Curr Urol Rep (2014) 15:385
DOI 10.1007/s11934-013-0385-y

Repair of Pelvic Organ Prolapse: What is the Goal?

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Published online: 3 January 2014

Abstract The objective of this review is to discuss the main goals of pelvic organ prolapse repair. Pelvic organ prolapse symptoms are variable, and prolapse degree does not necessarily correlate with perceived symptoms or other associated conditions including urinary, defecatory, and sexual dysfunction. Treatment for pelvic organ prolapse is based upon symptom bother and patient expectations. There are various surgical approaches to treat pelvic organ prolapse; however, there is no standardized definition of cure or success. Physician goals of pelvic surgery to correct prolapse include restoration of anatomy, resolution of patient symptoms, avoidance of complications and attainment of patient goals. However, patient's expectations may differ, and discussing preoperative goals and setting realistic expectations prior to treatment may guide surgical therapy and improve patient satisfaction.

Keywords Pelvic Organ Prolapse · Pelvic Floor Dysfunction · Surgical Outcomes · Patient Goals · Quality of Life · Expectations

Introduction

Pelvic Organ Prolapse (POP) occurs when there is a disruption of the natural supporting structures of the pelvic organs, often with impaired function of the pelvic floor musculature. The loss of these normal attachments and the dynamic support of the pelvic floor results in the descent of one or more pelvic structures including the bladder, the rectum, the uterus and cervix, or the vaginal cuff and the small bowel.

This article is part of the Topical Collection on *Female Urology*

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POP has become a major health concern, as it may affect 50 % of women over age 50 [1]. The lifetime risk of needing surgery for prolapse or urinary incontinence by 80 years of age is approximately 11.1 % in the United States [2] and has been reported as high as 19 % [3]. Even with adequate treatment, the risk of recurrence is estimated to be up to 30 % [2]. The direct cost of prolapse surgery is greater than $1 billion per year [4]. Given the high costs and risks of recurrence after surgery, the goals of both the patient and surgeon must be clear prior to proceeding with surgical intervention. It is also important to consider lifestyle factors which may impact choice of surgical repair and outcomes including occupation, exercise habits, sexual activity, and prior interventions for prolapse.

Indications for Treatment

POP is a component of pelvic floor dysfunction (PFD), and patients with prolapse may present with associated conditions including urinary, defecatory, and sexual dysfunction. On initial evaluation it is crucial to determine symptoms associated with POP and their degree of bother. Many women have signs of genital descent/prolapse at examination; however, clinical findings may not correlate well with symptoms since many women with clinically evident POP may be asymptomatic [2]. Bothersome symptoms may include feeling and/or seeing a vaginal bulge, which usually occurs when the prolapse is at or beyond the hymen; however, patients with prolapse above the hymen may also complain of pelvic and/or vaginal heaviness, fullness and/or lower back pain. Urinary symptoms associated with POP include urinary incontinence, urgency, frequency, and voiding dysfunction such as hesitancy, intermittency, incomplete bladder emptying, and needing to manually reduce the prolapse in order to void. Defecatory dysfunction symptoms include incomplete evacuation and needing to splint or having to manually apply pressure in the vagina or the perineum in order to defecate. Additionally, recent publications examining the impact of pelvic floor disorders have reported poorer sexual function in women with PFD. Because older age and postmenopausal status are

associated with impaired sexual function, these may be confounding variables; some studies have been limited by the lack of baseline data. Women with POP report less frequent intercourse and restriction of sexual activity for fear of leakage compared to women without POP [5–7]. In 2006 a comprehensive review to assess sexual function after pelvic surgery revealed conflicting results; some studies demonstrated an improvement in sexual function after surgery, while others showed no change or worsening sexual function [8].

Treatment for POP is based upon symptom bother, patient expectation, and quality of life impact. Patients must be reassured and educated regarding their condition and treatment options. If the symptoms are not sufficiently bothersome to the patient to warrant intervention and the associated risks, then a course of watchful waiting and expectant management is reasonable. Patients may be monitored periodically and encouraged to follow up if symptoms change or become bothersome in the future. Symptoms or findings that may require immediate attention include urinary retention or incomplete bladder or bowel emptying, excessive vaginal bleeding related to ulcerations of the exposed vaginal or cervical tissue, and renal failure related to chronic retention of urine or upper tract obstruction due to ureteral obstruction resulting from high-grade POP.

Treatment Options

Non-surgical

If the patient decides to proceed with treatment, then she should be informed of all non-surgical and surgical options available. Non- surgical treatments include pelvic floor muscle training and symptom-directed therapy as well as pessary use. Vaginal pessaries are synthetic mechanical devices that are inserted into the vagina to support the pelvic organs. Up to 75 % of women can be fitted with a pessary [9], and 90 % of women who are successfully fitted are satisfied at 2 months [10]. Clemons et al. [9] reviewed risk factors for unsuccessful pessary fitting in women with pelvic organ prolapse. In this study 54 % of patients were successfully fitted at their initial visit. The most common reasons that women were not fitted initially were pain or discomfort and pessary expulsion in 17 % and 29 %, respectively. 76 % of women who desired refitting were successfully refitted with a new pessary, with a 73 % overall fitting success. Additionally they found that a short vaginal length and a wide vaginal introitus (four fingerbreadths) were risk factors for an unsuccessful pessary fitting trial. Neither overall POP-Q stage, prolapse stages of any compartment, genital hiatus size, nor vaginal atrophy were associated with an unsuccessful pessary fitting trial. Pessaries are a simple, effective, and safe treatment for pelvic organ prolapse. However, patients need to return for follow-up to avoid potential complications like erosions and fistulas. These are ideal alternatives for patients who wish to avoid or delay surgical intervention or who are poor surgical candidates.

Surgical

The main objective of pelvic organ prolapse surgery is to improve prolapse symptoms. Concomitant urinary, bowel, and sexual dysfunction symptoms must be addressed prior to surgery and the risks and postoperative expectations should be discussed. The presence of preoperative stress incontinence is extremely important, as the patient may benefit from a concomitant anti-incontinence procedure. In addition, many surgeons advocate pre-operative testing for occult stress urinary incontinence with reduction of prolapse by various means. Surgical procedures to address POP may either reconstruct the vagina or obliterate it to accomplish symptom relief.

Obliterative procedures, or colpocleisis, may be performed with or without the uterus in place. This procedure is ideal for women who are not sexually active and do not plan on future sexual activity. It is often utilized in elderly women with comorbidities due to minimal anesthesia requirements, short operative times, and low blood loss. Colpocleisis offers high success rates (90-100 %) with low complications. Prior studies have shown an improvement in body image and a positive impact on bladder, bowel, and pelvic floor symptoms, as well as an improvement in quality of life (QOL), high satisfaction, and little regret following colpocleisis [11–14].

Pelvic reconstructive surgery for prolapse attempts to repair the deficient or impaired connective tissue of the vagina and the pelvic organs supported by the pelvic floor to restore structure and function. Surgery for pelvic organ prolapse can be approached either vaginally, abdominally, laparoscopically, robotically, or a combination of the above. Surgical approach is usually selected based on the specific supporting defects, surgeon preference and comfort, patient's choice and patient-centered goals. Additionally, concomitant procedures for incontinence may be planned simultaneously.

Anterior vaginal wall defects have traditionally been approached vaginally with an anterior colporrhaphy. Anterior colporrhaphy involves exposure of the pubocervical fascia, separation from the vaginal epithelium, and subsequent reapproximation in the midline, thereby correcting a central defect. Paravaginal defects secondary to disruption of the paracervical fascia from the arcus tendineus fascia pelvis (ATFP) can be repaired either vaginally, abdominally, laparoscopically, or robotically. Typically, paravaginal repair can be accomplished vaginally by suturing the lateral pubocervical fascia surrounding the bladder to the lateral pelvic side wall/ATFP.

Posterior vaginal wall defects have traditionally been approached vaginally with a posterior colporrhaphy, which exposes the rectovaginal fascia. The surgeon may perform a

traditional midline posterior colporrhaphy by imbricating the rectovaginal fascia in the midline. A site-specific repair can be performed by identifying the specific defects in the rectovaginal fascia and suturing those defects to restore the rectovaginal fascia. A levator myorraphy or perineorraphy may be performed concomitantly according to the posterior compartment defect and the patient's defecatory symptoms.

Apical prolapse includes uterine prolapse and vault prolapse after hysterectomy with or without small bowel (enterocele). There are multiple vaginal approaches to repair apical prolapse. Transvaginal apical prolapse repair involves suspension of the vaginal apex to either the uterosacral ligament or the sacrospinous ligament with preservation of vaginal length. There is limited data comparing these two approaches; however, anatomic outcomes and recurrence rates are probably similar between the two [15]. A uterosacral suspension may also be performed abdominally or laparoscopically, with or without the uterus in place.

Abdomino-sacrocolpopexy involves suspension of the vaginal apex to the sacral promontory by interposition of mesh between the anterior and posterior vaginal apex and the anterior longitudinal ligament of the sacrum. Sacrocolpopexy is a transabdominal repair performed via open, laparoscopic, or robotic approaches. The procedure may be performed with concurrent supracervical hysterectomy or with retention of the uterus, known as a sacrohysteropexy. There are few trials comparing vaginal versus abdominal repairs for apical prolapse; these studies favor abdominal sacrocolpopexy in terms of both anatomic and subjective success, although complication rates for abdominal repair with synthetic graft use need to be weighed against complications for vaginal repair when selecting approaches to apical prolapse repair.

Treatment Success

Defining treatment outcomes as well as patient goals and expectations remains a major challenge for clinicians in treating pelvic floor disorders. The goal of pelvic organ prolapse repair is restoration of anatomy, resolution of symptoms, avoidance of complications, and patient satisfaction. However, defining treatment success in pelvic surgery has become a challenge, and there is no standard accepted definition of success after POP repair. In 2001, the National Institutes of Health (NIH) defined an "optimal" anatomic outcome as stage 0 and a "satisfactory" anatomic outcome as stage 1 [16]. However, it seems these definitions may be overly stringent, as over 75 % of asymptomatic women who present for an annual gynecologic exam would be classified as abnormal and would not meet the definition of optimal, while 40 % would not meet the definition of "satisfactory" [17]. The symptom that most correlates with advanced prolapse is that of seeing or feeling a vaginal bulge [18]. Swift et al. [19] found that 90 % of women complained of vaginal bulge symptoms once the leading edge of the vagina was beyond the hymen with straining, and patients are usually pleased with their surgical outcome if their bulge symptoms resolve. However, many women with POP experience symptoms that do not necessarily correlate with compartment-specific defects. Furthermore, prolapse severity has only been found to have a weak association with symptoms related to urinary incontinence, voiding, defecatory, and sexual dysfunction [18, 20–22].

Definitions that are based on anatomic success have been shown to have a weak or absent correlation with patient perception of success. In 2009 Barber et al. [23] did a post-trial data analysis of the CARE (Colpopexy and Urinary Reduction Efforts) trial. Eighteen different definitions of surgical success and global improvement were used including the pelvic organ prolapse quantification (POP-Q) system, the Pelvic Floor Distress Inventory (PFDI) response, data on retreatment, and patient's subjective ratings of overall treatment success and global improvement. Success varied widely depending on the definition used (19.2 %–97.2 %). 58 % of women had vaginal prolapse within 1 cm from the hymen; however, 92 % of women felt subjective cure. Overall, definitions of success that included the absence of vaginal bulge symptoms had the strongest correlation with patient perception of treatment success and overall improvement.

Patient-Centered Goals

Women with POP have been shown to have decreased body image and overall quality of life [24, 25]. Multiple studies have assessed patient-centered goals for those women undergoing surgery [26, 27]. Identifying patient's individual goals may help select specific interventions, especially in a field where functional outcomes and improvement of patient's quality of life are the basis for surgical intervention. Among women with pelvic floor disorders, patient goals and expectations are linked to treatment satisfaction, and unmet goals are associated with patient dissatisfaction [27–29].

Mamik et al. [30•] assessed differences in goal attainment of self-described goals after surgical treatment for POP compared to women who elected pessaries. Goals were assigned into 4 main categories including symptom goals (prolapse, urinary, bowel, pain), quality-of-life goals (3 categories: physical activity, emotional, sex), avoidance goals (1 category), body image goals (1 category), and other (1 category). Initial goal-setting did not vary amongst the two groups. Most patients in both groups ranked prolapse symptoms as their first goal. Urinary incontinence was the second goal in surgical patients, and quality of life (activity) was the second goal in pessary patients. Avoidance was the third most common goal in both groups. At 3 months, patients who underwent surgery

had better symptom improvement and goal attainment compared to patients who elected pessary placement.

Hullfish et al. [31] prospectively evaluated achievement of patient-centered goals and satisfaction with care and quality of life in women with pelvic floor dysfunction undergoing surgical vs. non surgical treatment. Symptom relief and activity resumption were the most commonly stated primary patient-centered treatment goals in both groups. They found that surgically treated patients were four times more likely to report complete primary goal attainment at one year and six times more likely to have complete satisfaction compared with non-surgical intervention patients. Additionally, goal attainment scores correlated with disease-specific quality of life. Srikrishna et al. [32••] evaluated both patient and surgeon goal achievement. At two years, mean goal achievement was 85.1 % for patients and 89.6 % for surgeons. Another study evaluated goals and severity of prolapse [33]; these authors found relief of urinary symptoms to be the most commonly stated goal regardless of prolapse stage. Lifestyle, daily activity, and sexual function goals were the second, third, and fourth most common goals in all stages, respectively. Shveiky et al. [34] evaluated patients undergoing vaginal prolapse repair, with and without mesh. The most important goals of patients undergoing prolapse repair were to improve bulge and pressure symptoms, urinary and bowel symptoms, and their appearance, activity, and self-image. At 3 and 12 months post-operatively, patient goal attainment was high and not related to objective anatomical outcomes or the use of mesh. Women who achieved their first goal had significantly better symptoms, quality of life, and satisfaction scores than those who did not. Elkadry et al. [28] showed that 75 % of patients undergoing pelvic reconstructive surgery met all or most of their goals. 4 % met half; 12 % met less than half, and 9 % met none of their goals [28]. However this study also showed a lack of association between satisfaction and objective cure rate.

Paraiso et al. [35] evaluated outcomes of three different rectocele repair techniques (traditional, site-specific, and porcine graft augmentation). Overall, defecatory dysfunction decreased significantly after surgery including symptoms of splinting to defecate, hard straining, and feeling of incomplete emptying with no differences between treatment groups. Sexual function improved significantly in all three groups with no change in the rate of dyspareunia 1 year after surgery. Worsening of prolapse or colorectal symptoms 1 year after surgery (i.e., functional failure) was noted in 16 % of the posterior colporrhaphy group, 12 % of the site-specific repair group, and 21 % of the graft augmentation group with no statistically significant difference amongst groups. Overall, 93 % of subjects indicated that they would choose the same treatment again.

A study by Mahajan et al. showed a decrease in patient satisfaction at one year in patients with urge incontinence and less subjective goal attainment [36]. The incidence of de novo overactive bladder symptoms after anatomic correction has been shown to be 5 %–25 % [37, 38]. Pham et al. evaluated the incidence of new pelvic symptoms 3 months after pelvic reconstructive surgery. 42 % reported new pelvic symptoms: incontinence (27 %), urgency (25 %), frequency (23 %), difficult defecation (22 %), voiding difficulty (10 %), and POP (2 %). New onset symptoms were associated with decreased self-reported improvement and satisfaction, despite improvement on validated quality of life measures. Therefore surgical intervention is not without costs and complications, and surgical candidates must be counseled carefully prior to intervention.

Conclusions

Despite a long history of surgical treatment for pelvic organ prolapse, a standardized definition of cure is lacking, and data on postoperative outcomes remain heterogeneous. Ideally, the surgical goals after POP repair should combine anatomic outcome, low morbidity, an improvement in health-related quality of life, and patient satisfaction. Discussing patient goals and setting realistic expectations prior to treatment may guide surgical therapy and improve patient satisfaction. Pelvic floor surgeons must assess symptoms related to pelvic organ prolapse in a comprehensive manner, including urinary, defecatory and sexual issues. Choice of treatment must be individualized based on a patient's age, lifestyle, symptomatology, and specific goals of therapy.

Compliance with Ethics Guidelines

Conflict of Interest Dr. Margarita M. Aponte and Dr. Nirit Rosenblum each declare no potential conflicts of interest relevant to this article.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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