

Comparative Effectiveness of Transanal versus Transvaginal Surgical Approaches for Symptomatic Rectocele: A Randomized Controlled Trial (RCT) Assessing Symptomatic Relief, and Quality of Life

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Abstract

Background: There is always considerable controversy about the etiology, diagnosis, and management of rectocele. However, rectocele pathophysiological mechanism is promoted by deterioration of the connective tissue of the recto-vaginal septum, due to age, birth trauma. As regard treatment, there are many techniques, and the debate still continue about which has the best outcome.

Aim of Study: To compare the effectiveness of transvaginal repair versus transanal plication repair for symptomatic rectocele repair as regard anatomical outcome, symptomatic relief, and quality of life.

Patients and Methods: 40 women who underwent a rectocele repair from June 2022 to June 2024. These women are divided into 2 equal groups A and B each had 20 women. Group A received a transvaginal repair, and group B received a transanal repair. Follow-up is done for at least 6 months after operation, through regular visits to the out-patient clinics. Patients are followed for physical examination and assisting complications and life quality.

Results: Mean operative 44.8±6.68 in group A, while it was 62.6±7.02 in group B. Mean hospital stay was 2±1.095 in group A while in group B was 3.1±0.89. (significantly increase in groups B). As regard intraoperative complications (bleeding, apparent sphincter or rectal injuries). The recorded intraoperative complications were 40% in group A and 45% in group B ($p=0.7521$). Post operative complications was significantly increased in group B (transanal repair. It was in group

A in 40% (8 patients), while in 75% (15 patients) of group B ($p=0.0271$). The most serious complications was the incontinence. It occurred in 5 patients (25%) in group B, while it occurred only in one patient (5%) of group A with no significant difference between both group ($p=0.0803$). Anal stenosis has 0% in group A and 30% (6 cases) in group B (significantly increased in group B). Also, anal fistula has incidence of 25% in group B while it did not occur in group A. Postoperative surgical site infection was recorded in 4 patients of group A and in 9 patients of group B. Rectovaginal fistula recorded once in group A and no incidence in group B. There was no recurrence in group B, while there were 2 recurrences in group A. As regard quality of life after the operations, group A has 15 patients (75%) with good improvement of life quality after the operation while group B has 35% (significant improvement in group A). Mild improvement is recorded in 3 and 2 patients in group A and B respectively. Bad quality of life after operations was 2 (10%) in group A and 11 (55%) with high significant difference between them ($p=0.0027$).

Conclusion: The transvaginal approach for rectocele repair is safer, with less complications especially anal incontinence and stenosis. The conventional transanal approach could be replaced by other stapling techniques.

Key Words: Obstructive defecation syndrome – Transvaginal rectocele repair – Transanal rectocele repair.

Introduction

WOMEN are three times more than men to have pelvic floor dysfunction and to suffer from constipation. Pelvic floor dysfunction is usually the cause of constipation in female in child bearing period. Chronic constipation is considered the main provocative of rectocele. Rectocele is defined as herniation of the rectum by protrusion of its anterior wall through the posterior wall of the vagina. A com-

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monly-found condition in females, its prevalence is estimated at 30-50% of multiparous women over 50 years of age [1].

Pelvic floor dysfunction is mainly due to Musculo-ligamentous rupture or stretching in the course of traumatic vaginal deliveries, or a history of previous pelvic-perineal surgery. Chronic constipation with repeated straining or asynchronism causing failure of sphincter relaxation during rectal evacuation, leads to rectocele development. The rectocele pathophysiological mechanism is promoted by deterioration of the connective tissue of the recto-vaginal septum, due to age, birth trauma and postmenopausal estrogen deprivation [2].

Anatomy:

Rectoceles result from defects in the integrity of the rectovaginal septum and herniation of the rectal wall into the vaginal lumen. The normal posterior vagina is lined by squamous epithelium that overlies the lamina propria, a layer of loose connective tissue. A fibromuscular layer of tissue composed of smooth muscle, collagen, and elastin underlies this lamina propria, and is referred to as the rectovaginal fascia or septum. This is an extension of the endopelvic fascia that surrounds the pelvic organs and allows for their support, and contains blood vessels, lymphatics, and nerves supplying the pelvic organs [3]. Denonvilliers originally described a dense tissue layer in men between the bladder and the rectum and named it the rectovesical septum. Many clinicians refer to this layer as Denonvilliers' fascia. The layer of tissue between the vagina and the rectum was felt to be analogous to the rectovesical septum and became known as Denonvilliers' fascia in the female or the rectovaginal septum [4]. The rectovaginal septum is described as "a continuous layer of support extending from the sacrum above to the perineal body below." [5]. The normal vagina is stabilized and supported on three levels. Many consider the cervix to be the "superior central tendon, as the vaginal apical endopelvic fascia is attached to the cardinal-uterosacral ligament complex. The perineal body also considered as the inferior central tendon. Between the cervix and perineal body, the endopelvic fascia extends in the rectovaginal septum [6]. Zhai et al., [7] found that the rectovaginal septum was composed of anterior and posterior layers. The anterior layer was identified as Denonvilliers' fascia; the posterior layer as the fascia propria of the rectum. The bilateral insertions of Denonvilliers' fascia differ at different levels: At the cervix, Denonvilliers' fascia merged into the parametrium; at the upper vagina, it ended laterally at the paracolpium or fused with the fascia anterior to the vagina; at the middle vagina, the fas-

ciae anchored to the arcus tendinous fasciae pelvis; at the lower vagina, it ended at the lateral side of the outlet of the levator ani muscles. Fathy et al., [8] considered the rectovaginal septum (RVS) is the connective tissue fascia that separates the genital system from the digestive tract. It is more firmly adherent and closely attached to the vagina than to the anorectum. The thickness of the RVS varies from 0.1mm to 2.6mm, being thicker medially and looser and more adipose laterally.

Pathology:

The sphincters exhibit age-related changes with the internal sphincter becoming thicker with age as fibroelastic tissue replaces smooth muscle. There are hormonal receptors in the endopelvic fascia, and menopause is associated with a generalized loss of strength in the pelvic floor. The anal sphincters may be damaged directly during childbirth, resulting in tears to the external and possibly also the internal anal sphincter. The pelvic floor, particularly the puborectalis, may also be damaged. Stretching of the pudendal nerve causes some temporary neuropathy, but this may be permanent, and denervation of the external anal sphincter then results in atrophy [9]. A rectocele results from a stretching or actual separation or tear of the rectovaginal fascia, thus leading to a bulging of the posterior vaginal wall noted on examination during a Valsalva maneuver. Rectoceles may be located proximal (high), medial (mid), or distal (low) in the septum. Defects in the rectovaginal fascia or separation from its attachments often result from childbirth or improperly healed episiotomies, and commonly lead to transverse defects above the usual location of the connection to the perineal body [10]. Separation of the rectovaginal septum fascia from the vaginal cuff results in the development of an enterocele [6]. The pathophysiological mechanism is thought to be deterioration of the connective tissue of the recto vaginal septum, due to age, birth trauma and post-menopausal estrogen deprivation. The pathophysiology of rectocele is multifactorial. Several factors can promote the appearance of a rectocele chronic constipation with repeated straining or asynchronism causing failure of sphincter relaxation during rectal evacuation, Musculo-ligamentous rupture or stretching in the course of traumatic vaginal deliveries, or a history of previous pelvic-perineal surgery [2]. Sadahiro, et al., [11] suggested that laxity of the rectovaginal septum is closely related to vaginal delivery, but the etiology of symptomatic rectocele depends not only on the size of the bulge but on the presence of other anorectal conditions. Rectocele is defined as herniation of the rectum by protrusion of its anterior wall through the posterior wall of the vagina. A commonly-found condition in females,

its prevalence is estimated at 30-50% of multiparous women over 50 years of age [1]. The true incidence of rectoceles is unknown, but asymptomatic posterior compartment prolapse has been reported in approximately 40% of parous women [12]. Performing defecography in young, healthy volunteers, Shorvon et al., [13] identified small rectoceles in 17 of 21 women (81%), with 10 of these (48% of total) measuring >1cm. Rectovaginal septal defects and posterior compartment prolapse have been reported in more than 10% of nulliparous women aged 18 to 24 years [14]. Olsen et al., [15] in a retrospective analysis of 149,554 women in the Kaiser Permanente Northwest system, estimated that the lifetime risk of having surgery for pelvic organ prolapse by age 80 years was 11.1%, with 46% of those who undergo repair having defects in the pos-

terior compartment. Risk factors for development of a rectocele include age, multiparity, vaginal delivery, surgery (including episiotomy, hysterectomy, or hemorrhoidectomy), and conditions which chronically increase intra-abdominal pressure such as chronic obstructive pulmonary disease (COPD), obesity, and constipation [16].

There are three types of rectoceles can be distinguished depending on the anatomical height:

- High supra-levator rectocele, often associated with herniation of the Douglas pouch.
- Mid-rectal rectocele due to an alteration of the recto-vaginal septum.
- Low rectocele with involvement of the perineal body [17].

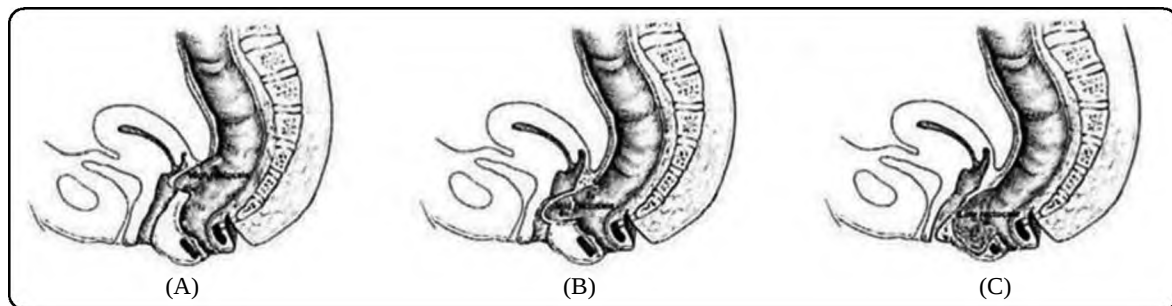


Fig. (1): Rectoceles are known as high (A), middle (B), and low (C). from Rosato and Lume in Surgical Treatment of Rectocele: Colorectal Approaches.

Rectocele could be considered as a contributing factor for defecatory dysfunction mainly, primarily obstructed defecation (Obstruction defecation syndrome ODS). It is still unclear whether rectoceles are the cause or the result of obstructed defecation [16]. There are many patients who experience difficulty in the evacuation purely as a result of propulsive forces being transmitted anteriorly into a rectocele rather than down through the anal canal which leads to stool trapping in the rectocele and the feeling that “pushing doesn’t push it out.” These patients often report the need to apply digital pressure to the posterior vaginal wall to defecate. On the other hand, studies have shown that the majority of patients with a rectocele and constipation have some combination of slow-transit constipation, paradoxical contraction of the puborectalis, and abnormal perineal descent in addition to a rectocele [18].

Physical examination:

The physical exam includes an anorectal exam and a pelvic exam. The anorectal examination involves a digital rectal examination to assess sphincter tone, a bi-digital examination to assess the integrity of the rectovaginal septum and to hook the

rectocele downward to assess its depth. Anoscopy may be performed to look for an associated rectal intussusception. The gynecological examination looks for any bulging of the posterior wall of the vagina with straining as well as the detection of stress urinary incontinence. Visual inspection with vaginal retractors makes it possible to unmask any associated anterior involvement (most often cystocele) [19].

Additional factors that should be evaluated during the physical examination include vaginal mucosal thickness and estrogenization, associated pelvic support defects such as vaginal vault prolapse or cystocele, and pelvic neuromuscular function. Poorly estrogenized, thin vaginal mucosa should be treated with local estrogen prior to surgical therapy. Levator tone and contraction strength are important factors in enhancing the long-term success rate of pelvic reconstructive surgery. Regularly performed Kegel exercises should be recommended following pelvic reconstructive procedures [3].

Diagnosis:

The diagnosis of rectocele is primarily clinical. The median age of onset of symptomatic rectocele,

as reported by large series, is between 50 and 60 years [20,21]. These are most often multiparous women, with a median number of two or three pregnancies according to different series. These series reported no relevant data as to the mode of delivery. However, a history of hysterectomy was noted in between a third and a half of patients [20,22,23].

Small rectoceles may be completely asymptomatic and may be a normal finding. Patients with larger rectoceles may complain of a variety of symptoms as pelvic pain or pressure, sexual dysfunction, and defecatory dysfunction which include obstructed defecation and incomplete emptying, in these conditions, there is a need to self-digitate or "splint" to evacuate the rectum. Among the symptoms; pelvic pressure, dyspareunia or general pelvic organ prolapse. Others, presenting with fecal incontinence, chronic constipation, and rectal prolapse [16].

Obstructive defecation syndrome (ODS) is a symptom found in most patients with rectocele. ODS is commonly found in individuals that have experienced chronic strain, often associated with the inability to relax puborectalis or the external anal sphincter muscles as well as slow transit motility. Obstructive defecation due to accumulation of stool within the rectocele reservoir leads to increasing degrees of perineal pressure. In the absence of digital reduction, women will note incomplete emptying associated with increasing degrees of perineal pressure. This leads to a high degree of frustration and a vicious cycle of increasing pelvic pressure, need for stronger Valsalva efforts, enlargement of the rectocele bulge, and increasing perineal pressure. Rectal digitation is less commonly reported [6].

An enlarging rectocele will widen the levator hiatus, increase vaginal caliber, and enlarge the genital hiatuses. This may lead to sexual difficulties including symptoms of vaginal looseness and decreased sensation during intercourse. Hemorrhoids can be associated with a rectocele. They typically occur secondary to increased Valsalva efforts by the patient to have a bowel movement. Women with a large rectocele may present with a palpable vaginal bulge [24].

A large, exteriorized rectocele places the patient at risk for vaginal mucosal erosion, and accelerates progression of the rectocele due to further weakening of the posterior vaginal wall. There is frequently an association with other anatomic support defects such as an enterocele or a cystocele [3].

Physiologic tests:

Anorectal physiologic testing is frequently used in the diagnosis and treatment of anorectal pathology. Specifically, defecography and manometry [25]. Anorectal Manometry (ARM) and a balloon expulsion test (BET) should be the first ancillary tests performed after an initial trial of medication adjustment and increased fiber [26]. Manometry and a balloon expulsion test essentially eliminate or prove the diagnosis of ODS. Patients with confirmed ODS (abnormal manometry) are further investigated with defecography (with fluoroscopy or MRI) to assess pelvic floor motion (perineal descent and puborectalis relaxation) and structural abnormalities such as intussusception and rectocele [27]. Importantly, surgery is only considered for patients with confirmed ODS who have a significant structural abnormality and normal pelvic floor relaxation [16]. Gynecologists frequently repair pelvic organ prolapse with no workup beyond a physical exam. Only 6% of gynecologists order defecography in their routine preoperative evaluation of rectocele [28].

ARM test is used for the evaluation of anal sphincter function and anorectal co-ordination [29]. Deshmukh et al., [30] summarize the measurements that were performed in manometry as following:

- 1- Anal resting pressure: The subject was instructed to calm and not to move in the left lateral position for 1 minute and anal resting pressure was measured.
- 2- Anal squeeze pressure: The subject was told to squeeze the anal canal as strong as possible 3 times with a 60-second rest given between each squeeze. Anal squeeze pressure is an average of 3 maximum squeeze pressures.
- 3- Endurance squeeze pressure: This pressure was recorded by asking the subject to squeeze the anal canal as tight and long as possible.
- 4- Push (simulated evacuation) pressure: This was measured first without and then with rectal balloon distension with 50 mL of air. The subject was instructed to push down for 10 seconds as if to defecate and pressure was recorded. Maneuver was done 3 times with a 30-second interval between each push.
- 5- The rectoanal inhibitory reflex: Presence or absence of anal sphincter relaxation is noted while injecting up to 50mL of air into the rectal balloon. A positive rectoanal inhibitory reflex (RAIR) response occurred if there is a 20% greater drop and then returns to the resting pressure.

- 6- Rectal sensation: Rectal balloon was inflated with a syringe in 10mL increments of air and the threshold volume for the first sensation was recorded. After that, the balloon volume was increased by 30mL, and urge to defecate, and maximum tolerable volume was recorded.
- 7- Rectal BET: This was measured as the time required to expel a rectal balloon filled with 50mL of water in the left lateral position. If more than 1 minute was required to expel the balloon it was considered as failure. In healthy subjects; anorectal pressures and rectal compliance are highly reproducible [31].

Defecography:

Defecography allows dynamic visualization of rectal evacuation, detects the presence of a rectocele, and evaluates degree, ease, and rapidity of emptying [32]. Its sensitivity and specificity for the diagnosis of rectocele are respectively 54 and 84% [25].

Defecography is performed by introducing 100 to 250cc of radiopaque paste into the rectum. An additional 20 to 50cc of liquid barium can be added to highlight details with a double-contrast technique. Rectal contrast is inserted with the patient lying on the left lateral position on the X-ray table. Subsequently, the X-ray table is positioned upright so that the patient is seated in a lateral position over a plastic radiolucent commode filled with water to create a phantom similar to soft tissue [33].

Defecography is a dynamic test that provides a detailed functional examination of the pelvic floor. There are two types of Defecography tests used for evaluation of pelvic floor disorders. The traditional method of defecography is performed under fluoroscopic control. Magnetic resonance defecography is developing as an alternative to the traditional method [34,35,36].

The fluoroscopic monitor is connected to a video recording machine to allow the entire radiologic procedure to be recorded. Instant radiographs are also obtained at rest (R), squeeze (S), and during push (P); an optional post evacuator film may also be taken. Measurements of anorectal angle (ARA), perineal descent (PD), and rectocele diameter can be accomplished. Rectocele diameter is the distance between the interpolated anterior anorectal axis and the anterior-most portion of the rectocele [37].

Coexisting causes of constipation such as rectoanal intussusception, paradoxical puborectalis contraction, and sigmoidocele are commonly observed.

These associated conditions could be predictors of a poor outcome after surgical repair of rectocele, as the defect could be a secondary condition. In addition, slow colonic transit time should be excluded as the cause of constipation prior to rectocele repair. Despite these controversies, surgical treatment of rectocele should be restricted to patients in whom clinical, physical, and dynamic findings confirm this defect as the primary cause of the symptoms. It has been demonstrated that at most only 10 to 20% of rectoceles are clinically significant as the major cause of symptoms. Adequate patient selection for surgical repair of rectocele yields a success rate of up to 82% after one year of follow-up [38].

Rectoceles and intussusception are usually visualized during defecation. Rectoceles are out-pouchings of the rectum beyond the expected contour of the rectal wall. They are more common in women and often normal [13]. In normal patients, they empty at the end of defecation [9].

Another cine defecography criterion that can indicate surgery is barium retention inside the rectocele. The volume of barium retention depends on a methodologic variable including the volume of barium injected and the technique used to determine the volume [32].

A radionuclide technique can yield to 33% retention in volunteers as any radioactivity adherence to the rectal wall will be recorded as retained, whereas with standard defecography, a thin layer of barium on the mucosa is considered normal [39].

Several measurements can be taken from the images. These include the anorectal angle, anal canal length, level of the anorectal junction, and descent and elevation of the anorectal junction. Most of these measurements are not practical as they can not only be difficult to calculate but also because there is so much overlap between normal and abnormal, that they are not very useful [13].

The anorectal angle is calculated between the axis of the anal canal and a tangent drawn along the posterior wall of the rectum. This angle is usually around 120 at rest in control subjects. The normal range is 70-134 with a mean of 95. With lifting or squeezing, the anorectal angle decreases to a mean of 19 in women. The range is 6-26. In men, the mean is 28. The range in men is 12-45. The angle increases during straining and defecation. In young normal women, the mean anorectal angle is 103 with a range of 75-108. The anorectal angle is slightly lower in men. The mean is 98 with a range between 67-123 [9,13].

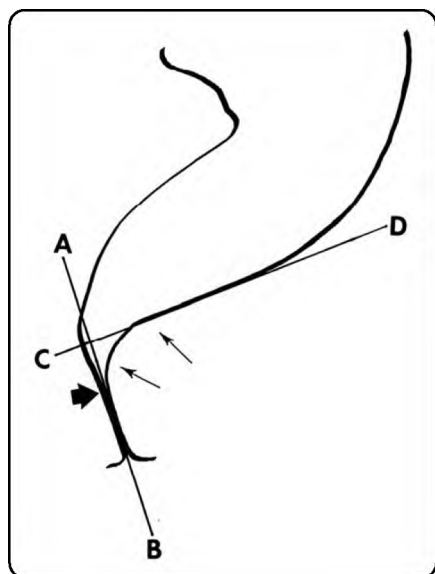


Fig. (2): Measurements that can be made: Anorectal angle between AB and CD. Anal canal length: Along AB. Measured from the end of the funnel (wide arrow) at the superior aspect to the closed end at the anus. Puborectalis impression: Thin arrows.

Treatment:

Medical:

A high fiber diet plus ingestion of two to three liters of noncaffeinated nonalcoholic fluids per 24 hours is recommended as initial conservative treatment. If control of the patient's symptoms is suboptimal, it is recommended to consider surgical therapy. Whatever the context or the location of the rectocele, when it is symptomatic, the therapeutic management begins with efforts to regularize intestinal transit and rehabilitative approaches in certain situations. If these efforts are not successful, surgical options are possible [19]. However, The American Gastroenterological Association's clinical management algorithm for ODS, only recommends surgery for patients who have significant structural abnormality and normal pelvic floor relaxation observed during balloon expulsion testing [16].

Surgical management:

Surgical indications for a symptomatic rectocele repair include the presence of obstructive defecation symptoms, lower pelvic pressure and heaviness, prolapse of the posterior vaginal wall, pelvic relaxation, or enlarged vaginal hiatus. Several approaches have been described to repair rectoceles. Gynecologists and many colorectal surgeons prefer the transvaginal approach (posterior colporrhaphy). Other options include a transanal and perineal approach. Now there are more advanced technique including transanal stappling, laparoscopic mesh fixation.

Transvaginal repair (posterior colporrhaphy):

Transvaginal plication (Posterior colporrhaphy) of the rectovaginal septum is the preferred approach to rectocele repair for most gynecologists and some colorectal surgeons. Posterior colporrhaphy is commonly performed in conjunction with a perineoplasty to adjust relaxed perineum and widened genital hiatus. Preoperatively, the desired final vaginal caliber is assisted. Allis clamps are placed on the inner labia minora bilaterally and then approximated in the midline. The resultant vagina should loosely admit two to three fingers. A transverse incision at the level of the perineal body is made between the Allis clamps, and sharp and blunt dissection is then performed to separate the posterior vagina from the underlying rectovaginal fascia. A midline incision along the length of the vagina to a site above the superior edge of the rectocele may enhance exposure and allow excision of redundant vaginal mucosa. The dissection is carried laterally to the lateral vaginal sulcus and medial margins of the puborectalis muscles. The rectovaginal fascia with or without the underlying the levator ani muscles is then plicated with interrupted sutures of 2–0 polyglycolic acid while depressing the anterior rectal wall. Typically, numerous slowly dissolving stitches are placed along the length of the rectocele. Excess vaginal mucosa is carefully trimmed and then reapproximated. A concomitant perineoplasty may be performed by plicating the bulbocavernosus and transverse perineal muscles. This reinforces the perineal body (or inferior central tendon) and provides enhanced support to the corrected rectocele [6].

Discrete tears in the rectovaginal fascia (septum) have been described and may contribute to the formation of rectoceles. The intent of the discrete fascial defect repair is to identify the fascial tears and reapproximate the edges. The surgical dissection is similar to the traditional posterior colporrhaphy whereby the vaginal mucosa is dissected off the underlying rectovaginal fascia to the lateral border of the levator muscles. However, instead of plicating the fascia and levator muscles in the midline, the fascial tears are identified and repaired with interrupted sutures [6].

Richardson [4] describes using a finger in the rectum to push anteriorly to identify areas of rectal muscularis that are not covered by the rectovaginal septum. The operator can then identify fascial margins and reapproximate them. A perineoplasty may be necessary if a widened vaginal hiatus is present. Identification of discrete defects becomes more difficult at the apex of the vagina, where the fibromuscular wall of the vagina is thin and the rectovagi-

nal septum is composed mainly of thin endopelvic fascia. In the lower vagina, the most common location of a discrete break is actually a transverse separation of the perineal body from the rectovaginal septum, the reattachment and stabilization of which is essential to the repair [4]. Several authors emphasize the importance of anchoring the repair to the perineum and performing a concomitant perineoplasty when the muscles of the perineal body have been disrupted or separated, to avoid perineal rectocele [40].

Many authors have reported satisfactory results after posterior colporrhaphy and repair of discrete defect. These have included symptoms of a pressure, symptoms of incomplete bowel emptying, constipation, and sexual dysfunction. A major component of sexual dysfunction is dyspareunia, which has been reported in up to 50% of patients and associated with plication of the levator ani muscles [52].

The addition of a prosthetic or biologic graft to transvaginal rectocele repairs has been proposed as a potential modification to increase durability. Many studies have randomized patients to transvaginal repairs with or without graft augmentation, using prosthetic or biologic mesh. In a prospective randomized trial, Sand et al., [41] found no difference in the rate of recurrent rectocele 12 months after transvaginal repair with or without the addition of a polyglactin mesh. Sung et al. [42] performed a prospective, randomized, double blinded study of transvaginal rectocele repair with or without reinforcement with a porcine subintestinal submucosal (SIS) and found no difference in the rate of anatomic failure between patients with or without graft reinforcement. Furthermore, ODS symptoms (straining, splinting, or incomplete evacuation) remained with considerable percentage in both groups. Paraiso et al., [23] found significantly higher recurrence rate in grafted patients compared conventional posterior colporrhaphy. Based on these data, they did not recommend the use of graft reinforcement.

Transanal repair:

In 1967, Marks described a transanal repair of rectoceles. Depending on his believe that the prolapsed anterior rectal mucosa was a source of defecation difficulties that aggravated anal problems despite correction of the posterior vaginal wall and rectovaginal musculofascial layer. His procedure was performed in the lithotomy position. The anterior rectal mucosa was excised after the redundant rectal mucosa was grasped and pulled outward until taut. A two-layer suture closure was performed underlying the rectal mucosa, including the hemor-

rhoid. The formation of scar at the suture line added to support [6]. The transanal approach is preferred by many colorectal surgeons; as many of the patients have other anorectal pathology, and the post-operative pain may be less than with a transvaginal approach [43].

Patients receive a mechanical and antibiotic bowel preparation. After institution of general or regional anesthesia, the patient is positioned in the prone jackknife position with the buttocks taped apart. The size and location of the rectovaginal defect is confirmed by manual palpation. Depending on the way of repair that is to be performed, a vertical, horizontal, or elliptical incision in the anorectal mucosal is created using the electrocautery. A bi-valved retractor is placed in the rectum and the submucosal plane is infiltrated with an epinephrine: saline solution (1:200,000). A "T-" or "I"-shaped incision is made in the center of the mucosa longitudinally and flaps are elevated. The muscularis of the rectum and the deeper fibromuscular tissue are plicated transversely with interrupted absorbable sutures, with care taken to avoid the vaginal mucosa. Redundant mucosa is excised before closure of the incision with absorbable sutures. Variations on this technique include transverse or elliptical incisions, vertically oriented plication, or plication without mucosal incision [16].

Sehappayak [38] described repair of the rectovaginal septum through a transanal approach. A midline incision is made distal to the dentate line, continued 7 to 8cm above the anorectal ring, and deepened to the rectovaginal septum. The levator ani muscle and rectovaginal fascia are then plicated separately. Ninety-eight percent of 355 patients reported improvement. In terms of bowel function, 49.5% were asymptomatic, 35% had occasional straining, and 14% used laxatives. They did not report on postoperative sexual function. Complications included a rectovaginal fistula and infection. The author warns against performing this procedure for high rectoceles or enteroceles or combining it with transvaginal surgery secondary to the risk of infection.

Arnold et al., [53] retrospectively compared rectocele operations performed transanally versus transvaginally. In all, fifty-four percent had postoperative constipation, and 34% had gas, liquid, or stool incontinence. Sexual dysfunction was reported in 22%. These complications occurred equally among the two groups of patients. The only significant difference was that the patients repaired transvaginally had more persistent pain. Khubchandani et al., [44] reported a retrospective study of 123 consecutive cases of transanal repair of rectocele.

Patient satisfaction was noted as 82% and the complication rate was only 3%, confirming the validity of this simple technique.

Other techniques:

Fox and Stanton [45] describe mesh interposition to correct a rectocele at the time of abdominal sacrocolpopexy for vaginal vault prolapse. This simplifies the approach for patients with both vaginal vault prolapses and rectocele, as it alleviates the need for a concomitant vaginal procedure. The rectum is dissected from the posterior vaginal wall to the perineal body and a continuous piece of mesh is placed from the perineal body to the vaginal vault. The mesh is then tied to the anterior longitudinal ligament overlying the sacral promontory in a tension free fashion.

Pollak J, Davila, [3] treated 29 patients with this surgery and reported significant improvement in prolapse symptoms. They were dissatisfied, however, by the continued bowel symptoms including constipation and incomplete defecation. Similarly, Taylor et al [36] reported a persistence or increase in bowel symptoms in 39% of their patients who underwent this type of surgery. Laparoscopic rectocele repair involves opening the rectovaginal space and dissecting inferiorly to the perineal body. The perineal body is sutured to the rectovaginal septum and rectovaginal fascial defects are identified and closed. The levator ani muscles may be plicated. The advantages are reported to be better visualization secondary to magnification and insufflation, and more rapid recovery, with decreased pain and hospitalization. Disadvantages are many, including difficulty with laparoscopic suturing, increased operating time and expense, and an extended learning curve.

Few reports describing outcomes of laparoscopic surgery for pelvic organ prolapse exist in the literature. Lyons and Winer [46] described the use of polyglactin mesh in laparoscopic rectocele repair in 20 patients, with 80% reporting relief of both prolapse symptoms and the need for manual assistance to defecate. Further studies are needed to assess this surgical approach for rectocele repair.

Aim of the work:

It is to compare the effectiveness of transvaginal repair versus transanal plication repair for symptomatic rectocele repair as regard anatomical outcome, symptomatic relief, and quality of life.

Patients and Methods

40 female patients admitted from the outpatient clinic of surgical department in the period between

2022 to 2024. Inclusion criteria were patients with symptomatic rectocele for which surgical treatment was indicated. Patients were selected for the operation based on clinical symptoms and physical examinations combined with defecographic findings (the depth of the rectocele >4cm). Preoperative assessments included clinical interviews, anal manometry, and defecography. These patients were randomized divided into two groups, each group contains 20 female group A and B. The rectocele repair in patients of group A is done by transvaginal posterior colporrhaphy while in group B by transanal repair. Both groups are followed-up for 6 months in the outpatient clinic for detecting changes of symptoms and examined for complications and recurrence.

Statistical analysis:

Statistical analysis was performed using the IBM SPSS ver. 18.0 (IBM Co., Armonk, NY, USA). The Mann-Whitney U-test was used to compare the means of the variables for the groups. The paired t-test was used to compare subjective symptoms. Data were expressed as means and standard deviation. Statistical significance was considered to be present when $p < 0.05$.

Results

All patients were female with age range between 23 to 62 years old and mean age was 47.25 ± 9.16 for group A while in group B the age range was between 29 to 63 and mean age was 48.35 ± 8.09 . there was no significant difference between both groups as regard the age (p -value=6895) (Table 1). As regard presenting symptoms, all patients in both groups have constipation and pelvic fullness. 13 patients of group A have anal problems, while 9 patients in group B have anal problems (fissure, piles and anal fistula). Stress incontinence is found in 4 patients in group A and in 2 in group B. Vaginal vault bulging is found in 4 and 3 patients in group A and B respectively (Table 1).

As regard history of normal vaginal delivery (NVD), its mean incidence in the group A was 3.85 ± 1.8 while it was 4.2 ± 2.32 in group B with no significant difference between the two groups (p -value=0.5951). While the incidence of total abdominal hysterectomy (TAH) was 4 cases in group A and 2 cases in group B. As regard the manometric and defecographic findings are all illustrated in Table (2) and there was no significant difference between both group before the operation except anal squeeze pressure was significantly higher in group B ($p=0.0027$).

Intraoperative outcomes:

Outcomes observed were operative time, estimated blood loss (Table 2), length of stay, intraoperative complication rate. The recorded operative time was range from 38-60 with mean of (44.8±6.68) in group A, while it was ranging between 45-75 minutes (mean 62.6±7.02). There is no significant difference between both groups although it was much less in group A of posterior colporrhaphy (p -value = 0.1734). Hospital stay was 1-5 days (mean 2±1.095) in group A while in group B was 2-5 days (mean 3.1±0.89). it was significantly less in group A. There was no significantly difference between the two groups as regard intraoperative complications (bleeding, apparent sphincter or rectal injuries). The recorded intraoperative complications were 40% in group A and 45% in group B (p =0.7521).

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Table (1): Preoperative assessment of the patients.

	Group A (20)	Group B (20)
Mean age	23-62 (47.25±9.16)	29-63 (48.35±8.09) $p = 0.6895$
<i>Symptoms:</i>		
Constipation	All pats	All pats
Pelvic fullness	All pats	All pats
Vaginal spotting	2	1
Dyspareunia	2	1
Vaginal vault bulging	4	3
Stress urinary incontinence	4	2
	8 fissure 4 piles 1 fistula	3 fissure, 3 piles, 3 fistulas
<i>Anal problems:</i>		
History of pelvic operation	4 TAH (20%) 6 appendicectomy 7 lap chole	2 (10%) 1 and 6 other I ABD Operation 6
Chronic illness	DM 11 HTN 11 Thyroid troubles 8 Behest disease 0	7 9 5 2
Parity history	NVD From 1 to 6 (3.85±1.8) Cs. (0.75±1.1) 2 had only Cs 5 had both NVD and Cs 13 had only NVD	NVD 1-8 (4.2±2.32) $p = 0.5951$ 0-4 (0.8±1.208) 3 4 13
Urinary troubles	4	2
Illness duration	From 7-18 month (11±3.96)	From 6-18 months (9.8±3.09)

Table (2): Manometric and defecography results.

	Group A Range and (Mean)	Group B Range and (Mean)	Significant state (p -value)
<i>Defecography results:</i>			
Resting angle	52-90 (75.45±9.61)	54-90 (70.85±11.29)	$p=0.1734$
Defecation angle	79-105 (92.6±7.32)	69-121 (92.5±13.79)	$p=0.9773$
Size of the rectocele	3.8-6.1 (4.905±0.7)	3.8-6.5 (4.945±0.696)	$p=0.8572$
<i>Manometry results:</i>			
Rectal defecation pre	21-36 (28.7±5.81)	18-41 (25.9±7.42)	$p=0.1919$
Anal resting pressure	59-96 (84.85±10.38)	58-101 (80.15±10.76)	$p=0.1679$
Anal squeeze pressure	52-91 (67.55±9.79)	57-90 (78.05±10.86)	$p=0.0027$
Anorectal pressure gradient	8-22 (15.65±4.45)	7-22 (14.2±4.59)	$p=0.3168$

Postoperative outcomes:

Post operative complications was significantly increased in group B (transanal repair) in spite of there was no significant difference in the intraoperative complications between both groups. It was in group A in 40% (8 patients), while in 75% (15 patients) of group B ($p=0.0271$).

The main and the most serious complications was the incontinence either partial or complete. It occurred in 5 patients (25%) in group of transanal repair (group B), while it occurred only in one patient (5%) of group A of transvaginal repair. Although it is much higher in group B but there was no significant difference between both groups ($p=0.0803$).

The second most serious complication is anal stenosis which has 0% in group A and 30% (6 cases) of group B which was highly significantly increased in group B. Also, anal fistula has incidence

of 25% in group B while it did not occur in group A (significantly increased in group B, $p=0.0183$). postoperative surgical site infection was recorded in 4 patients of group A and in 9 patients of group B. rectovaginal fistula recorded once in group A and no incidence in group B. Although of all those complications in group B, there was no recurrence in group B, while there were 2 recurrences in group A (Table 3).

As regard quality of life after the operations, group A has 15 patients (75%), with good improvement of life quality after the operation while group B has only 7 patients (35%). With significant improvement of life quality postoperatively in group A. Mild improvement is recorded in 3 and 2 patients in group A and B respectively with no significant difference. While patients recorded bad quality of life after operations was 2 (10%) in group A and 11 (55%) with high significant difference between them ($p=0.0027$).

Table (3): Intraoperative and Postoperative results.

	Group A	Group B	p-value
Operative time	38-60 (44.8±6.68)	45-75 (62.6±7.02)	$p=0.1734$
Hospital stays	1-5 (2±1.095)	2-5 (3.1±0.89)	$p=0.0013$
Improved constipation	17 (85%)	12 (60%)	$p=0.0804$
Intraoperative	8/20 (40%)	9/20 (45%)	$p=0.7521$
Complications	7	7	$p=0.0271$
Bleeding	1	2	
Sphincter complex injury	2	0	
Rectal injury:			
Postoperative complication	8 (40%)	15 (75%)	$p=0.0803$
Dyspareunia	4	2	
Vaginal stenosis	2	0	
SSI	4	9	
Abscess	1	3	
Flatus or stool incontinence	1 (5%)	5 (25%)	$p=0.0087$
Rectovaginal fistula	1	0	
Anal stenosis	0 (0%)	6 (30%)	$p=0.0183$
Anal fistula	0 (0%)	5 (25%)	$p=0.0121$
Quality of life:			
Good Improved	15 (75%)	7 (35%)	$p=0.0027$
Mild improved	3	2	
Not improved or get bad	2 (10%)	11 (55%)	
Recurrence	2	0	

Discussion

The management of rectocele is complex, both in terms of the indication for surgery and choice of the approach. The difficulty inherent in the management of rectocele is that it is an integral part of a complex pelvic floor disorder involving the bladder and uterus. In addition, the symptoms do

not correlate with the size of the rectocele since the vast majority of women are asymptomatic [19]. The major risk factor for rectocele development is vaginal delivery, which causes injury to the pelvic floor muscle and pudendal nerve. Sadahiro et al., [11] concluded that laxity of the rectovaginal septum is closely related to vaginal delivery. In this study all patients in both groups had more than once vagi-

nal delivery. 90% of group A and 85% of group B had vaginal delivery. Aging, is also risk factors for rectocele development [47]. This condition occurs commonly, with an estimated prevalence of 30-50% of women over age 50 [19]. The mean age in this present study was 47.25 ± 9.16 and 48.35 ± 8.09 in both group with no significant difference between them and is not considered a young age and was similar to that recorded by Aubert et al., [19]. This means are agreed with that of Chung et al., [47] (50 years) and Harris et al., [48] (57.92 years old for transvaginal group; and 53.19 years in stapled transanal rectal resection) with no significant difference between them. However, in Maeda et al., [49] the mean age was much older (mean was 68 year). Most surgeons advocate surgical repair when a rectocele is symptomatic and of large dimension ($>3\text{cm}$), or if the rectum fails to empty sufficiently on defecography [50] in our present study the mean size of the rectocele is more 3 cm, as it ranged between 3.8-6.1 with mean of (4.905 ± 0.7) in transvaginal group and ranged from 3 to 6.5 with mean of (4.945 ± 0.696) in transanal group indicating surgical interference together with other symptoms. Defecography is a useful imaging modality since it can detect the presence of a rectocele, quantify its size and the degree of rectal emptying as well as identify a non-relaxing puborectalis muscle and assess the rectal emptying capacity [50]. Both groups are similar in manometric and defecography results before the operations but unfortunately, this study does not have postoperative measurements of both manometry and defecography. However, Chung et al., [47] found that neither the mean anal resting pressure nor the maximum squeezing pressure was significantly changed after surgery. The same conclusion also received by Harris et al., [48].

Regarding posterior colporrhaphy versus transanal repair, numerous series trials have found similar rates of anatomic cure and similar rates of dyspareunia and ODS symptoms [22,23,51]. However, the small number of prospective studies and weak data comparing transvaginal and transanal rectocele repair make it difficult to know the optimal approach for rectocele repair. Functional outcomes, specifically those related to ODS symptoms, are poorly documented, especially in the gynecologic literature, where these symptoms often are not the primary indication for repair. In one of the largest published series on transvaginal repair. [52].

A Cochrane review [58] on the surgical management of pelvic organ prolapse in women identified only two randomized studies that compare transvaginal versus transanal rectocele repair with no

significant difference in the recurrence rates between the two approaches [58]. No reliable comparison of functional outcomes between the 2 approaches is available. However, Overall, surgical correction success rates are quite high when using a vaginal approach for rectocele correction. Vaginal dissection results in better visualization and access to the endopelvic fascia and levator musculature, which allows for a firm anatomic correction [16].

Chung et al., [47], reported that the mean operation times for group of transanal repair was 61.54 ± 11.44 minutes which was significantly less than that of trans vaginal repair (74.17 ± 11.65 minutes; $p=0.014$). Also, Harris et al., [48] reported mean operative time for transvaginal repair by 85.5 and transanal repair by 52.7 which is much significantly less in transanal ($p\text{-value}=0.0001$). In the present study the opposite was recorded that the mean operative time in transvaginal (44.8 ± 6.68) is less than transanal (62.6 ± 7.02) procedure but there was no significant difference between them ($p=0.1734$). The significant short time recorded by Harris et al., [48] mostly due to that transanal technique was through stappling, and in our study it was done by the conventional method. An early retrospective review done over a four-year period was performed by Arnold et al., [53]. They found no difference in complications between both techniques (transanal and transvaginal repairs). 54% still complained of constipation, (34%) had partial incontinence, 17% noted persistent rectal pain, and 22% complained of vaginal tightness or sexual dysfunction. Leanza et al., [50] 5° reported that incontinence, and risk of infection or vaginal fistula are reported after transanal technique, but not after transvaginal procedures which is compatible with our results in the present study.

The transanal approach procedure has several disadvantages, the most serious one is the presence of a risk of anal incontinence because both the resting and the squeeze pressures are reduced through the use of an anal dilator for adequate exposure. [47,54] van Dam et al., [54] advocate use of other retractors, such as the Scott's retractor (Lone Star Medical, Houston, Tex., USA), may be less damaging to the anal sphincters. The transvaginal approach is less likely to have an influence on the anal sphincter parameters (without compromising sphincter function) [47]. Transvaginal rectocele repair has been suggested to be preferable in patients with impaired continence Ho et al., [55]. In our present study, incontinence occurred in 5 patients (25%) in group of trans anal repair, while it occurred only in one patient (5%) of transvaginal repair group which shows big difference but the re-

sult was insignificant. However, Arnold et al., [53] reported fecal incontinence after transvaginal rectocele repair in up to 36% of patients and Abramov et al., [22] reported fecal incontinence 18% in transvaginal posterior colporrhaphy.

Literature does not report cases of post-operative dyspareunia following transanal correction but dyspareunia always follows transvaginal repair, Lefevre, Davila, [56]. In this study there were 4 (20%) cases with postoperative dyspareunia in transvaginal group and 2 cases (10%) in transrectal group. Van dam [54] reported dyspareunia in 41% of patients after transvaginal rectocele repair. Although this complication probably arises because of the transvaginal repair, Arnold et al., [53] reported post-operative dyspareunia up to 21% after transanal rectocele repair.

Nieminen et al., [57] found that transanal technique was associated with more clinically diagnosed recurrences of rectocele (40%) than transvaginal approach (7%). In this study the recurrence rate was 10% in the transvaginal and zero% in the transanal approach. However, Maher et al., [58] concluded that there is no significant difference in the recurrence rates between the two approaches (2 out of 39 transvaginal vs. 7 out of 48 transanal).

Conclusion:

This study suggested that transvaginal approach for rectocele repair is safer, with less complications especially anal incontinence and stenosis. The conventional transanal approach could be replaced by other stapling techniques. This study has limitation of not performing postoperative manometry and defecography to demonstrate effects of the operation on pelvic floor.

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المقارنة بين فعالية النهج الجراحى عبر الشرج مقابل النهج الجراحى عبر المهبل فى علاج القيلة فى المستقيم المصحوبة بأعراض: تجربة سريرية عشوائية لتقييم مدى زوال الاعراض وجودة الحياة بعد العملية

الأهداف: مقارنة فعالية إصلاح القيلة فى المستقيم عبر المهبل مقابل إصلاحها عبر الشرج من حيث تخفيف الأعراض، وجودة الحياة بعد العملية.

طريقة إجراء البحث: شملت الدراسة ٤٠ امرأة خضعن لإصلاح القيلة فى المستقيم فى الفترة من يونيو ٢٠٢٠ إلى يونيو ٢٠٢٤. تم تقسيم المشاركات إلى مجموعتين متساويتين (أ) و(ب) تضم كل مجموعة ٢٠ امرأة. تلقت المجموعة (أ) إصلاحاً جراحياً عبر المهبل، بينما تلقت المجموعة (ب) إصلاحاً جراحياً عبر الشرج. تم المتابعة لمدة لا تقل عن ٦ أشهر بعد العملية من خلال زيارات منتظمة للعيادات الخارجية، حيث خضعت المريضات للفحص البدنى وتقييم المضاعفات ومدى جودة الحياة بعد العملية.

النتائج: كان متوسط زمن العملية 64.8 ± 6.68 دقيقة فى المجموعة (أ)، مقابل 62.6 ± 7.02 دقيقة فى المجموعة (ب) أما متوسط مدة الإقامة فى المستشفى فكان 2 ± 1.09 يوم فى المجموعة (أ)، و 3.1 ± 0.89 يوم فى المجموعة (ب) - زيادة ملحوظة فى المجموعة (ب) فيما يتعلق بالمضاعفات أثناء العملية (النزيف، إصابات المصرّة أو المستقيم الظاهرة)، سُجلت مضاعفات فى ٤٠٪ من حالات المجموعة (أ) و ٥٥٪ من حالات المجموعة (ب) ($p = 0.7521$). أما المضاعفات بعد العملية فكانت أعلى بشكل ملحوظ فى المجموعة (ب) (إصلاح عبر الشرج)، حيث ظهرت فى ٤٠٪ (٨ مريضات) من المجموعة (أ)، و ٧٥٪ (١٥ مريضة) من المجموعة (ب) ($p = 0.271$). كانت أخطر المضاعفات هى السلس الشرجى، حيث حدث فى ٥ مريضات (٢٥٪) من المجموعة (ب)، مقابل مريضة واحدة فقط (٥٪) من المجموعة (أ)، دون فرق إحصائى كبير بين المجموعتين ($p = 0.803$). لم تسجل أى حالة تضيق شرجى فى المجموعة (أ)، بينما ظهرت فى ٣٠٪ (٦ حالات) من المجموعة (ب) - زيادة ملحوظة فى المجموعة (ب) كما بلغت نسبة حدوث الناسور الشرجى ٢٥٪ فى المجموعة (ب)، ولم تسجل أى حالة فى المجموعة (أ) أما عدوى موضع الجراحة بعد العملية فقد سُجلت فى ٤ مريضات من المجموعة (أ) و ٩ مريضات من المجموعة (ب) سُجلت حالة واحدة من الناسور المستقيمى المهبلى فى المجموعة A ولم تسجل أى حالة فى المجموعة (ب) لم يحدث أى انتكاس فى المجموعة (ب)، بينما حدث انتكاسان فى المجموعة (أ) وبالنسبة لجودة الحياة بعد العمليات، فقد أظهرت المجموعة (أ) تحسناً مرضياً فى جودة الحياة بنسبة ٧٥٪ بعد العملية، مقابل ٣٥٪ فى المجموعة (ب) تحسن ملحوظ فى المجموعة (أ) وسُجل تحسن طفيف فى ٣ مريضات من المجموعة (أ) و ٢ من المجموعة (ب) أما تدهور جودة الحياة بعد العمليات فقد ظهر فى ٢ (١٠٪) من المجموعة (أ) و ١١ (٥٥٪) من المجموعة (ب) مع وجود فرق كبير بين المجموعتين ($p = 0.0027$).

الاستنتاج: يُعد النهج المهبلى لإصلاح القيلة فى المستقيم أكثر أماناً من النهج الشرجى، مع مضاعفات أقل، خاصة فيما يتعلق بسلس وتضيق الشرج. ويمكن استبدال النهج التقليدى عبر الشرج بتقنيات التدبيس الأخرى.