Surgical Techniques for Rectal Prolapse

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Complete rectal prolapse or rectal procidentia is a debilitating disease that presents with fecal incontinence, constipation, and rectal discharge. Definitive surgical techniques described for this disease include perineal procedures such as mucosectomy and rectosigmoidectomy, and abdominal procedures such as rectopexy with or without mesh and concomitant resection. The debate over these techniques regarding the lowest recurrence and morbidity rates, and the best functional outcomes for constipation or incontinence, has been going on for decades. The heterogeneity of available studies does not allow us to draw firm conclusions.

rectal prolapse perineal approach abdominal approach laparoscopic approach

1. Introduction

Complete rectal prolapse or rectal procidentia is defined as a full-thickness protrusion of the rectum through the anal canal, and should be distinguished from the mucosal prolapse [1]. Although the definite etiology of this disease is unclear, the most common related pathologies are the redundant sigmoid colon, a deep cul-de-sac, and the diastasis of levator ani muscles [2][3].

The incidence is higher in females, with a peak in the seventh decade [4]. Patients usually complain of fecal incontinence, which is thought to be a result of a chronic stretch of the anal sphincter and continuous stimulation of the rectoanal inhibitory reflex by the prolapsed tissue [5][6]. Other symptoms include constipation, pain, bloody or mucous rectal discharge [7].

The diagnosis can be made by demonstrating the protrusion of the rectal circumferential radial folds with straining maneuvers on clinical examination [7]. However, additional diagnostic tests such as dynamic pelvic magnetic resonance imaging (MRI), anal manometry, and endoanal ultrasonography (EUS) are usually required to detect co-existing anatomical abnormalities and decide on the optimal surgical treatment method [8][9][10][11][12].

Described surgical techniques are varied, and whether the approach is abdominal or perineal, the treatment aims to correct anatomical and functional abnormalities by the fixation of the rectum to the sacrum and/or the resection of the redundant bowel [13]. In this article, these different techniques are reviewed for their

2. Surgical Techniques

As a general consideration, perineal procedures have been associated with reduced complication rates and chosen in frail patients with co-morbidities. However, with recent randomized controlled trials and reviews, perineal and abdominal procedures have been reported to have similar outcomes in expert hands regarding perioperative complications, recurrence rate, and quality of life [14].

A recent Cochrane Database review demonstrated no significant difference in recurrence rates [15], and Mustain et al. reported no difference in terms of postoperative complications between these two approaches [16]. Moreover, Emile et al. revealed that similar recurrence and complication rates were seen, but increased length of hospital stay in perineal procedures and longer operative time in abdominal procedures were noted [17].

2.1. Abdominal Approach

Described techniques, whether rectopexy using a mesh or suture and/or resection, have been proven to be effective and safe via laparoscopy [13]. The laparoscopic approach for rectal prolapse has been associated with shorter hospital stay and less postoperative pain. Moreover, there was no statistical difference in recurrence rates, postoperative constipation, or incontinence scores [18][19][20].

2.1.1. Ripstein Procedure (Anterior Mesh Rectopexy)

This procedure was first described by Ripstein in 1952 [21]. Reported results ranged from 0 to 13% for recurrence and 0 to 2.8% for mortality, with high complication rates of 33% [22]. Its well-recognized complication was the obstruction and narrowing of the rectum; therefore, patients may complain from newly developed or worsened constipation in the postoperative setting [23].

2.1.2. Wells Procedure (Posterior Mesh Rectopexy)

With the use of absorbable materials instead of non-absorbable materials, as initially described by Wells, recurrence and complicatons such as pelvic sepsis have been lower with posterior mesh rectopexy [24].

Laparoscopic posterior mesh rectopexy (LPMR) was investigated by several prospective studies [25][26][27]. Dyrberg et al. reported a recurrence rate of 11%, as well as improvements in continence and constipation scores (74% and 65%, respectively) [26]. In a comparative study with a mean follow-up of 46 months, recurrence rates were found to be 3%, and this was similar to the laparoscopic ventral mesh rectopexy (LVMR) group, whereas patients with LPMR had less improvement in constipation scores [28].

2.1.3. Suture Rectopexy

Suture rectopexy was first described by Cutait in 1959, and it aimed to form scar tissue between the rectum and sacrum [29][30]. Presumably, due to extensive rectal mobilization, postoperative constipation rates are increased [15][31].

2.1.4. Frykman-Goldberg Procedure (Resection Rectopexy)

In addition to rectopexy, sigmoid resection has been considered effective in terms of recurrence and functional outcomes, particularly in patients with complaints of constipation [14][15][32]. For patients with the main symptom of fecal incontinence, this procedure seems to be unnecessary [33].

Laparoscopic resection rectopexy (LRR) is the most commonly chosen technique for rectal prolapse in the United States [34]. Ashari et al. demonstrated similar improvement rates of continence and constipation (62% and 69%, respectively) and a recurrence rate of 3% with a median follow-up of 62 months [35]. Moreover, a retrospective comparative study between LRR and LVMR reported no significant differences in recurrence and functional outcomes, but higher complication rates in the LRR group [36].

2.1.5. Ventral Mesh Rectopexy

Ventral mesh rectopexy was first described by D'Hoore in 2004 [37]. The main advantage of this technique is the limited dissection anteriorly to the rectum, which enables reinforcement of the rectovaginal septum, preservation of the autonomic nerves, and concomitant colpopexy. High improvement rates in constipation and decreased de novo constipation compared to posterior rectopexy are attributed to the avoidance of complete rectal mobilization [38][39]. Based on these favorable outcomes, ventral mesh rectopexy has become a standard treatment for complete rectal prolapse in European countries [40][41].

2.2. Perineal Approach

2.2.1. Delorme Mucosectomy

Delorme procedure was first described in 1900 [42], and it is usually preferred in patients with short segments of rectal prolapse [43]. Initial studies reported that this procedure was associated with high recurrence rates and worse functional outcomes [44]. Marchal et al. demonstrated an improvement rate of 42% and 54% of continence and constipation, respectively, and 20% morbidity in patients with a mean follow-up of 73 months [45]. In a prospective study including 113 patients with a mean follow-up of 36 months, an improvement of continence was found to be much higher (89%), with an increased morbidity rate of 30% [46].

On the other hand, Fleming et al. reported similar results between Altemeir and Delorme procedures in terms of functional outcomes, postoperative complications, and mortality [47]. Moreover, in a randomized prospective study comparing patients undergoing Delorme procedure vs. Delorme with levatoroplasty, it was revealed that the combined procedure was associated with decreased recurrence rates and better functional outcomes [48].

2.2.2. Altemeier Procedure (Perineal Rectosigmoidectomy)

Altemeier procedure has been commonly performed in patients with long segments of rectal prolapse (>5 cm) [14]. It has also been described as a preferred method for strangulated rectal prolapse combined with diverting ileostomy [49][50]. There are mostly retrospective studies reporting contradicted results regarding functional outcomes, morbidity, and mortality rates of this procedure. In a large retrospective study including 518 patients, morbidity and recurrence rates were 9% and 23%, respectively [51]. On the other hand, Trompetto et al. reported a

significantly higher morbidity rate of 38% and recurrence rate of 35% in patients with a median follow-up of 49 months [52].

2.2.3. Perineal Stapled Prolapse Resection (PSPR)

PSPR is faster and easier than conventional perineal procedures and it is suitable for high-risk patients under spinal anesthesia. However, high rates of early recurrence have been reported by several studies [53][54]. Tschuor et al. reported a recurrence rate of 44% in a median follow-up of 40 months [55]. Even though the recurrence rates were comparable to Altemeier's and Delorme's procedures in a recent meta-analysis, the authors emphasized the necessity of further randomized prospective studies comparing PSPR with other techniques in complete rectal prolapse [56].

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