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SHORT COMMUNICATION

Complex pelvic organ prolapse: decision-making algorithm

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Abstract

Purpose The pelvic floor is considered as a single anatomical and functional unit, consisting of several structures that suspend the pelvic organs maintaining their function. For this reason, a multi-compartmental prolapse is a common disease that needs a multidisciplinary pelvic floor team in order to be treated. The aim of the authors is to suggest a treatment algorithm to better approach complex pelvic organ prolapse.

Methods A multidisciplinary pelvic floor team was set up 7 years ago. Starting from the literature review integrated with a team experience, a decision-making algorithm was drawn up. It was used to guide all the shared treatment for the complex pelvic floor disorders.

Results An accurate preoperative assessment with a shared diagnosis among the specialist is the base to follow the proposed algorithm. It leads to combine different surgical procedures considering advantages and disadvantages which may have an influence on the final outcome.

Conclusions The proposed algorithm provides an integrated surgical view of complex pelvic floor disorders. It shows how is it feasible to associate surgical treatments of different compartments to obtain good pelvic floor anatomical and functional results and leading to an improvement of the patients' quality of life.

Keywords Pelvic floor · Complex prolapse · Rectal prolapse · Rectocele · Hysterocele · Cystocele

Pelvic floor is a term used to describe a diaphragm that closes the lowest part of the ebony pelvis. It is composed by a muscular system with ligaments and aponeurotic fascia that suspend all the pelvic organs allowing the interaction each other maintaining their own function [1, 2]. For this reason, the term "pelvic organ system" could be more appropriate to better describe the real link between organs and pelvic floor structures. A damage to one or more of its components (muscles, ligaments, aponeurotic fascia or neural network) can produce an anatomical alteration which may lead to a subsequent pelvic floor dysfunction [2]. The broad spectrum of pelvic floor disorders includes pelvic organ prolapse, fecal or urinary incontinence, urinary retention, obstructed defecation syndrome (ODS), and pelvic pain. To simplify the approach to the pelvic floor, it was divided into three compartments: anterior (bladder and urethra), middle (vagina and uterus), and posterior compartment (rectum and anus) [2]. This compartmentalization has led the patient to be referred to a single specialist such as a urologist, a gynecologist, or a colorectal surgeon. However, multi-compartmental disease is more common than an alteration of a single compartment alone [1]. For this reason, it is mandatory to consider the pelvic organ system as a single anatomical and functional unit requiring a shared and integrated multidisciplinary approach from a team composed by different specialist. This approach allows to evaluate all the pelvic compartments simultaneously and try to treat concomitant diseases. The first part of the evaluation is based upon an accurate anamnestic data collection to underline the main symptoms that must guide the whole team through the visit. After a complete physical examination performed by all the specialist, specific diagnostic tests are frequently required to complete the assessment and to decide for a medical or surgical treatment. Usually, the surgical treatment is proposed in case of failure of medical therapy or in those cases in which there is a preeminent anatomical alteration causing symptoms. Hence, the multidisciplinary approach becomes relevant because it reduces the risk to solve a disorder of a single

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compartment inducing or aggravating the problem of another one that was already evident or latent. To better approach complex pelvic organ prolapse, the authors propose a treatment algorithm (Fig. 1) coming from a 7-year' experience of the multidisciplinary pelvic floor team integrated with an accurate literature review.

Transanal and transabdominal approaches have been described to treat ODS due to internal rectal prolapse (IRP) and rectocele [3, 4]. In the algorithm, the first line of treatment for ODS (due to IRP and supraperineal low rectocele with necessity of transvaginal digitation or perineal manual support) is the STARR procedure, because of its good functional results [5]. However, after STARR procedure, fecal urgency or incontinence may occur due to size reduction of the rectal ampulla and postoperative rectal sensitivity modifications. For this reason, in cases of IRP and rectocele in patients with impaired anal continence (urgency, passive incontinence or urge incontinence) or with high risk of incontinence after surgery (sphincter or pelvic floor weakness and in impaired rectal compliance), the internal Delorme (ID) procedure is suggested. Literature shows that ID procedure does not worsen the impaired continence and sometimes even improves it after surgery [3]. ID can be also safely performed in patients with previous or simultaneous surgical mesh placement in the middle or posterior compartment. In fact, being ID only a mucosectomy differently from STARR that is a full thickness rectal resection, a possible suture dehiscence after ID should not lead to a mesh infection. When ODS due to IRP and rectocele is associated with posterior vaginal wall prolapse, enterocele with or without impaired anal continence, laparoscopic or robotic-assisted ventral rectopexy (VR) is indicated. This procedure can correct rectocele and IRP with a satisfactory improvement of ODS, as well as the associated enterocele and the posterior colpocele [6]. In this condition, the posterior vaginal wall is fixed to the mesh of the ventral rectopexy. In particular, in case of a vaginal vault prolapse with or without cystocele, the posterior and anterior vaginal walls could be fixed to the mesh of the ventral rectopexy performing a colpo-procto-sacropexy [7]. In this technique, a Y-shaped mesh that is used with the anterior branch (shorter) of the mesh is fixed to the anterior vaginal wall after dissecting it from the bladder

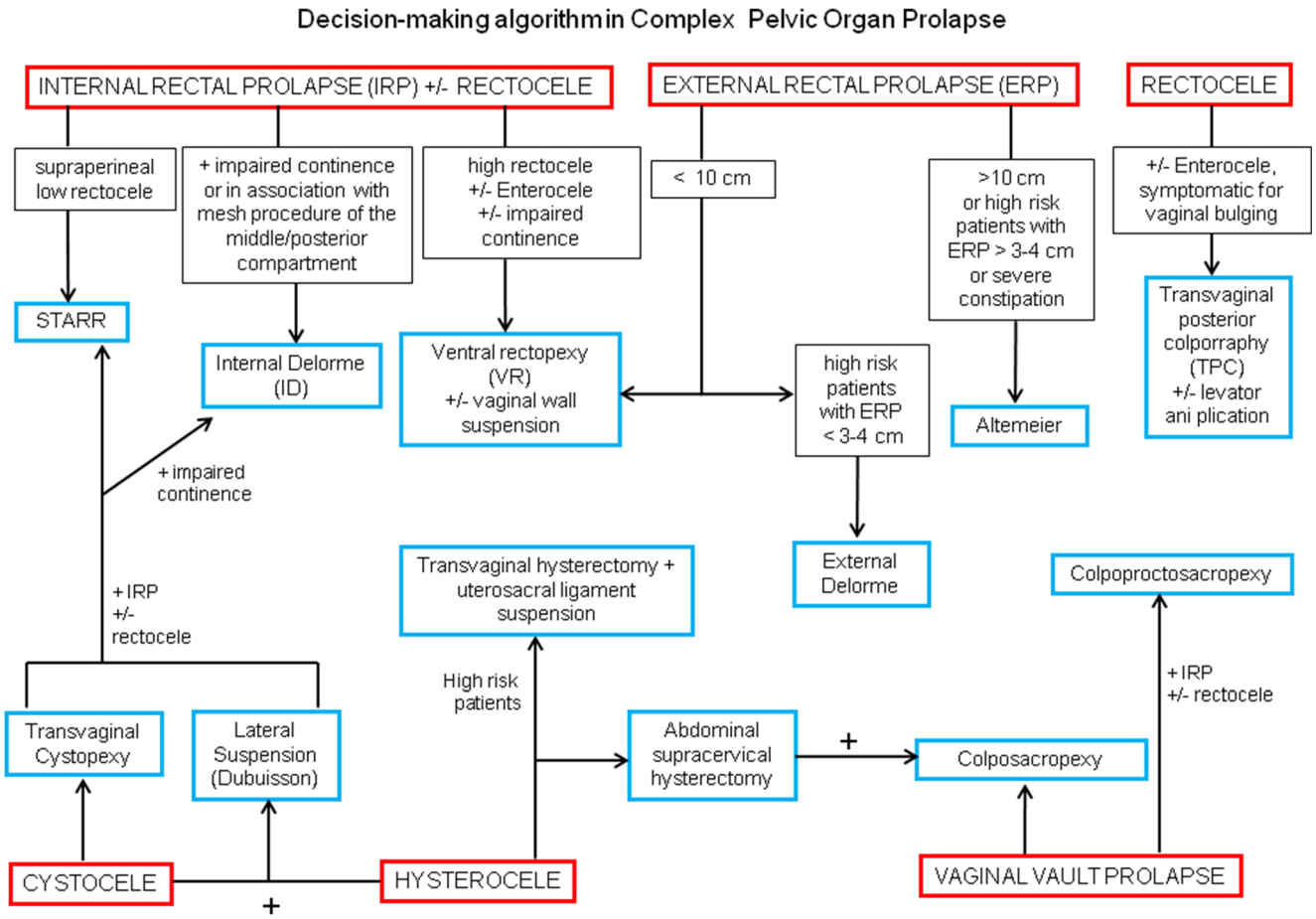

Fig. 1 Decision-making algorithm in complex pelvic organ prolapse

and the posterior branch (longer) is fixed to the posterior vaginal wall and anterior rectal wall.

Transvaginal posterior colporrhaphy (TPC) with or without mesh is widely described in literature [8]. Authors perform the TPC (possibly associated with levator ani plication) for rectocele, with or without enterocele in those cases in which the main symptom is vaginal bulging without ODS.

If prevalent symptoms of cystocele are associated with hysterocele, IRP, and rectocele, STARR or ID procedure can be combined with correction of the middle/anterior compartment, by laparoscopic or robotic lateral suspension with Dubuisson technique [9]. Despite laparoscopic, sacrocolpopexy and sacrohysteropexy are considered the gold standards for correcting apical organ prolapse, this technique avoid dissection at the promontory and can be performed with uterine preservation. So, lateral suspension leads to a good treatment of the anterior and middle compartment concurrently preserving the uterus with a high patient satisfaction [9]. Symptomatic hysterocele associated with IRP and rectocele are treated with abdominal supracervical hysterectomy and sacral colpopexy, in association with ID (because of the mesh as previously stated) in case of low rectocele or colpo-procto-sacropexy in case of high rectocele and enterocele. If all of these abdominal procedures are contraindicated, (high risk patients with general contraindications for abdominal surgery), cystocele and hysterocele can be treated with a transvaginal approach, and then the suggested transanal approach for rectocele and IRP approach is ID avoiding full thickness rectal anastomosis close to the mesh or wide anatomical dissection [10].

Over the years, different approaches (transabdominal and transperineal) and procedures have been described to treat the external rectal prolapse (ERP). Among the abdominal procedures, VR showed a low recurrence rate at long-term follow-up which is even lower if compared to transperineal approaches [11]. In fact, a recent consensus considers VR a definitive indication for ERP [4]. The authors suggest VR in patients suitable for abdominal surgery only if the ERP is less than 10 cm with or without concomitant gynecological prolapse; otherwise, transperineal procedure is proposed. In fact, a conservative treatment with repositioning of a heavy prolapse into the abdomen does not give enough guarantees of bowel function recovery and reduction of recurrence rate. Therefore, a transperineal approach is reserved to all high-risk patients for abdominal surgery. In these patients, a ERP longer than 3–4 cm is treated with an Altemeier procedure while a ERP shorter than 3–4 cm is treated with an external Delorme procedure. A resective transanal approach is also suggested in ERP associated with severe constipation, because of the risk of new onset or worsening of a preoperative constipation after abdominal rectopexy. Moreover, it is demonstrated that even after laparoscopic resection rectopexy, the constipation-related quality of life does not improve compared to the Altemeier procedure [12]. If the patient has ERP associated with hysterocele or vaginal vault prolapse, a suspension to sacrospinous ligament is feasible through a transanal extraperitoneal approach before rectoanal anastomosis during Altemeier procedure.

A potential limitation of the proposed algorithm is the lack of uniform and shared data about several approaches for treating complex pelvic floor diseases. However, the proposed flow chart shows how is it possible to associate surgical treatment of different compartments to restore anatomy improving global pelvic floor functional results and consequently the quality of life.

In conclusion, a multidisciplinary team composed by different specialists such as urologists, gynecologists and colorectal surgeons is needed to conduct shared research and to offer a better quality of treatment to the patient suffering from a complex pelvic floor diseases.

Authors' contribution Gabriele Naldini, Bernardina Fabiani, and Tommaso Simoncini contribute to the conception and design of the study. Gabriele Naldini, Bernardina Fabiani, and Alessandro Sturiale contribute to the acquisition of literature data and revision, and to the final approval to the version to be published.

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