Pelvic Organ Prolapse—Vaginal and Laparoscopic Mesh: The Evidence

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KEYWORDS

• Pelvic organ prolapse • Mesh • Sacrocolpopexy • Laparoscopy • Outcomes

KEY POINTS

- Transvaginal mesh (TVM) repair of the anterior compartment is associated with improved anatomic support compared with native tissue repair, but without significant improvement in quality-of-life parameters.
- Studies fail to show a difference in quality-of-life improvement between vaginal mesh and native tissue vaginal repairs in any compartment.
- Sacral colpopexy is considered the gold standard for management of apical prolapse because of high success rates and few complications.
- Minimally invasive sacrocolpopexy (SCP) has the additional benefit of reduced blood loss and decreased hospital length of stay compared with open SCP, without compromising anatomic or subjective outcomes.
- Level 1 evidence has shown no difference in anatomic or subjective outcomes between the laparoscopic versus robotic SCP.

INTRODUCTION

Approximately 20% of women will undergo surgery for stress urinary incontinence or pelvic organ prolapse (POP) over their lifetime, and a large percentage will require additional surgery for recurrent POP.[1] In an effort to reduce failure rates, graft materials were introduced to augment reconstructive repairs. Based on the success of mesh-augmented repairs for groin hernias, the idea of using synthetic grafts for prolapse repairs developed. The first synthetic mesh prostheses placed abdominally

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for POP repairs were introduced in the 1970s. These synthetic materials, which are fibers woven into mesh form, vary in pore size, filament structure, strength, and inflammatory response. Mesh products that are lightweight, composed of monofilament fibers, and woven into a macroporous architecture are thought to enhance mesh performance because they promote better integration into the host tissue.[2] Currently, the preferred mesh for prolapse repairs is a nonabsorbable synthetic material that meets these characteristics (ie, light-weight, large-pore polypropylene). In this report, current evidence regarding the use of synthetic mesh for the correction of POP is reviewed, and its use in abdominal, laparoscopic, and vaginal surgery is examined.

BACKGROUND ON ABDOMINAL MESH

The sacrocolpopexy (SCP) procedure, generally considered the gold standard surgical procedure for apical POP, was first described in the late 1950s. This procedure, of anchoring the uterus or vaginal apex posteriorly to the sacral promontory, was a novel idea and attempted to reduce the rates of recurrent enterocele that pelvic surgeons had previously encountered when affixing the vagina anteriorly. Use of a graft material was introduced in the early 1960s in order to reduce excessive tension on the apex after elevation.[3] Based on the success of surgical mesh for the repair of abdominal wall hernias, gynecologists began using surgical mesh indicated for hernia repair in their abdominal prolapse repairs in the 1970s. In an attempt to avoid some of the risks associated with synthetic mesh material, surgeons also investigated the use of biologic grafts for the SCP procedure. Of the various types of biologic grafts introduced (porcine dermis, porcine small intestine submucosa, and cadaveric fascia lata), all were shown to be inferior to synthetic mesh for improving apical anatomic support (**Table 1**).[4] In 2001, the US Food and Drug Administration (FDA) officially approved synthetic grafts for use in POP repairs.

The abdominal SCP has robust level 1 evidence to support its success, with proven durability in multiple studies. The long-term follow-up of the randomized

Table 1
Sacral colpopexy outcomes for apical prolapse, biologic grafts compared with synthetic grafts

Author	Graft Type	Number	Follow-up (mo)	Success Rate	Study Design
Cundiff et al, 2008	Pelvicol, Mersilene, Gynemesh, Gore-Tex	302	24	N/A	RCT, secondary analysis
Culligan et al, 2005	Tutoplast, Trelex	89	12	Tutoplast: 68% Trelex: 91%	RCT
Deprest et al, 2009	Xenograft (Surgisis or Pelvicol) vs Gynemesh	104	33	Pelvicol: 79% Gynemesh: 97%	Prospective/ retrospective cohort
Quiroz et al, 2008	Pelvicol, Autologous Fascia, Synthetic Mesh	259	13	Pelvicol: 89% Autologous Fascia: 93% Synthetic Mesh: 99%	Retrospective series

Definitions of cure and surgical technique vary for each study.

Adapted from Yurteri-Kaplan LA, Gutman RE. The use of biological materials in urogynecologic reconstruction: a systematic review. Plast Reconstr Surg 2012;130(5 Suppl 2):247S; with permission.