

# The role of vaginal graft procedures in pelvic organ prolapse reconstructive surgery

Diana Badiu<sup>1#</sup>,  
Dan Navolan<sup>2#</sup>,  
Tony L.  
Hangan<sup>1</sup>,  
Simona  
Vlădăreanu<sup>3</sup>,  
Crîngu Antoniu  
Ionescu<sup>4</sup>

1. Faculty of Medicine,  
"Ovidius" University  
of Constanta, Romania

2. Department  
of Obstetrics-Gynecology  
and Neonatology,  
"Victor Babes" University  
of Medicine and Pharmacy  
Timisoara,  
City Emergency  
Clinical Hospital Timisoara,  
Romania

3. Department  
of Neonatology,  
Elias University Hospital,  
"Carol Davila" University  
of Medicine and Pharmacy,  
Bucharest, Romania

4. Department of Obstetrics  
& Gynecology,  
"Carol Davila" University  
of Medicine and Pharmacy,  
"Sf. Pantelimon" Clinical  
Emergency Hospital  
Bucharest, Romania

<sup>#</sup>Both authors have  
contributed equally  
to this article and should be  
considered first author.

Correspondence:  
Dr. Simona Vlădăreanu  
e-mail: simconst68@  
gmail.com

## Abstract

Pelvic organ prolapse (POP) represents a risk in women who undergo surgical intervention such as hysterectomy. In order to treat it, many surgeons started to use grafts implants in reconstruction of the pelvis. The latest studies showed the development of new grafts era, supporting its beneficial effect for the patients. In this respect, the treatment should be individualized and in particular cases the use of grafts should be taken into consideration. When comparing the graft with native tissue repair, the application of surgery on POP have been shown similar anatomical restoration, and grafts were attributed more complications, especially in the transvaginal implant. Although nowadays grafts represent the best tool for prolapsed repair, the ideal implant has not yet been developed. The present review tries to explain the role of synthetic or biological grafts and the therapeutic approaches of the POP.

**Keywords:** pelvic organ prolapse, pelvic floor, grafts implants

## Introduction

Pelvic organ prolapsed (POP) is a common issue among older women<sup>(1)</sup>. One study found that about 31.7% of women had at least one symptomatic pelvic floor disorders and more than 14.8% had more than two<sup>(2)</sup>. After previous POP and urinary incontinence, the risk of reoperation increased until 17%<sup>(3)</sup>. When the pelvic organs are repaired (i.e. bladder, rectocele or uterine), it need two things to clarify: the main support site to be repair without any tension and the affected tissue to become rebuild with a tissue or implants very similar with the implantation borders<sup>(4)</sup>. For improvements of the rate of the recurrence, the surgeons have been used different prosthetic materials or grafts required in the treatment of POP. In this context, the use of grafts was associated with some complications like vaginal erosions, dyspareunia or vesico-vaginal fistulas which could lead to other interventions<sup>(5)</sup>. Interestingly, another study presented 2 surgical methods in the case of POP: the first one, consisted of colposuspension to the sacrospinous ligaments which was achieved on 179 patients and the second one regarding colposacropexis, persomend on 71 patients. The results of the study showed that both techniques presented comparable results aiming long term fixation<sup>(6,7)</sup>.

When a natural or synthetic substance is incorporated into a human's body is named "biomaterial" graft. Considering that nowadays there are available different coating materials, the ideal material has not yet discovered<sup>(8)</sup>. Some of the biomaterials used in POP reconstruction are consisted of biologics like autologous fascia (i.e. fascia lata, or skin graft) or heterologous like allogenic (i.e. fascia lata, or dermis) or xenogenic (i.e. small intestine) or synthetics which can be absorbable (i.e. polyglactin, or polypropylene) or non-absorbable (i.e. polyethylene, or nylon)<sup>(9)</sup>.

In the present review, we discuss available data about the efficacy and clinical use of both synthetic and biological grafts in POP therapeutic approach.

## The role of synthetic grafts

For the apical vaginal prolapsed, the abdominal sacrocolpopexy using synthetic grafts is a very appreciate technique<sup>(10)</sup>. It's positive rate was estimated at about 78 till 100% over a 6 month period<sup>(11)</sup>. And other studies show longer follow-up until 17 months with 94% success rate<sup>(12)</sup>.

Indeed, laparoscopic sacrocolpopexy presented short term therapies compared with abdominal cases. However, it was showed that the material failure rate together with the irradiated and freeze-dried fascia lata grafts should not be used in urogynecological surgery<sup>(13)</sup>.

Higher prevalence rate was met when it was used the biological grafts<sup>(14)</sup>. One study shows that xenogenic graft was more superior to polypropylene mesh. Different composites or coated grafts showed to present antiadhesive profile, or to elicit less pronounced foreign body reaction when tested<sup>(14)</sup>.

Another study showed that from two hundred seventy-seven women who achieved surgery with transvaginal grafts for POP, thirty-four patients of grafts exposure were observed after 2 months which represent almost 12.27%. From the total patients, only nine showed to become complete healed in 2 months period follow-up<sup>(15)</sup>.

Interestingly, some studies compare different surgery procedures like vaginal (paravaginal repair) or the classical-abdominal way (sacrocolpopexy) using different grafts. Another study showed that the vaginal group presented more intraoperative blood loss a shorter operative time together with dyspareunia and longer hospitalization<sup>(16)</sup>. Therefore, the results showed that the optimal surgical effectiveness in the vaginal group was 80.3% and in the abdominal group was

Received:  
July 05, 2017  
Revised:  
August 14, 2017  
Accepted:  
September 10, 2017

94.2%<sup>(16)</sup>. It was concluded that abdominal colposacropepy achieved better surgical results comparing with sacropino-us ligament suspension<sup>(16)</sup>. Although many informations regarding synthetic and nonabsorbable grafts are limited to small case series, surgical decision-making which concern the application of such grafts should be based on the technique and patient features in order to obtain a greater benefit<sup>(17)</sup>.

## The role of biological grafts

Although the major of the surgeons use transobturator procedure with synthetic grafts, American Food and Drug Administration recently has shown that synthetic materials present much higher risk of complications<sup>(18)</sup>.

In contrast, a Cochrane review showed that the rate of success especially for the anterior compartment were better achieved using synthetic mesh, although it was not showed any significant difference in the case of subjective success<sup>(19)</sup>.

Allografts and xenografts like biological grafts were started to be used more frequently. These grafts seem to present a lower rate of complications, decreasing the surgery time and lowering the risk of erosion on tissues, preserving the epithelium with vessels, collagen fibers, and basal membrane, is adequate treated<sup>(20)</sup>.

Although the biological meshes have been sowed superiority, some of disadvantages could appear like host versus graft achievements and prior transmission. Therefore, the existing studies is more concerning the guide decision regarding when and if to use grafts in tranvaginal POP<sup>(21)</sup>.

## Therapeutic approaches of the pelvic organ prolapsed

One study shows that the distribution of POP quantification system into a population reveal a shaped curve, in which stage 0 (i.e. best pelvic support) presented few patients or stage 3 (i.e. moderate to severe pelvic support)<sup>(22)</sup>. The results of another study shows that the indications of factors for using different grafts together with the outcome features

was shown to become slow in taken the surgical decision<sup>(23)</sup>. The symptoms could appear more frequently after the menopause, and one study achieved on 68 years women over 3 years period showed that POP increased at least 2 cm in 11% women, and only in 2.7% it was seen a regression. Moreover, it seems that the body mass index and the multiparity showed to increased the risk of vaginal descent progression<sup>(24)</sup>.

In the same direction, Handa and contributors showed that POP is not always chronic or progressive and spontaneous regression is most common seen, especially in grade 1 prolapse<sup>(25)</sup>. The importance should be given to the pelvic floor muscle exercise, which could lead to POP regression and the surgical procedures should be implemented in symptomatic POP and without conservative treatment. In the cases where the patients are asymptomatic, the surgery can induce pre- and postoperative complications. One study showed that when the correlation was made on the symptoms with the leading edge of the prolapsed revealed that patient symptoms increased from less than 1 to more than 1, when the edge of the prolapsed extended beyond the hymenal remnants<sup>(26)</sup>.

Considering the facts that mostly POP appear during pregnancy or after vaginal delivery, the treatment should be applied more conservative. Taken together, younger women present less experience recurrent prolapsed after vaginal repair comparing with obese patients, at whom an improved procedure should be applied<sup>(27)</sup>.

## Conclusions

When POP becomes symptomatic at many women, it can alter the quality of life and may necessitate the conservative treatment. When conservative treatment it can be applied, standard vaginal procedure can be achieved for any isolated POP. The introduction of different grafts should be proper taken into consideration, in respect with their potential complications. Further studies should be developed to reveal the ideal grafts with higher success rate in terms of both urinary and sexual functions. ■

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