Parietex ProGrip™ Self-Fixating Mesh in Surgical Treatment of Pelvic Organ Prolapse

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Rezumat

Parietex ProGrip™ Self-Fixating Mesh în tratamentul chirurgical al prolapsului genital

Introducere: Prolapsul genital în stadii avansate reprezintă o problemă de sănătate publică, iar tratamentul acestuia poate fi dificil, necesitând o abordare multidisciplinară.

Obiective: Obiectivul principal al articolului de față este de a descrie aspectele particulare ale utilizării protezelor textile autofixante Parietex ProGrip™ pentru sacrocolpopexie sau sacrocervicopexie, pe cale abdominală. Obiectivul secundar este de a prezenta rezultatele inițiale ale utilizării acestor proteze textile autofixante.

Rezultate: Zece paciente succesive cu prolaps genital de grad 2 sau mai mare au beneficiat de această procedură. Nu au fost decelate complicații sau recidive la 1, 3 și 6 luni postoperator. Timpul mediu operator a fost de 102±25.84 minute. Durata medie de spitalizare a fost de 6.7±0.67 zile.

Concluzii: Rezultatele utilizării acestei proceduri chirurgicale demonstrează că plasele textile autofixante Parietex ProGrip™ pot fi utilizate fără complicații și cu rezultate postoperatorii bune. Principalul avantaj al utilizării acestei proteze textile este dat de

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faptul că nu necesită alte mijloace de fixare. Lipsa reacției de respingere sau a patologiei corpului străin încurajează implementarea acestei proceduri chirurgicale. Continuarea acestui studiu este necesară pentru a consolida aceste rezultate.

Cuvinte cheie: proteze textile autofixante, prolapsul organelor genitale, tratament chirurgical

Abstract

Introduction: Advanced pelvic organ prolapse is a public health problem, and its treatment can be difficult, requiring a multidisciplinary approach.

Aim: The main objective of this article is to describe particular aspects of the use of Parietex ProGrip™ Self-Fixating Mesh for abdominal sacrocolpopexy or sacrocervicopexy. The secondary objective is to present the initial results of the use of these self-fixating meshes.

Results: Ten successive patients with a POP of grade 2 or higher have benefited from this procedure. No complications or recurrences of prolapse were detected at 1, 3 and 6 months post-operatively. The mean operative time was 102 ± 25.84 minutes. The mean length of hospital stay was 6.7 ± 0.67 days.

Conclusions: The results of this surgical procedure demonstrate that Parietex ProGrip™ Self-Fixating Mesh can be used without complications and with good postoperative results. The main advantage of using this mesh is that it does not require other fastening means. The lack of rejection reaction or foreign body pathology encourages the implementation of this surgical procedure. Further study is needed to consolidate these results.

Key words: self-fixing textile mesh, pelvic organ prolapse, surgical treatment

Introduction

Pelvic organ prolapse (POP) is a common health problem, associated with increased morbidity and decreased quality of life (1). The pathology is represented by the descent of one or more genital segments outside the vaginal canal (2). Depending on the organs involved, prolapse is classified into the posterior compartment, containing either the rectum (rectocele) or small bowel (enterocele); the middle compartment, containing the uterus or vagina; or the anterior compartment, containing the bladder (cystocele) (3). POP is often associated with other pelvic floor disorders, such as bowel and sexual dysfunction or lower urinary tract disease (4).

Current treatment options for POP include pelvic floor muscle training, pessaries and surgery (5). Surgery for POP repair is the last treatment option, reserved for patients with

advanced prolapse whose symptoms significantly affect their quality of life (6). The different surgical procedures include hysterectomy, uterine suspension sling (including sacrohysteropexy), infracoccygeal sacropexy, and uterine and vault suspension without sling (5). All these methods involve meshes and use other fastening means.

Parietex ProGrip™ Self-Fixating Mesh (*Fig. 1*) is a biocomponent mesh made of a hydrophilic monofilament polyester layer interspersed with resorbable polylactic acid microgrips. This combination makes it simple and fast to fixate, without the need for other fixation devices (7).

The main objective of this article is to describe particular aspects of the use of Parietex ProGrip™ Self-Fixating Mesh for sacrocolpopexy or sacrocervicopexy. The secondary objective is to present the initial results of the use of these self-fixating meshes.

Figure 1. Parietex Pro-Grip™ Self-Fixating Mesh (Picture taken from <https://www.medtronic.com/covidien/en-gb/products/hernia-repair/mesh-products.html#parietex-progrip-self-fixating-mesh>)

Surgical Technique

Preparation Before Surgery

Before surgery, all patients underwent gynaecological examination, including vaginal and abdominal ultrasound examination. A POP quantification system was used for prolapse assessment (8). Patients were examined in both lying and sitting positions to assess the influence of pressure. All patients were examined by our urologist to evaluate occult stress urinary incontinence. A pressure-flow urodynamic study was performed in women with complicated stress urinary incontinence. Urethral catheterisation was performed and cefuroxime 1.5 g was administered perioperatively. All patients received low molecular weight heparin starting the evening before the surgery. An iodine-based solution was used to prepare the vaginal cavity before starting the surgery. Cefuroxime 1.5 g was administered 15 minutes before the skin incision.

Operating Room and Patient Setup

This procedure was performed by a multidisciplinary team consisting of two general surgeons and a gynaecologist. Abdominal sacrocolpopexy or cervicopexy was performed under general anaesthesia and endotracheal

intubation. The patient was placed in the supine position, with legs apart, with the first surgeon positioned on the left side of the patient, the gynaecologist on the right side, and the third surgeon positioned between the legs.

Surgical Technique

The surgery began with a low midline laparotomy or a Pfannenstiel incision. After the incision, a careful exploration of the entire peritoneal cavity was performed to check for unexpected abnormalities or adhesions. The small bowel was gently elevated and maintained with large gauze. A total hysterectomy with bilateral adnexectomy was performed if indicated or necessary. If the uterus had been previously removed, then the peritoneum was dissected to distinguish the vaginal stump. An incision was made in the peritoneum adjacent to the rectosigmoid junction. Through the created peritoneal gap, the rectum was carefully posteriorly prepared. The rectum and mesorectum were prepared, lifted from the anterior face of the sacral bone without producing devascularisation, in the Heald space to the urogenital diaphragm of the pelvic floor (*Fig. 2*). After the rectum and

Figure 2. Rectum and mesorectum preparation (A. rectum and mesorectum; B. Heald space)

Figure 3. Modifying the mesh by widening the hole through which the rectum will pass

mesorectum were prepared and lifted from the sacral bone, their diameters were measured to create a suitable hole at the level of the mesh to avoid extrinsic stenosis – usually 1.5–2 cm larger than the diameter of the rectum and mesorectum (*Fig. 3*). Fixation of the mesh was produced only by digital pressure, using as fixation marks the promontory and the vaginal stump. The fixed part of the mesh adhered to the promontory, and its movable arms effectively embraced the rectum with their attachment to

the vaginal stump, like a hammock (*Fig. 4*). The microgripping side of the mesh adheres to the promontorium and the vaginal stump, and the nongripping side works as a hammock on which the rectum and mesorectum sit. The mesh was then fixated by digital pressure for approximately 30 seconds (*Fig. 5*). The retroperitoneal space was washed with warm saline, confirming no bleeding or foreign bodies. After resection of the excess of the peritoneum (Douglasectomy), two drainage tubes were placed in the sacrococcygeal excavation and the peritoneum was sutured with continuous suture, making a new pouch (neo-Douglas) to cover the mesh (*Fig. 5*). The abdomen was closed with separate fascial sutures and a Blair-Donati stitch was used for the skin.

Postoperative Care

In the first postoperative day, patients received a liquid diet. Antibiotic treatment continued for the first 5 postoperative days. The urinary catheter and drainage tubes were removed on the third postoperative day. Anticoagulant treatment with low molecular weight heparin continued during the hospital stay.

Figure 4. The arms of the mesh wrapping the rectum to be fixated to the vaginal stump (A. vaginal stump; B. arms of the mesh)

Figure 5. Fixation of the mesh (A. anterior rectocolpopexy; B. posterior rectocolpopexy)

Figure 6. Final aspect after drainage and suturing of the peritoneum

Results

This procedure was performed in Surgical Clinic No. 1, Emergency Clinical County Hospital of Târgu Mureș. Ten successive patients with a POP of grade 2 or higher have benefited from this procedure. We found no recurrence or any complication at 1, 3 or 6 months following the surgery (*Figs. 7, 8*).

The operative time was 102 ± 25.84 minutes

and the period of hospital stay was 6.7 ± 0.67 days.

Discussion

The literature suggests that we are the first to use Parietex ProGrip™ Self-Fixating Mesh for abdominal sacrocolpopexy or cervicopexy.

The incidence of reoperation after POP surgery within 30 days has been reported at up to 1.5 % (9). During our short follow up we found no recurrence or any complications.

The operative time was influenced by the associated pathology, such as peritoneal adhesions, umbilical hernia or the necessity of hysterectomy. The mean operative time was 102 ± 25.84 , shorter than the 125 minutes required for robotic sacrocolpopexy (range, 90-270 minutes) and significantly shorter than the 220 minutes required for laparoscopic sacrocolpopexy (range, 80-420 minutes) (10). When compared to abdominal sacrocolpopexy, the mean operative time was slightly shorter than the 117.3 ± 41.6 minutes (11).

The period of hospital stay was 6.7 ± 0.67 days, higher compared to the laparoscopic or vaginal approach (11).

The major advantage of this mesh is that

Figure 7. Results 3 months after the surgery

Figure 8. Results 6 months after the surgery

it does not require other fastening means compared to regular polypropylene mesh which requires additional sutures to fixate it (11). In a prospective study in which other device was used for sacrocolpopexy, Pelvicol xenograft (Pelvicol® 2x4 cm, Bard, UK), the fixation of this device on the vaginal stump was through sutures (12).

This study is limited by the small number of operated patients and the short follow-up. However, its strength can be seen in the results, with patients responding well to the use of this kind of mesh.

Multidisciplinary monitoring of the patients is continuing, with follow-up planned at 12, 18 and 24 months following the surgery.

Conclusion

The results of this surgical procedure show that Parietex ProGrip™ Self-Fixating Mesh can be used without complications and with good postoperative results.

The lack of rejection reaction or foreign body pathology encourages the implementation of this surgical procedure. The continuation of this study is necessary to strengthen these results.

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Committee of “G.E. Palade” University of Medicine, Pharmacy, Science and Technology of Târgu Mureș (No. 531/21.11.2019) and the Ethics Committee of Emergency Clinical County Hospital of Târgu Mureș approved this study.

Declaration of Competing Interest

The authors declare no conflicts of interest.

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