The prolapse of the pelvic organs between past and present

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SUMMARY: The prolapse of the pelvic organs between past and present.

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The incidence of pelvic organ prolapse is difficult to quantify; it is assumed that about 30% of women is suffering from pelvic organ prolapse. However, the possibility of being subject to an operation for incontinence or prolapse, it is estimated around 11%. Pelvic organ prolapse has significant negative effects on a woman's quality of life. Worldwide, vaginal hysterectomy is the leading treatment method for patients with symptomatic utero-vaginal prolapse. Several studies are showing that vaginal sacrospinous hysteropexy and laparoscopic hysterectomy are safe and effective alternatives in treating uterine descent. But currently there are no comparative studies, numerically significant, to be able to define if it's better a correction of the pelvic floor, that foresees the maintenance of the uterus or its removal.

Method. In our department, in a period of 4 years, we have handled 53 corrections of utero vaginal prolapse with the laparoscopic technique defined P.O.P.S. The treated prolapses have been among 3° and the 4° degree by the classification of Baden-Walker, with or without stress urinary incontinence. The follow up of the result of the intervention has been done respectively to 2-6 and 12 months of distance from surgery.

Conclusions. Although it has already been said currently there are not comparative and significant studies to recognize what the better therapeutic option is, according to our experience, the suspension of the pelvic organs by laparoscopic surgery, it gives a good solution, particularly in comparison with the vaginal hysterectomy.

KEY WORDS: POPS - Uterine prolapse - Laparoscopy - Pelvic floor.
Anatomy
The pelvic organ prolapse is a defect of a specific vaginal segment characterized by the descent of the same vagina and the related pelvic organs. Patients may present differing levels of prolapse. In more serious cases (total pelvic prolapse), the uterus protrudes completely through the genital hiatus. In such cases, multiple defects are associated, the anterior, side, rear, and apical compartments.

Incidence
The incidence of pelvic organ prolapse is difficult to quantify; it is assumed that about 30% of women is suffering from pelvic organ prolapse. However, the possibility of being subject to an operation for incontinence or prolapse, it is estimated approximately around 11%. The disease occurs mainly in women older than 40 years. It is more common in multiparous women, who are in menopause and in those who have undergone a hysterectomy (1, 2).

Etiology
Pelvic floor defects may be generated by labour and are caused by the stretching and tearing of endopelvic band, of the levator muscles and the perineal body. Other important factors are all those conditions able to determine a steady increase in the time of intra abdominal pressure, as in the case of obesity, constipation, but also collagen abnormalities.

It is most likely that in the determinism of the support defects, there is an involvement of more elements, verifiable in the majority of women with pelvic organ prolapse.

Diagnostic evaluation
So, even if the prolapse is common in anatomical terms, the condition rarely causes symptoms. Prolapse can affect the urethra and the bladder (urethral cystocele), rectum (rectocele) and the uterus in different combinations and severity levels (Figures 1-4).

In the case where the prolapse is mild, grade I-II according to the classification Half Way System (Figure 5) (3), generally does not require treatment as asymptomatic.

But when the pelvic organ prolapse reaches a larger entity, such as stage III-IV, it determines the most representative symptoms, like the feeling of weight, urinating difficulty and defecatory, vaginal discharge for possible ulceration of the cervical mucous, or still coital disorders and the leakage of a bulge through the vaginal introitus.
A correct evaluation of the patient should be done both in the lithotomy position and in the upright position, both during the relaxation of the muscles constituting the abdominal press, which is under stress. In a subsequent step, a speculum is inserted to examine the vagina and cervix, and then the speculum should be disassembled and removed, leaving only the shell at the back, allowing in this way a rotation through the display of both the front wall than the rear.

In order to assess the quality of contraction of the pelvic floor muscles, we ask the patient to tighten the vagina, namely the levator muscles of the anus around the two examiners fingers.

It should, of course, be done a careful bimanual examination to assess uterine size, mobility of the same and of the annexes. Finally, it should be also performed a rectal exam, in order to assess the presence of rectocele or enterocele.

**Instrumental and laboratory diagnostics**

The main instrumental and laboratory diagnostic techniques are represented by:

- Urodynamics test
- Pelvic sonography
- PAP test
- Defecography.

The term “urodynamics” includes several tests that measure the urinary function. Most commonly it refers to the pressure-flow study, also called with the name of cystomanometry.

The pressure-flow urodynamic studies are suggested when it is necessary to know more details on functional aspect of the bladder and urethra. The clinical conditions that may require a urodynamic evaluation are the obstructions of the urinary tract, the bladder muscle hyperactivity, the detrusorial hypoactivity and functional disorders of underactive or overactive urethral mechanisms underlying to urinary incontinence.

This test is crucial to rule out the possible development of postoperative incontinence; it is believed that up to 30% of patients can become incontinent after surgical correction of prolapse.

Pelvic sonography and the Pap tests are needed to rule out uterine cervix and adnexal pathologies in case of uterus preservation.

Defecography should be reserved for those patients with disorders of defecatory function.

**Therapy**

When dealing with the clinical case, it must be considered a number of variables, in order to quantify the surgical risk and more generally the cost-benefit ratio. These are basically represented by:

- The state of health, age, or the suitability of the patient for the type of surgery
- The symptoms entities
- The patient choices (for example, an intervention surgical or non-surgical)
- The presence of conditions that require a multiple approach, such as urinary or fecal incontinence.
- The history of previous pelvic surgery.

**Anatomy of the pelvic floor**

The knowledge of anatomy is essential to understand the pathogenic mechanisms of prolapse of pelvic organs.

The pelvic cavity is the lower portion of the abdominal hollow. The bony pelvis forms a cylinder obliquely cut, the higher the rear and lower front. The pelvic floor is made up by the muscular and fascial structures that enclose the lower of female pelvis, it supports the pelvic organs (bladder, vagina, uterus, rectum) and it is involved in the mechanisms of urinary and fecal continence, in sexual activity and childbirth. The pelvic floor is made up of three basic structures:

- the levator muscle in its components of the pubococcygeus and ilium-coccygeal (Figure 6);
- the endopelvic band;
- the urogenital diaphragm (or perineal membrane).

The levator of anus, is the main structure of the pelvic active support, it has a front opening median through which pass the urethra and vagina; the posterior muscle fibers of both sides cross the midline posterior to the rectum. Contracting, this muscle group is used to stretch and raise the front wall of the vagina, rectum, urethra and the bladder neck towards to the pubis; while in rest conditions it has a supporting role from the bottom of the pelvic organs.

**Medical-rehabilitation therapy**

For the correction of a prolapse of mild-average degree associated with urinary incontinence, in particular in the young woman, the alternative to surgery is represented by perineal rehabilitation, which includes physi-
Physical therapy, biofeedback and electrical stimulation.

The perineal kinesi therapy consists of a series of exercises of contraction and relaxation of the pelvic floor muscles, in order to strengthen the system of support of the pelvic organs. Such exercises may be assisted by the usage of vaginal silicon supports.

Biofeedback perineal consists in the same muscle contraction exercises, performed with a vaginal probe connected to a device, which allows to objectify, with audible and visual signals, the magnitude of the contractions, helping the woman to perform them properly.

The perineal electrostimulation, finally, is indicated in cases where the perineal muscles can’t be contracted voluntarily and in an efficient way.

There is no doubt that the perineal rehabilitation does not pretend to totally and permanently solve the problem, but the results reported by various authors are satisfactory. Also it is recommended a perineal rehabilitation with a view to prevention in women, postpartum, that already have the first symptoms of a vaginal prolapse uterus or urinary incontinence.

Even the vaginal estrogen therapy, using creams or vaginal suppositories based on promestriene, especially for women in menopause, brings certain benefit, in particular for urinary disorders. In addition, also it plays a role in the preparatory phase and in the subsequent surgery to improve results.

The same use of a pessary by itself has few drawbacks, such as lack of the patient’s ability to enforce the follow-up and operating instructions.

**Surgical therapy**

Surgical treatment of pelvic organ prolapse can be performed by abdominal, vaginal or laparoscopic way (4).

1) **Treatment for prolapse of the anterior vaginal wall**

The anterior vaginal repair consists in a duplicate of the pubo cervical band or the placement of a mesh in polypropylene in order to reduce the protrusion of the bladder through the vagina. This repair is indicated especially in patients with a central vaginal defect.

When the fascial defect is paravaginal, the treatment can be performed laparoscopically, abdominal or with vaginal surgery. In this case, the space of Retzius is used to suspend the vagina anterolaterally to tendinous arch of the endopelvic tend, restoring its normal positioning (support of De Lancey II level - Figure 7).

2) **Surgical treatment of prolapse of the posterior vaginal wall**

The posterior vaginal repair or rear colporrhaphy, is performed to repair a defect of the posterior wall of the vagina, usually a rectocele. Traditionally, it is performed by gynecologists, by a vaginal approach with a duplication both of the vaginal rectus band and the elevator muscles of the anus, thus eliminating the posterior vaginal protrusion and naturally removing the excess mucous.

3) **Surgical treatment of apical vaginal prolapse and uterine prolapse**

**Abdominal approach**

The major abdominal surgery performed for apical vaginal prolapse and uterine prolapsed are the hystero-
The prolapse of the pelvic organs between past and present

Sacrospexy and the total hysterectomy with vaginal vault suspension to the uterosacral ligaments.

Hysterosacropexy consists in fixing and lifting the uterus, or better of the upper portion of the vagina in its front and rear, to the periosteum of the sacral promontory, using polypropylene mesh in the retroperitoneal space to prevent erosion. This technique can therefore be completed with a closing of the Douglas space, according to the Moschowitz method or by the Marion technique to prevent the enterocele (5).

Vaginal approach

The most common vaginal procedures to suspend the prolapsed of the uterus and vagina are represented by hysteropexy to the sacral spinous ligament (technique according to Richter), from culdoplastica according McCall, from the suspension of the uterosacral ligaments to the ileo coccygeal muscles and, more recently, by techniques that make use of a mesh in polypropylene.

These materials make it possible to fix the prolapse both to the anterior and rear wall of the vagina; the intervention time is shorter than the traditional surgery, it allows an early discharge and resumption of normal activities quickly enough (6).

We remind that these techniques are not free from risks, in fact, in 2011 the Food and Drug Administration warnings about the use of surgical mesh in transvaginal pelvic organ prolapse repair defining “not rare complications such as the erosion of the vaginal mucosa, urinary problems, recurrence of prolapse and/or urinary incontinence, pain and dyspareunia. These outcomes are frequently attributed to mesh use, and can result in expense, frustration, and the need for further medical and surgical interventions for patients undergoing treatment for pelvic floor disorders.

Also, considering overall the safety and effectiveness of these devices, there was no evidence of significant differences between a transvaginal repair of pelvic organ prolapse thanks to the use of mesh, compared to techniques which do not provide this use.

Laparoscopic approach

The advantages of laparoscopy include better anatomical visualization through the laparoscopic magnification, superior hemostasis resulting from the display and from the pressures of intraperitoneal injection, reduced hospital stay, reduced postoperative pain and faster recovery.

Hysteropexy

The promontory laparoscopic fixation was introduced in the early 90s by Bruhat (7). Until now it has been the gold standard in the treatment of pelvic organ prolapse, with a success rate of about 85% (8-10)

POPS

The surgical technique, called P.O.P.S. acronym for the pelvic organ prolapse suspension, was conceived by a surgeon, Prof. Antonio Longo - Chief of the Department of Coloproctology and Pelvic Diseases, St Elisabeth Hospital/Wien.

This technique is primarily based on the unified vision of the prolapsed organs suspended from the pelvic floor using a net V-shaped with very long wings. The apex of the V is fixed to the front wall of the vagina at the fornix and the distal ends of the wings V will then be fixed by extraperitoneal way with a simple point to the band of the external oblique muscles, playing a crucial role in the balance suspensive of the pelvic floor organs (Figure 8).

Figure 8 - Anatomical scheme of P.O.P.S.
The technique has many advantages: it allows to achieve good functional and aesthetic results, provides a brief hospitalization and allows a speedy recovery of the social activities. It can also link together other minimally invasive trans anal surgical techniques to correct the prolapse of the rectum, the S.T.A.R.R. (Stapler Trans Anal Rectal Resection), optimally solves the prolapse of the internal lining of the rectum not otherwise achievable with the laparoscopic suspension only.

Our experience and results

In our department, from 2013 until 2015, we have managed 53 corrections of utero-vaginal prolapse with the laparoscopic technique defined P.O.P.S. The choice of this method was determined by the predilection of our group towards this approach.

Our surgical technique involves the introduction of a classic main trocar of 10 mm in the umbilical site and three pelvic trocar of 5 mm. Then one proceeds to the preparation of the anchoring point of the mesh in propylene, V-shaped with a width of the two arms of approximately 20 mm and detaching the bladder from the vaginal fornix (Figure 9). So, still, the vertex of the mesh is fixed to bend with points in mersilene and tucker in titanium or Vicryl (Figure 10) and then extracting the free ends by extraperitoneal way through two incisions of 2 cm higher and posteriorly respect to the iliac crests, these ends are gently trazionate due to a rise of the uterus of about 4-5 cm. The coverage of the net is finally performed in correspondence of the insertion by the closure of peritoneum (Figures 11, 12).

The possible persistence of rectocele is treated with a vaginal rectopexy and back vaginal wall plastic.

The criterions of selection of the patients have been respectively represented by age, generally inferior to 70 years (range among the 40 and 70), the body index mass...
The prolapse of the pelvic organs between past and present

inferior to 30, the sexual activity, Pap test normal, absence of anomalous uterine bleeding, increase of uterine volume not meaningful, the good physical and psychological conditions.

The treated prolapses have been among 3° and the 4° degree of the classification of Baden-Walker, with or without IUS. The evaluation was effected with patient in both supine and orthostatic position, combining the manoeuvre of Valsalva.

The subjective and objective evaluation of the result of the intervention has been effected respectively to 2-6 and 12 months of distance from surgery, also associating the questionnaire ICIQ in its short version in those patients that introduced IUS before the intervention (11).

Of the 53 treated cases the results have been very encouraging, 52 showed anatomical and subjective recovery, generally reducing the prolapse to the 2nd degree. In one case (1,8%) instead the recidivist occurred, probably both for the not correct selection of the patient, obese and smoker, and still not perfect surgical technique. Inside the group around 20% shows stress urinary incontinence, that also regressed after surgery.

The indications of the period of convalescence foresee that the patients avoid the intense physical exercise or the lifting of excessive weights as well as sexual relations for 6-8 weeks, after that they progressively return to the normal daily activities. Besides it is dissuaded all of this that can involve an increase of the intra-abdominal pressure as the constipation, the lifting of weights as already said, and smoke.

When not contraindicated, it recommends to them the vaginal estrogenic therapy to improve the trophic level of the pelvic tissues.

Conclusions

In the clinical practice, the question for the maintenance of the uterus in the surgical management of the prolapse is in constant increase. Nevertheless, the scientific literature on this matter is still insufficient to determine which patient is the ideal candidate for the conservative surgery. Currently, the decision is usually influenced by the preferences of the patient and by ability and experience of the surgeon.

There are currently no comparative studies, numerically meaningful, to be able to define if it’s better a correction of the pelvic floor, that foresees the maintenance of the uterus or its removal. More studies will be necessary that involve a great number of patients, with wider follow-up, before opting for a technique that foresees the maintenance or not.

The literature, to the actual stage, it suggests that the maintenance of the uterus must be considered, in women opportunely selected and motivated.

It is therefore essential, that the patients fully understand the possibility to incur in an uterine pathology during the time, and therefore the necessity to continue the routine check. Even if our experience is not able for its nature to furnish incontestable results, we are convinced that the laparoscopic hysterexopy is an effective technique to correct the uterine prolapse. Our evaluation is that the laparoscopic surgery furnishes an apical support stronger respect to the vaginal hysterectomy.

Naturally these first results must be confirmed from a great evaluation of cases, with a period of longer and random follow-up. However we continue confident to appraise the result of this new procedure.

References