



Modified Technique of Posterior Colpoperineorrhaphy for Rectocele Repair

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Abstract: The female pelvic floor is a complicated anatomical structure whose motive is integrally associated with bladder, bowel and sexual function. Consequently, the symptoms of pelvic floor weakness in some or both of these areas often manifest as dysfunction. POP refers to the downward displacement of anterior, apical or posterior vaginal compartments associated structures. The aim of the present work is to assess the anatomic and functional outcome of a modified technique of posterior colpoperineorrhaphy on which a modified suture done at the upper part of levator ani muscles. The study subject included 30 women with symptomatic rectocele at child bearing period during a period of 2 years. All patients were subjected to the usual preoperative preparations of vaginal operations including routine laboratory investigation including complete urine analysis, hemoglobin percent and complete blood count, fasting blood sugar and bleeding, clotting and prothrombin times and activity.

Surgery was performed on all patients and notes were taken for each patient before, during and after operation, six weeks, three months, six months and twelve month postoperatively.

Subjective and objective assessment of the patients was done in the postoperative period to assess the surgical technique.

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The results can be summarized as follows:

1. All patients had symptoms caused by rectocele before operation, symptoms attributable to the condition included mass protrusion, heaviness, sexual dysfunction in the form of dyspareunia and rectal symptoms.

2. As regarding preoperative symptoms, it was found that 73.3 % of patients had dyspareunia, 56.7 % of the patients had rectal symptoms in the form of difficult defecation and 100% of them had symptoms of mass protrusion and heaviness.

3. As regards the early assessment and early complications in studied group it was found that only 3 cases had no complication, one case experienced postoperative infection and 2 cases had pain at incision site.

4. As regards late assessment and late complication in the studied group, it was found that none of the patients of studied group had symptoms of mass protrusion during the follow up and only 10 % of patients had heaviness at 3 months which regressed to be 6.7 % at 12 months.

5. As regards late assessment and late complication in the studied group, it was found that the percentage of dyspareunia was 33.3 % of studied cases at three months and decreased to 16.7 % at

twelve months and the degree of sexual satisfaction improved from 73.3 % at three months to be 83.3 % at twelve months.

6. Regarding recurrence, it was found that none of patients of studied group experienced recurrence symptoms of prolapse at three, six or twelve months.

7. This new study demonstrates a new surgical technique of rectocele repair using a modified suture at the vaginal apex through levator ani plication improving the post-operative outcome in the form of restoring the natural anatomical direction of the vaginal canal which in role decreases the degree of dyspareunia.

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1. Introduction

The female pelvic floor is a complicated anatomical structure whose motive is integrally associated with bladder, bowel and sexual function.

Consequently, the results of pelvic ground weakness often happen as dysfunction in any or all of

those areas. Pelvic Organ Prolapse (POP) refers back to the downward displacement of structures associated with the anterior, apical or posterior vaginal compartments (Haylen et al., 2016).

The prolapse of the posterior vaginal wall is defined as the observation of the descent of the posterior vaginal wall, which often results in the protrusion of the rectum into the vagina. In the posterior vaginal wall, the rectocele is defined as a bulge associated with the herniation of the anterior wall of the rectum. Furthermore, the anterior rectal wall may cause a perineal bulge, in which case it would be known as a perineocele (Sultan et al., 2017).

It is estimated that pelvic organ prolapse is found in nearly 40% to 60% of older parous women, although about 3% of those women report symptoms (Handa et al., 2004; Hendrix et al., 2002; Wu et al., 2014).

Less well-reported is the specific incidence of a posterior compartment prolapse, or rectocele. The prolapse of the posterior vaginal wall is a herniation of the anterior rectal wall, producing a posterior vaginal bulge. This is regularly related to a wide range of medical symptoms, which includes pain, constipation, and splinting to attain defecation. Some patients are asymptomatic. Correlation of anatomical findings and clinical symptoms is often challenging, making prolapse a challenge. Statistics show that pelvic organ prolapse is increasing until menopause and by 2050 the number of women suffering from this problem is expected to increase to nearly 5 million (Wu et al., 2009).

Medical management with stool bulking agents, laxatives, and softeners can benefit some symptoms but not the resolution of a vaginal bulge or defecatory dysfunction. The use of vaginal pessary has also been found to be unsuccessful in helping to treat prolapse symptoms in the posterior vaginal wall. Thus, surgery has become the mainstay of symptomatic rectoceles therapy. While several surgical procedures have been identified with a view to repairing the rectocele, no specific guidance on the form of repair has been provided in the literature. The defects found in the anterior compartment mirror those found in the anterior one. Traditionally, central and lateral defects were corrected with midline rectovaginal fascia (posterior colporrhaphy) plication. Site-specific posterior repair aims to correct the rent in the rectovaginal fascia and can be performed as an alternative. (Cundiff et al., 1998).

Perineal weakness may require reapproximating the perineal body (perineorrhaphy). Loss of proximal support may be associated with anterior prolapse, and more comprehensive surgical preparation may be needed (Guzman- Negron et al., 2019).

Aim of the Work

The aim of the study is to assess the anatomic and functional outcome of a modified technique of posterior colpoprotoporrhaphy on which a modified suture done at the upper part of vaginal apex through the levator ani muscles which restore the anatomical direction of the vagina facilitating proper function during intercourse and guarantee adequacy, tightening, decrease adhesion and fibrosis which in role decrease dyspareunia.

1. Patients and Methods Patients

This is a prospective study had been conducted on 30 patients with lower posterior vaginal wall prolapse (rectocele) during a period of 2 years from January of 2018 to January of 2020 selected from the Out-patient Clinic at Bab El-Sheria Maternity Hospital Al-Azhar University.

Inclusion criteria:

1. Symptomatic rectocele.
2. Parous women at child bearing period.
3. No predisposing factors increasing intra-abdominal pressure (e.g.; ascites, splenomegally, chronic cough and constipation).
4. No Systemic diseases such as diabetes mellitus (DM) or hypertension (HTN).

Exclusion criteria:

1. Patients with previous pelvic floor operations eg: posterior colpoprotoporrhaphy.
2. Patients with increased intra-abdominal pressure e.g.; ascites, splenomegally, chronic cough (as in bronchial asthma and bronchitis), constipation and systemic diseases.

Methods

All patients have been subjected to the following after a written consent was taken from each.

Complete medical history taking. Clinical Examinations:

- a. General examination to exclude causes of chronic increase in intra-abdominal pressure as; ascites, splenomegaly, chronic cough (as in bronchial asthma and bronchitis), constipation.
- b. Pelvic examination in lithotomy position for evaluating the degree of rectocele after maximum straining by Valsalva maneuver.

Investigations included:

- A. Complete blood picture
- B. Urine analysis
- C. Random blood sugar
- D. Coagulation profile including bleeding time (BT), clotting time (CT), prothrombin time and activity (PT).
- E. e. Liver functions tests including liver enzymes, serum bilirubin, Hepatitis B virus (HBV) and Hepatitis C virus (HCV) affection.
- F. f. Kidney function tests including blood urea and serum creatinine.

Operative technique:

Patients (should be post-menstrual) are placed in lithotomy position under general or spinal anesthesia, Modified technique of posterior colpoperineorrhaphy was done by placing a modified suture at upper part of levator ani muscle connecting to the apex of the vagina as inverted U shaped.

Follow-up:

All patients were checked post-operative after 6 weeks, and in case of proper wound healing sexual intercourse was resumed.

Patients were rechecked at 3 months, 6 months and 12 months post-operative to assess the outcome of the procedure by a simple and brief questionnaire which measure sexual functioning.

3. Results

This study was carried out on 30 patients with lower posterior vaginal wall prolapse (rectocele) during a period of 2 years from January of 2018 to January of 2020, the following data was detected for every patients as follow:-

Demographic data Age

Table (1), Shows the age distribution of the patients in the studied group, the mean age was 36.33 ± 5.48 , there was increase in the presence of pro lapse as the age increase and it was noted that most of cases above 30 years.

Parity

Table (1), Shows the parity distribution of the patients in the studied group, the mean parity was 3.13 ± 0.86 , there was increase in the presence of prolapse as the parity increase.

BMI

Table (1), Shows the BMI distribution of the patients in the studied group, the mean BMI was 28.97 ± 2.31 , there was increase in the presence of prolapse as the BMI increase.

Table (1): Descriptive analysis of the studied cases according to age, parity and BMI (n = 30)

	No.	%
Age		
≤30	5	16.7
>30	25	83.3
Min. – Max.	24.0 – 44.0	
Mean ± SD.	36.33 ± 5.48	
Median (IQR)	38.50(32.0 – 40.0)	
BMI		
Min. – Max.	25.0 – 34.0	
Mean ± SD.	28.97 ± 2.31	
Median (IQR)	29.0(27.0 – 30.0)	
Parity		
Min. – Max.	2.0 – 5.0	
Mean ± SD.	3.13 ± 0.86	
Median (IQR)	3.0(3.0 – 4.0)	

Pelvic examination

Table (2) shows the pelvic examination of the patients in the studied group according to the type of prolapse present, it was noted that most of cases have isolated rectocele 80 % and the rest of cases have cystocele.

Table (2): Distribution of the studied cases according to pelvic examination (n = 30)

Pelvic examination	No.	%
Cystocele	6	20.0
Rectocele	24	80.0

Symptoms and signs

Table (3) shows the main symptoms in the studied group, it was found that the main symptoms were protrusion and heaviness, followed by Dyspareunia and rectal symptoms in the form of difficult defecation.

Assessment of the operation

Early assessment: (6 weeks after the operation)

Table (4) shows the early assessment and early complications in the studied group, it was found that only 3 cases have complications in the form of infected wound and pain at the incision site the other 27 patient have normal wound healing and permitted for sexual intercourse.

Table (3): Distribution of the studied cases according to pre- operative symptoms (n = 30)

Symptoms	No.	%
Mass protrusion	30	100.0
Heaviness	30	100.0
Rectal symptoms	17	56.7
Dyspareunia	22	73.3

Table (4): Distribution of the studied cases according to follow up after 6 weeks (n = 30)

Follow up after 6 weeks	No.	%
Infected wound	1	3.3
Pain at operative site	2	6.7
proper wound healing	27	90.0

Late assessment: (3, 6 and 12 months after the operation) Mass protrusion and Heaviness

Table (5) shows Comparison between preoperative and postoperative symptoms (mass protrusion and heaviness), it was found that none of the patients of studied group had symptoms of mass protrusion postoperatively during the follow up and only 10 % of patients had heaviness at 3 months which regressed to be 6.7 % at 12 months postoperative.

Dyspareunia and sexual satisfaction

Table (6) shows Comparison between

preoperative and postoperative symptoms (dyspareunia and sexual satisfaction), it was found that the percentage of dyspareunia decreased from 73.3 % preoperatively to be 33.3% at 3 months postoperatively, 23.3% at 6 months and 16.7 % at 12 months and the degree of sexual satisfaction improved from 13.3% preoperatively to be 73.3% at 3 months postoperatively, 80 % at 6 months and 83.3 % at 12

months.

Recurrence

Table (7), Shows Comparison between three periodic cycles according to postoperative recurrence of the prolapse, it was found that none of patients of studied group experienced recurrence symptoms of prolapse at 3, 6 months or 12 months postoperatively.

Table (5): Comparison between preoperative and postoperative symptoms during three periodic cycles according to mass protrusion and heaviness (n = 30)

	Pre-operative (n=30)		Post-operative						Fr	p
			3 months (n = 30)		6 months (n = 30)		12 months (n = 30)			
	No.	%	No.	%	No.	%	No.	%		
Mass protrusion										
Present	30	100.0	0	0.0	0	0.0	0	0.0	90.000*	<0.001*
Absent	0	0.0	30	100.0	30	100.0	30	100.0		
Heaviness										
Present	30	100.0	3	10.0	2	6.7	2	6.7	81.141*	<0.001*
Absent	0	0.0	27	90.0	28	93.3	28	93.3		

Fr: Friedman test

p: p value for comparing between the three periods

Table (6): Comparison between preoperative and postoperative symptoms during three periodic cycles according to dyspareunia and sexual satisfaction (n = 30)

Dyspareunia	Pre-operative (n=30)		Post-operative						χ^2	p
			3 months (n = 30)		6 months (n = 30)		12 months (n = 30)			
	No.	%	No.	%	No.	%	No.	%		
Dyspareunia										
Present	22	73.3	10	33.3	7	23.3	5	16.7	24.976*	<0.001*
Absent	8	26.7	20	66.7	23	76.7	25	83.3		
Sexual satisfaction										
Unsatisfied	26	86.7	8	26.7	6	20.0	5	16.7	41.920*	<0.001*
Satisfied	4	13.3	22	73.3	24	80.0	25	83.3		

χ^2 : Chi square test

p: p value for comparing between the three periods

Table (7): Comparison between three periodic cycles according to postoperative recurrence of the prolapse (n = 30)

Recurrence	3 months (n = 30)		6 months (n = 30)		12 months (n = 30)		Fr	p
	No.	%	No.	%	No.	%		
Present	0	0.0	0	0.0	0	0.0		
Absent	30	100.0	30	100.0	30	100.0	-	-

Fr: Friedman test

p: p value for comparing between the three periods

4. Discussion

Pelvic organ prolapse is a common condition and its surgical correction is one of the most common procedures (Chaliha and Khullar, 2006).

Pelvic floor repair surgery has five distinct objectives: (1) symptom relief; (2) correction of all pelvic floor defects, (3) restoration of the horizontal vaginal axis and of normal vaginal depth, (4) restoration of normal bowel and bladder function, and (5) retention of the potential for satisfactory sexual intercourse (Porter et al., 1999).

According to the current International Urogynecological Association (IUGA) terminology for anorectal dysfunction, a rectocele is defined as a posterior vaginal bulge (Sultan et al., 2017).

Rectoceles are caused by a variety of breaks in the pre-rectal fascia and the recto-vaginal septum, according to Richardson (1993). He described the most common break as a transverse separation above the perineal body attachment which resulted in low rectocele.

The rectocele defect commonly seen in multiparous women is a pocketing out of the anterior rectal and posterior vaginal walls into the vagina's lumen. (Scales, 1953).

Rectocele repair aims at alleviating symptoms, restoring anatomy and restoring sexual function.

Over the years the surgical approach to repairing rectocele has changed. The traditional posterior colporrhaphy technique has its origins in the repair of obstetric perineal lacerations, which date back to the 16th century. Anatomic cure rates range from 76 to 96 % for rectoceles (Kudish and Iglesia, 2010).

The literature reported variations in rectocele repair techniques, along with evidence that treatment is not always effective and can cause some complication.

In the traditional repair in which plication of the levator ani is performed, the fascial defect is never identified, yet it is over sewn (Mant et al., 1997).

While this removes the vaginal bulge by hiding the underlying defects, it never restores the vaginal anatomy. The transverse ridge in the posterior vaginal wall and the narrowed introitus resulting from the conventional posterior colporrhaphy procedure were reported as causing dyspareunia (Mant et al., 1997).

Plication of levator ani is now only indicated in non-sexually active patients. This supplement to conventional posterior colporrhaphy was shown to cause severe dyspareunia in around 30 % of patients (Kudish and Iglesia, 2010).

The posterior colporrhaphy was the standard method by gynecologists to rectocele repair. While commonly performed, gynecological surgeries have been described as "among the most misunderstood and

poorly performed." While several authors have reported satisfactory anatomical findings, they have noted contradictory effects on postoperative bowel and sexual function. These included lump or pressure symptoms, symptoms of incomplete emptying of the intestines, constipation, fecal incontinence, and sexual dysfunction. Dyspareunia is a major component of sexual dysfunction that has been identified in up to 50 % of patients and is associated with levator ani muscle plication. This led some authors to propose a new repair of rectocele, the separate repair of fascial defects (Beck and Allen, 2010).

A new technique for rectocele repair in which a modified suture done at upper part of levator ani muscle which restore the anatomical direction and proper function of the vagina and guarantee adequacy, tightening, decrease adhesion and fibrosis which in role decrease dyspareunia.

As regards the preoperative sexual symptoms in the present study, dyspareunia was a complaint in 73.3% of the cases, Maher et al., (2004) reported it in 37% of cases, Paraiso et al., (2006) in 56 % of the cases, Henn and Cronje, (2018) reported it in 18% of cases, and Guzman Rojas et al., (2015) in 18 % of the cases.

As regards the preoperative rectal symptoms reported by the patients in the present study it was found that the assisted manual evacuation of rectum to be a complaint in 56.7 % of the patients, in Maher et al., (2004) study it was found in 100% of cases, Paraiso et al., (2006) reported it in 43% of cases, in Henn and Cronje, (2018) study it was found in 49 %of cases, and Guzman Rojas et al., (2015) reported it in 25% of cases.

Constipation was a complaint of 35% of the present study, 76% of Maher et al., (2004) Cases, 67% of Paraiso et al., (2006) cases, 41% of Henn and Cronje, (2018) Cases and 70 % of Guzman Rojas et al., (2015) cases, Constipation is a symptom of different origins so its incidence varies according to the cause.

As regards the early assessment and early complications in studied group, one case suffered from post-operative infection and 2 cases suffered from pain at operative site.

Regarding late assessment and late complications in the studied group, it was found that none of patients of the studied group still have symptoms of mass protrusion at 3, 6 and 12 months postoperatively and only 2 patients still have heaviness after a period of 12 months postoperatively.

As regards late assessment and late complications in the studied group, it was found that the degree of dyspareunia improved at 3 months to be 33.3% of studied cases and decreased to 23.3% at 6

months and to 16.7% at 12 months.

In the present study, the improvement of sexual concerns and sexual satisfaction post operatively was 83.3%, while in Maher et al., (2004) it was 85%, Paraiso et al., (2006) reported improvement in 30.7 % of cases, in Henn and Cronje, (2018) study it was 74.2%, and Guzman Rojas et al., (2015) reported improvement in 17 % of cases.

Regarding the improvement of the rectal symptoms, there was a wide range of variation among different studies, which could be explained by the multiplicity of causes which can produce the rectal symptoms, some of these causes are related to rectocele, others may be related to associated conditions e.g. dysfunctional puborectalis muscle syndrome.

The improvement in constipation post operatively in our study was 93%, while in Maher et al., (2004) study was 68%, in Paraiso et al., (2006) study it was 54%, in Henn and Cronje, (2018) study it was 30% of cases, and in Guzman Rojas et al., (2015) study it was 50%.

All patients in the studied group who were in need for digital assistance for evacuation were improved, while Maher et al., (2004) reported improvement in 84.2% of cases, Paraiso et al., (2006) reported it in 60% of cases, Henn and Cronje, (2018) reported it in 60% of cases, and Guzman Rojas et al., (2015) reported it in 70% of cases.

Regarding the recurrence of rectocele after a period of 6 months follow up, it was zero% in our study, and also zero % in Maher et al., (2004) and Paraiso et al., (2006) studies.

This good result may be explained by the restoring the normal vaginal direction, preventing re-bulging of the rectocele into the vaginal cavity.

In conclusion, this modified technique of posterior colpopemiorraphy for rectocele repair is effective regarding improvement of symptoms of rectocele such as dyspareunia, mass protrusion, heaviness and rectal symptoms which also decrease the rate of postoperative adhesion and fibrosis and recurrence.

Conclusion

This is a new study demonstrates a new surgical technique of rectocele repair using a modified suture at the vaginal apex through levator ani plication improving the post-operative outcome in the form of restoring the natural anatomical direction of the vaginal canal backward, downward and posterior with good tone of the vaginal muscles to facilitate the proper function of vagina during intercourse without complain.

Recommendations

- Rectocele repair is better done with this modified technique during levator ani plication.
- Prefer not to use tension sutures.
- This study recommends the application of this technique in Gynecological practice and promotes training on this technique to boost learning curve in beginners.
- This study recommended more studies on a larger number of cases.

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