIO-A® Hernia Plug have been associated with a lower incidence of pain^{3,4}.

To improve results, the literature suggests minimizing nerve involvement, fixation, amount or surface area of foreign body⁵, and the use of inert or absorbable material to minimize chronic inflammatory reaction.

We suggest an ideal method is the open preperitoneal approach and a unique material combination: GORE® BIO-A® Hernia Plug and GORE® INFINIT Mesh. By placing the reinforcement in the preperitoneal space we can minimize fixation and nerve encroachment, reduce pain and swelling. This technique is easy to learn and use, and represents an emerging technique in the literature⁶.

The purpose of this study was to evaluate short term outcomes using the open preperitoneal approach a unique material combination: GORE® BIO-A® Hernia Plug and GORE® INFINIT Mesh.

PATIENT DEMOGRAPHICS

Gender n = 120 pts	
Male	117 (84%)
Female	22 (16%)

COMPLICATIONS

Post Operative	
Wound infection	1
Follow up	
4.5 month avg, range	
1-7 month	
Recurrence (n= 139)	0
Pain (n= 139)	0

OPERATIVE FINDINGS

Inguinal Hernia	98
Direct/Indirect	97
(18 bilateral)	
Femoral	1
Ventral Hernia	41
Umbilical	39
Epigastric	1
Speigelian	1

RESULTS

Between April 3rd, 2009 through October 30, 2009 a single surgeon completed 139 hernia repairs in 120 patients; 98 inguinal and 41 ventral hernias. In addition to standard post operative follow-up, there was 73% response to phone follow up, averaging 4.5 months. All patients reported they were “totally satisfied” with their surgical experience, and there were no negative comments. Minimal complications were reported (Complications table) including 0 recurrences in the review period.

OPERATIVE TECHNIQUE



A pre-peritoneal pocket is dissected. GORE® BIO-A® Hernia Plug is inserted into pre-peritoneal space with the disc against the peritoneum.



Each tube is placed in the preperitoneal pocket, oriented to cover the entire myopectineal space, covering direct, indirect, and femoral areas.



GORE® INFINIT Mesh is placed in the preperitoneal space ensuring adequate overlap of the pubic tubercle and placed under epigastric vessels.



After the mesh is placed, the defect is closed with a modified Bassini technique using non-absorbable suture.

METHODS

A prospective, non-randomized single center evaluation of patients who were treated for unilateral or bilateral inguinal, primary or recurrent hernias without prior mesh repair. All procedures were completed by a single surgeon.

- Modified Plug and Patch method, using a bioabsorbable plug, macroporous PTFE underlay mesh.
- Plug reduces force of hernia while mesh incorporates, and later reinforces the repair as a scaffold for tissue growth.
- Plug becomes a scaffold for tissue generation as it absorbs
- Chronic foreign body reaction is minimized through reduction of permanent foreign body, (GORE® BIO-A® Hernia Plug) and PTFE monofilament (GORE® INFINIT Mesh).

REFERENCES

1. Nienhuijs S, et al. Chronic Pain after mesh repair of inguinal hernia: a systematic review. *AM J Surg* 2007; 194(3):394-400.
2. Kumar et al. Chronic pain after laparoscopic and open mesh repair of groin hernia. *British Journal of Surgery* 2002;89:1476-1479
3. DeBord et al. Two Year Results: Reducing Chronic Pain Utilizing GORE Bioabsorbable Hernia Plug in Inguinal Herniorrhaphy. Poster presented at American College Of Surgeons, 2008.
4. J P Arnaud, C Meyer, J Cancel, A Lacroix, J M Diaz de Cerio, DEssique, J Gugeinheim, P Mariol, C Doucet, J Y Bauchu. 1-Year Preliminary Results: RESOLUT Study. Poster presented at the European Hernia Society/American Hernia Society Joint Congress: September 9-12, 2009; Berlin, Germany.
5. Klosterhalfen B, Junge K, Klinge U. The lightweight and large porous mesh concept for hernia repair. *Expert Reviews in Medical Devices* 2005;2(1):103-117.
6. F. Berrevoet, C. Sommeling, S. De Gendt, C. Breusegem, B. de Hemptinne. The preperitoneal memory-ring patch for inguinal hernia: a prospective multicentric feasibility study. *Hernia* (2009) 13:243-249.
7. J W Murphy, D C Misra, B Silverglide. Sigmoid colonic Fistula secondary to Perfix-plug, Left Inguinal Hernia Repair. *Hernia* (2006) 10:436-438
8. D. J. Lo, K. Y. Bilimoria, C. M. Pugh. Bowel complications after PROLENE® Hernia System (PHS) repair: a case report and review of the literature. *Hernia* (2008) 12:437-440.

CONCLUSION

This technique is a safe, effective, and easy to learn repair for inguinal hernia. Recurrence and pain have been extremely low. Long term evaluation is needed.

DISCUSSION

Preperitoneal placement of GORE® BIO-A® Hernia Plug & GORE® INFINIT Mesh appears to reduce pain and swelling. The totally pre-peritoneal approach reduces nerve involvement and points of fixation. Pre-peritoneal placement of a completely absorbable plug may reduce complications associated with erosion of polypropylene devices into the bowel^{7,8}.

This technique is easy to use with a short learning curve, and is an emerging technique in the literature. Operating times are similar to the author’s prior experience with the PROLENE® Hernia System, and this repair has the advantage of fully covering the direct, indirect, and femoral sites. A long term multicenter study is planned.

GORE® BIO-A® Hernia Plug’s unique 3-dimensional fully absorbable tissue scaffold reinforces the hernia defect, reduces the potential for chronic complications associated with permanent plugs, and has been shown to help minimize long-term pain after inguinal herniorrhaphy².

GORE® INFINIT Mesh is the only 100% solid monofilament PTFE, large-pore, knitted surgical mesh engineered for long term patient comfort and quality of life. Unlike polypropylene and polyester, PTFE has remarkable chemical inertness, providing a naturally low chronic foreign body reaction, and doesn’t degrade in the body over time.

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