# ABDOMINAL OR VAGINAL ROUTE FOR GENITAL PROLAPSE TREATMENT. ARGUMENTS PRO AND AGAINST THE USE OF MESH

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## ABSTRACT

Perhaps one of the most challenging part of surgical treatment of genital prolapse is the surgical planning and its associated aspects such as the approach- vaginal, abdominal or laparoscopi/robotic, the concomitant performance of a hysterectomy and other prophylactic measures – salpingo-oophorectomy or prophylactic salpingectomy and, not least, the benefits of using a mesh for reestablishing the anatomical position of the prolapsed organs. Certainly, every decision on surgery should be individualized on every women taking into account the particularity of the pelvic pathologic – the grade of the genital prolapse according to the Pelvic Organ Prolapse Quantitation (POP-Q) system, the type of prolapse compartment and whether isolated or associated with other types of prolapse-, the risk of intra- and perioperative complications, mesh-associated risk as well as the risk of recurrence, the impact of the surgical treatment on the sexual activity of the women and certainly also the women's expectations from the surgical treatment. In this review we aimed to present the general aspects which must be considered when it comes to the decision on a non-conservative treatment of the genital prolapse with regard to the advantages and disadvantages of the abdominal, vaginal and laparoscopic route and to the benefits and limits of using a mesh.

**Keywords:** genital prolapse, mesh, vaginal wall prolapse

**Abbbreviations**

POP-Q = Pelvic Organ Prolapse Quantitation. ASC = abdominal sacral colpopexy; USL = uterosacral ligaments; CL = cardinal ligaments; SSLF = sacrospinous ligament fixation; USLS = uterosacral ligament suspension

## INTRODUCTION

With an estimated prevalence between 2.9% and 8%, prolapse of the pelvic organs (POP) is reported to require a surgical repair in approximately 12.6% (1) annually because of its significant impairment on daily activities especially in advanced cases (uterine prolapse grade POP-Q II-IV), the majority of women reporting symptoms of urinary and/or bowel incontinence, nycturia, pollachiuria or pelvic pains (2). Although in the last decades many surgical methods aimed at different types of prolapse have been studies and applied in the clinical practice, it is still unclear which technique provides the better results in terms of associated risk, success and recurrence rate and life quality (3). However, it is clear that each step in the process of the surgical planning must be individualized to each woman according to the pathophysiology of the POP, the resulted symptomatology, the physical examination of the patients which must imply the evaluation of all of the three levels of support, the need to correct other pelvic defects as well as the most suitable route of operation with or without

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mesh (4). In this paper, we present the most important issues of the surgical decision-making on POP and to discuss the pro and cons arguments of using a mesh.

### Vaginal or abdominal route

When it comes to the apical compartment prolapse which mainly implies the deterioration of the connective tissue of the utero-sacral (USL) and cardinal ligaments (CL) it has been reported a good success rate for the abdominal sacral colpopexy (ASC) compared to the vaginal procedures (5). The ASC provides a more suitable restoration of the apical anatomy compared to the transvaginal techniques that suspend the USL and CL such as sacrospinous ligament fixation (SSLF) or uterosacral ligament suspension (USLS) which consequently involves a normalization of the function of the apical structures with improvement of the associated symptomatology (6). An opened mesh sacral colpopexy offers a lower recurrence rate and a higher durability that native tissue SSLF or USLS which can make it an adequate technique for patients with an increased risk of recurrence although this must be considered in relation with the associated risk of an opened procedure with a mesh such rejection, erosion, interstinal and/or ureteral complications (7). ASC is mainly preferred in women with an advanced POP grade 2-4 who present factors for an increased risk of recurrence-obesity, surgery for POP in the history, recurrence of an apical prolapse, a younger age and, rarely, associated malformations such as spina bifida or bladder exstrophy (7,8).

The abdominal route should be also choose when the preoperative physical examination of the patients reveals an insufficient vaginal mucosa for a transvaginal approach or the need for concomitant abdominal operations such as massive ovarian cyst or suspect structures on the fallopian tubes although, in many cases, the adnexes can be also vaginally removed (8). However, the associated risk of the opened approach such as longer operating and recovery time, longer admissions in hospital and increased perioperative risk consist a main disadvantage of the abdominal route compared to a transvaginal procedure (7, 8). On the other side, the disadvantages of an abdominal route can be minimized through a laparoscopic or assisted-robotic approach (9). Among the open procedures, there is evidence that the laparoscopy and robotic routes seem to provide a more adequate repair of the structures at all of the three levels of support than the classic abdominal procedures and a shorter recovery time compared to the vaginal routes (10). The lower risk for sever bleeding and consequently blood transfusions as well as fewer days of admission in hospital are definite arguments for a laparoscopic approach. When it comes to the recurrence rate, a randomized controlled trial published in 2016 by Constantini et al. (11) on 112 women who have undergone either abdominal or laparoscopic sacral colpopexy, the laparosocopic route has been associated with a higher risk of postoperative anterior prolapse compartment compared to the open approach, however both of the techniques have been reported to provide similar rates of apical compartment repair, perioperative complications and complications related to a mesh exposure after 41 months of follow-up.

With regard to the transvaginal routes, the common arguments pro a vaginal approaches refer to the perioperative complications although in the last decades the most of the open procedures are performed either through laparoscopy or roboted assisted laparoscopy (12), techniques which provide a significantly lower risk of peri-and postoperative complications compared to the open procedures. When evaluating the transvaginal native tissue repair techniques with open sacral colpopexy, a retrospective study by Sanses et al. (13) published in 2016 on 3015 women older than 65 years old demonstrated a higher number of readmission in hospital, bowel complications as well as postoperative infections for the group of patients who underwent open abdominal sacral colpopexy compared to the transvaginal native tissue repair procedure either SSLF or USLS. However, when a minimal invasive technique has been chose for a the sacral colpopexy, the prevalence of gastrointestinal complications was reduced at 2,6% (14). Another benefit of the native tissue repair procedures is the absence of mesh related complications compared to the open techniques with synthetic materials (13,14).

Other arguments pro transvaginal routes refer to the possibility of a concomitant approach of all of the three vaginal compartments, the shorter time of operation, recovery and admission in hospital, a significantly lower risk of postoperative prolapse greater than grade 2 and no complications related to foreign materials ().Among the native tissue repair methods, the OPTIMAL trial (The Operations and Pelvic Muscle Training in the Management of Apical Support Loss) compared the most two popular vaginal techniques that use native tissue- SSLF and the USLS-and reported the absence of a statistical-

ly significant difference between the two methods in terms of postoperative apical and/or anterior and/or posterior prolapse greater than grade 2, bulge symptoms and reoperations for severe postoperative complications (16).

Among the minimal invasive techniques, the laparoscopic approach appear to be more convenient than the robotic assisted techniques especially when it comes to comparators such as costs, operating time, exposure to anesthesia while the surgical outcome rates have been reported to be similar (17,18). The robotic approach has evidently the advantages of an easier and rapid learning curve as well as a better visualization of the pelvic anatomy compared to the laparoscopic technique (18).

### Arguments for using or not using a mesh

The current evidence on the benefits of using a mesh in POP repair shows that the surgical outcomes depend on the type of the mesh and whether it is placed through a vaginal or abdominal route (19). Some old studies (20,21) found no significant difference between abdominal sacral colpopexy with mesh and SSLF with regard to the restoration of the normal pelvic anatomy although the rates of postoperative apical prolapse and reoperation for recurrence were higher after SSLF. Nowadays the success rates of abdominal procedures with mesh are combined with the benefits of a vaginal approach, the vaginal mesh procedures are very popular especially for apical prolapse repair. Although popular, comparative studies have reported significant complications related to the apical mesh such as graft erosion (30%), infections of the urinary tract (19%), bowel lesions (3%), severe pain or dyspareunia (2%). In 2011, Maher (22) and coworkers published a randomized trial comparing the laparoscopic sacral colpopexy with the total vaginal mesh using the PROLift device in terms of objective success rate (the postoperative grade of POP using the POP-Q system) as well as life quality, reoperation rate, peri-and postoperative complications and reoperation rate ad demonstrated a superior efficiency for the laparoscopic sacral colpopexy especially with regard to the surgical outcome (grade of the prolapse) with a success rate of 77% compared to 43% in the group of total mesh repair and the reoperation rate 22% compared to 5%. However, due to the increased number of complications associated with the use of the mesh, the device Prolift is no more used.

The rate of graft associated complications depends on the material of the mesh, the modern lighter and porous meshes having a significant lower complication rate compared to the older synthetic meshes. Type 1 polypropylene meshes are much better tolerated than type III or IV meshes. New graft materials extracted from the extracellular matrix may provide a better integration of the material into the vaginal mucosa recreating a functional tissue without destroying it (23).

The type of surgery seems to also impact the risk of erosion as a total vaginal hysterectomy followed by a transvaginally attached mesh is associated with a 23%-40% risk of erosion compared to 2%-10% after sacrocolpopexy (24).On the other side, the use of a type I polypropylene mesh after performing the total vaginal hysterectomy is at low risk to induce erosion or necrosins of the vaginal tissue (25). Furthermore, another factor that plays an important role in the risk of tissue destruction is the type of suture performed for the fixation of the mesh, the modern delayed absorbable sutures being reported to have lower risk of necrosis compared to the permanent sutures (26).

## CONCLUSIONS

There is a huge literature data that present pro and cons arguments for both the vaginal and the open techniques for POP repair though no study has achieved to present precise benefits for a technique so that it can be implemented into the clinical practice. But one aspect is clearly defined: the choice of one or another route should be particularly decided for each patients depending on the pathophysiology of the POP in concordance with the integral theory without omitting the importance of the anamnesis, physical examination of the women as well as the experience of the experience of the surgeon. When it comes to the use of meshes in transvaginally or abdominal operations, modern graft materials which minimize the risk of complications should be the first option.

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