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ORIGINAL ARTICLE

Laparoscopic Ventral Mesh Rectopexy Versus Transvaginal Posterior Colporrhaphy in Management of Anterior Rectocele

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Abstract

Background Management of rectocele is challenging. Treatment usually starts with conservative measures and may involve surgical intervention in non-responding patients. We compared the outcomes of transvaginal posterior colporrhaphy (PC) and laparoscopic ventral mesh rectopexy (LVMR) in treatment of anterior rectocele.

Methods Patients with anterior rectocele who underwent PC or LVMR were functionally assessed using Cleveland Clinic Constipation Score (CCCS) and Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12). Pelvic Organ Prolapse Quantification System (POP-Q) was used for clinical assessment, defecography for anatomic assessment, and manometry for physiologic assessment. In addition, quality of life was assessed.

Results A total of 231 female patients with a mean age of 39 years were included to the study. One hundred fifty-nine underwent PC and 72 underwent LVMR. The LVMR group showed significantly a better functional outcome as compared with the PC group ($p < 0.0001$). The mean of CCCS at 1 year after LVMR was 6 ± 2.3 vs 9.2 ± 1.2 after PC. The mean of PISQ-12 at 1 year after LVMR was 39.3 ± 2.8 vs 35.8 ± 2.2 after PC. LVMR showed better anatomic correction by defecography, had significantly higher quality of life scores, and had a longer operative time as compared with PC, yet with comparable incidence of complications.

Conclusion PC and LVMR are both effective treatment options for treatment of rectocele. LVMR was associated with better anatomic correction and greater improvement in constipation, sexual symptoms, and quality of life compared with PC. Although LVMR had a longer operation time than PC, the complication rate of the two procedures was comparable.

Keywords Rectocele · Mesh rectopexy · Posterior colporrhaphy · Functional assessment · Quality of life

INTRODUCTION

Anterior rectocele is one form of pelvic organ prolapse (POP) that affects nearly two-thirds of parous women (Ladd & Tuma, 2020).

Nonetheless, it was reported that nearly 12% of nulligravida females may acquire rectocele secondary to congenital defects (Dietz & Clarke, 2005).

Old age and multiparity are the main risk factors for the development of rectocele, in addition, chronic constipation and obesity may have a key contribution in the pathogenesis of this condition (Zawodnik et al., 2019).

- **Rectocele may be associated with manifestations of obstructed defecation syndrome (ODS).**

- **Around 30–70% of patients may suffer from rectal emptying difficulties, excessive straining, local pelvic manifestation, and the need for additional aids to facilitate defecation.**

(Farid & Madbouly, 2010)

- **Treatment of rectocele usually starts with *conservative measures* in the form of high-fiber diet, increased water intake, and laxatives.**
- **Patients may benefit from performing *Kegel exercises* and the supervision of a pelvic floor *physiotherapy* specialist (Tso et al., 2018).**

- Many ***surgical procedures*** were described for the management of symptomatic rectoceles aiming at the anatomical correction of rectocele and relief of symptoms **(Maher & Baessler, 2006).**

. Overall, surgical repair of rectocele can be achieved through a transvaginal, transperineal, transanal, or a transabdominal approach. **(Leanza et al., 2013).**

- **There is no such an ideal method or a standard approach for the management of rectocele (Ladd & Tuma, 2020).**

- Recently, the laparoscopic approach has emerged as a promising option for the management of rectoceles, and ODS in general. Laparoscopic ventral mesh rectopexy (LVMR) was originally described for the management of rectal prolapse

  (D' Hoore & Pennickx, 2006).

- yet it was also recommended for the management of large symptomatic rectoceles **(Leanza et al., 2013).**

The present study aimed to compare the outcome of :

Transvaginal posterior colporrhaphy

Vs

Laparoscopic ventral mesh rectopexy

in treatment of anterior rectocele in terms of :

1. Anatomical correction
2. Defecatory and sexual symptoms improvement
3. Impact on the quality of life.

Patients and Methods

. Study Design

- single-center
- retrospective review of prospectively collected data of female patients with anterior rectocele associated with ODS.

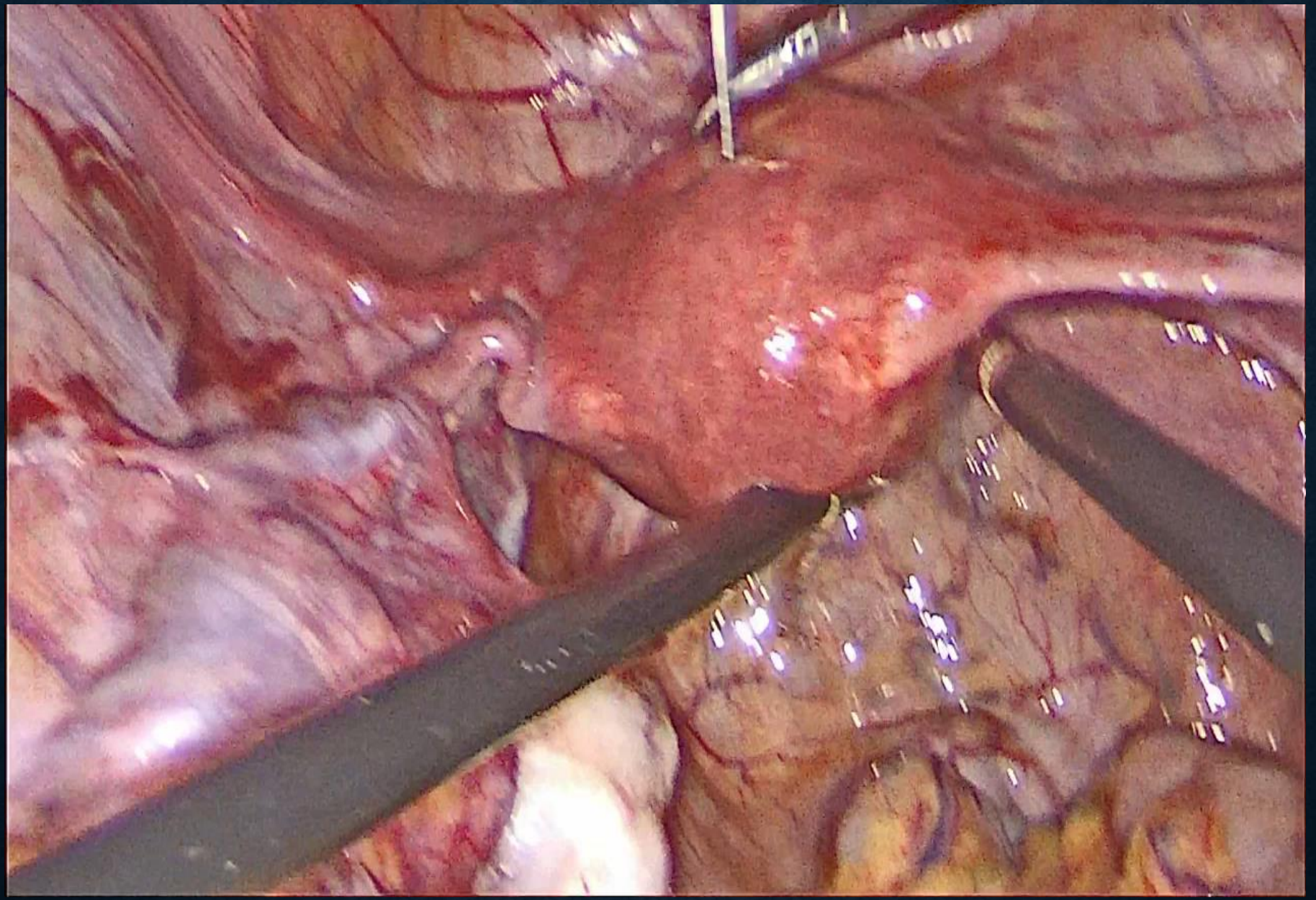
- The study was conducted at Mansoura Center for Colorectal and Laparoscopic Surgery, Egypt, in the period of January 2017 through March 2019.
- Ethical approval for the study was obtained from the Research Ethics Committee.

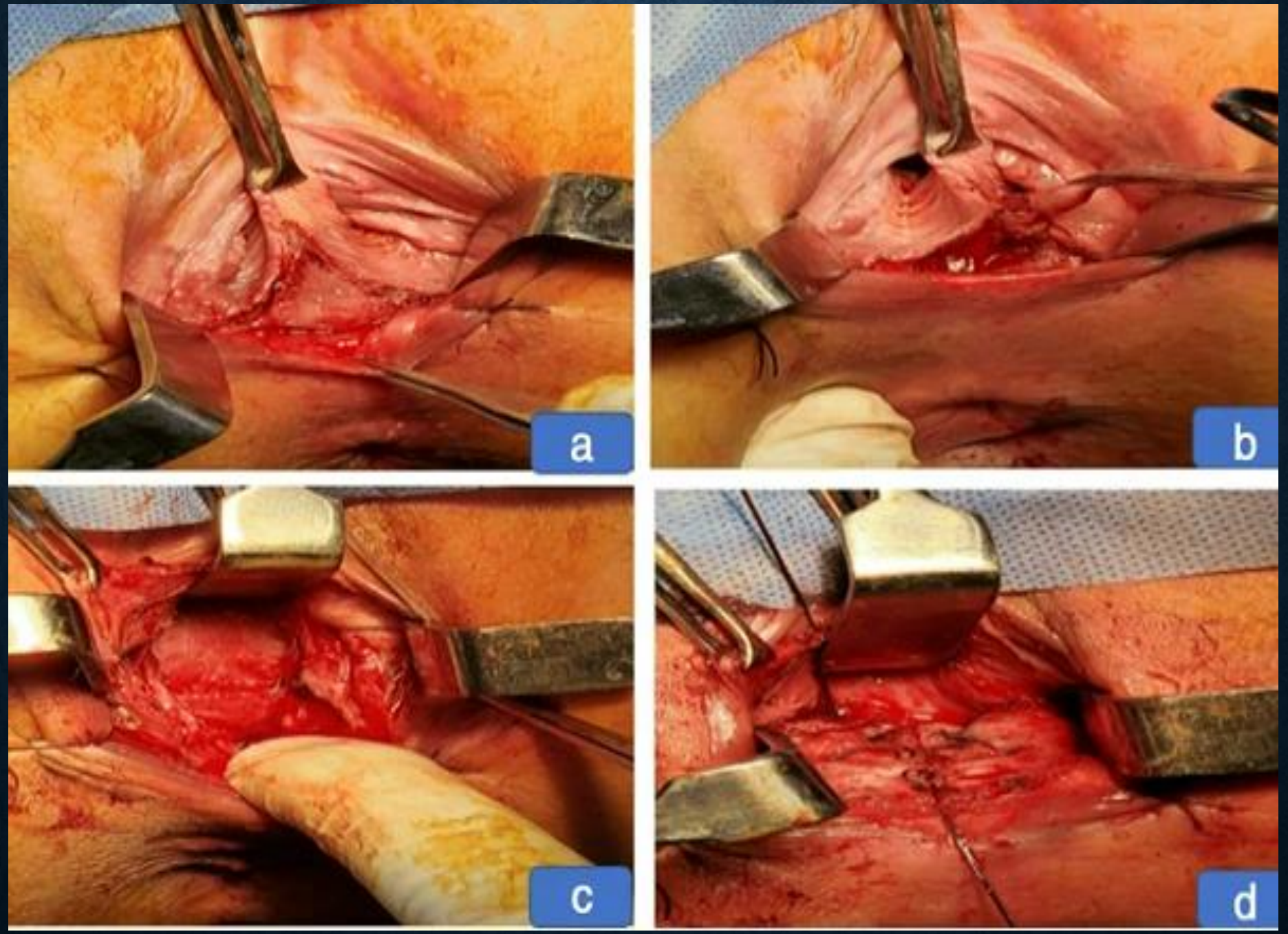
Patients **with anterior rectocele who underwent PC or LVMR were functionally assessed using:**

- **Cleveland Clinic Constipation Score (CCCS) for ODS evaluation**
- **Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12) >>> for sexual functions evaluation.**

- Pelvic Organ Prolapse Quantification System (POP-Q) >>> for clinical assessment
- Defecography >>> anatomic assessment
- Manometry >>> physiologic assessment.
- Patient assessment of constipation quality of life (PAC-QoL) questionnaire >>> quality of life assessment.

SURGICAL TECHNIQUE




a
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RESULTS

- A total of 231 female patients were included.
- The mean age of patients was 39 ± 12.1 years.
- Twenty-one (9.1%) patients were nulligravida.
- The median number of deliveries was 2 (range, 0–5).
- Two hundred two (87.4%) patients presented with low-level rectoceles.

- According to Baden-Walker stage, 145 (62.8%) rectoceles were stage III.
-
- According to POP-Q staging, 200 (86.6%) rectoceles were stage II.

- There were no significant differences between the PC and LVMR groups with regard to age, parity, anatomical levels, and clinical stag

- **159 underwent PC and 72 underwent LVMR. The LVMR group showed significantly a better functional outcome as compared with the PC group ($p < 0.0001$).**

- **The mean of CCCS at 1 year after LVMR was 6 ± 2.3 vs 9.2 ± 1.2 after PC.**

- The mean of PISQ-12 at 1 year after LVMR was 39.3 ± 2.8 vs 35.8 ± 2.2 after PC.

- LVMR showed better anatomic correction by defecography, had significantly higher quality of life scores, and had a longer operative time as compared with PC, yet with comparable incidence of complications.

Table 1 Baseline patients' characteristics

Item	PC *n* (%)	LVMR *n* (%)	*p* Value
Age in years (mean ± SD)	37.7 ± 12.5	40.5 ± 11.1	0.1
Parity			
- Nulligravida	15 (9.4)	6 (8.3)	0.99
- Parous	144 (90.6)	66 (91.7)	
Level of rectocele			
- Low	138 (86.8)	64 (88.9)	0.26
- Mid	17 (10.7)	4 (5.6)	
- High	4 (2.5)	4 (5.6)	
Baden-Walker staging			
- Stage II	55 (34.6)	31 (43.1)	0.24
- Stage III	104 (65.4)	41 (56.9)	

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy

Table 2 Clinical quantification of patients in the two groups

Variable		PC (n = 159)	LVMR (n = 72)	p Value
POP-Q point Ap (preoperative)		0.3 ± 1.1	0.1 ± 1.2	0.21
POP-Q point Ap (12 months postoperative)		− 1.7 ± 1	− 2.7 ± 0.6	< 0.0001
p Value		< 0.0001	< 0.0001	------
POP-Q point Bp (preoperative)		0.4 ± 1	0.2 ± 1.2	0.19
POP-Q point Bp (12 months postoperative)		− 2.7 ± 1.1	− 4.1 ± 1.8	< 0.0001
p Value		< 0.0001	< 0.0001	------
POP-Q point C (Preoperative)		− 6.6 ± 1	− 6.4 ± 0.8	0.14
POP-Q point C (12 months postoperative)		− 8.2 ± 1.2	− 8.6 ± 1	0.014
p Value		< 0.0001	< 0.0001	------
POP-Q stage 0	Preoperative (%)	0	0	0.99
	Postoperative (%)	39 (24.5)	50 (69.4)	< 0.0001
POP-Q stage I	Preoperative (%)	0	0	0.99
	Postoperative (%)	19 (12)	13 (18.1)	< 0.0001
POP-Q stage II	Preoperative (%)	142 (89.3)	58 (80.6)	0.1
	Postoperative (%)	101 (63.5)	9 (12.5)	< 0.0001
POP-Q stage III	Preoperative (%)	17 (10.7)	14 (19.4)	0.1
	Postoperative (%)	0	0	0.99

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *POP-Q* Pelvic Organ Prolapse Quantification System

Table 3 Functional assessment of patients in the two groups

Variable		PC (n = 159)	LVMR (n = 72)	p Value
CCCS	Preoperative	14.3 ± 1.4	14.5 ± 1.6	0.34
	6 months postoperative	9.6 ± 1.2	7.6 ± 1.9	< 0.0001
	12 months postoperative	9.2 ± 1.2	6.0 ± 2.3	< 0.0001
p Value		< 0.0001	< 0.0001	------
PISQ-12	Preoperative	28.2 ± 2.1	28.7 ± 2.2	0.1
	6 months postoperative	31.4 ± 2.6	35.5 ± 3.4	< 0.0001
	12 months postoperative	35.8 ± 2.2	39.3 ± 2.8	< 0.0001
p Value		< 0.0001	< 0.0001	------

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *CCCS* Cleveland Clinic Constipation Score

Table 4 Symptom-specific quality of life assessment

Variable	PC (n = 159)	LVMR (n = 72)	p Value
PAC-QoL dissatisfaction (preoperative)	65.1 ± 4.7	65.6 ± 4.5	0.45
PAC-QoL dissatisfaction (postoperative)	43.9 ± 5.5	24 ± 6.3	< 0.0001
p Value	< 0.0001	< 0.0001	------
PAC-QoL satisfaction (preoperative)	0.4 ± 0.7	0.6 ± 0.7	0.32
PAC-QoL satisfaction (postoperative)	7.1 ± 0.9	9.7 ± 1.8	< 0.0001
p Value	< 0.0001	< 0.0001	------
Overall PFIQ-7 (preoperative)	90.5 ± 8	88.6 ± 6.5	0.08
Overall PFIQ-7 (postoperative)	20.8 ± 5.3	13.6 ± 5	< 0.0001
p Value	< 0.0001	< 0.0001	------
UIQ (preoperative)	2.9 ± 1.7	3.3 ± 1.7	0.1
UIQ (postoperative)	1.3 ± 1.3	0.6 ± 1	< 0.0001
p Value	< 0.0001	< 0.0001	------
POPIQ (preoperative)	26 ± 4	25.1 ± 3.9	0.11
POPIQ (postoperative)	11.1 ± 1.3	5.8 ± 3.8	< 0.0001
p Value	< 0.0001	< 0.0001	------
CRAIQ (preoperative)	61.6 ± 6.3	60.2 ± 5.2	0.1
CRAIQ (postoperative)	8.5 ± 5	7.2 ± 3.5	0.047
p Value	< 0.0001	< 0.0001	------

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *PAC-QoL* Patient Assessment of Constipation Quality of Life, *PFIQ-7* Pelvic Floor Impact Questionnaire (short form), *UIQ* Urinary Impact Questionnaire, *POPIQ* Pelvic Organ Prolapse Impact Questionnaire, *CRAIQ* Colorectal/Anal Impact Questionnaire

Table 5 Anatomical assessment by fluoroscopic defecography

Variable	PC (n = 159)	LVMR (n = 72)	p Value
Mean rectocele size (preoperative)	4.4 ± 0.7	4.5 ± 0.8	0.34
Mean rectocele size (postoperative)	2.1 ± 0.8	0.7 ± 0.5	< 0.0001
p Value	< 0.0001	< 0.0001	
Patients with barium entrapment (preoperative)	143 (89.9)	64 (88.9)	0.82
Patients with barium entrapment (postoperative)	61 (38.4)	0 (0)	< 0.0001
p Value	< 0.0001	< 0.0001	
Postoperative anatomic correction (%)	126 (79.2)	72 (100)	< 0.0001

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy

Fig. 4 Postoperative pain assessed using the visual analogue score (VAS)

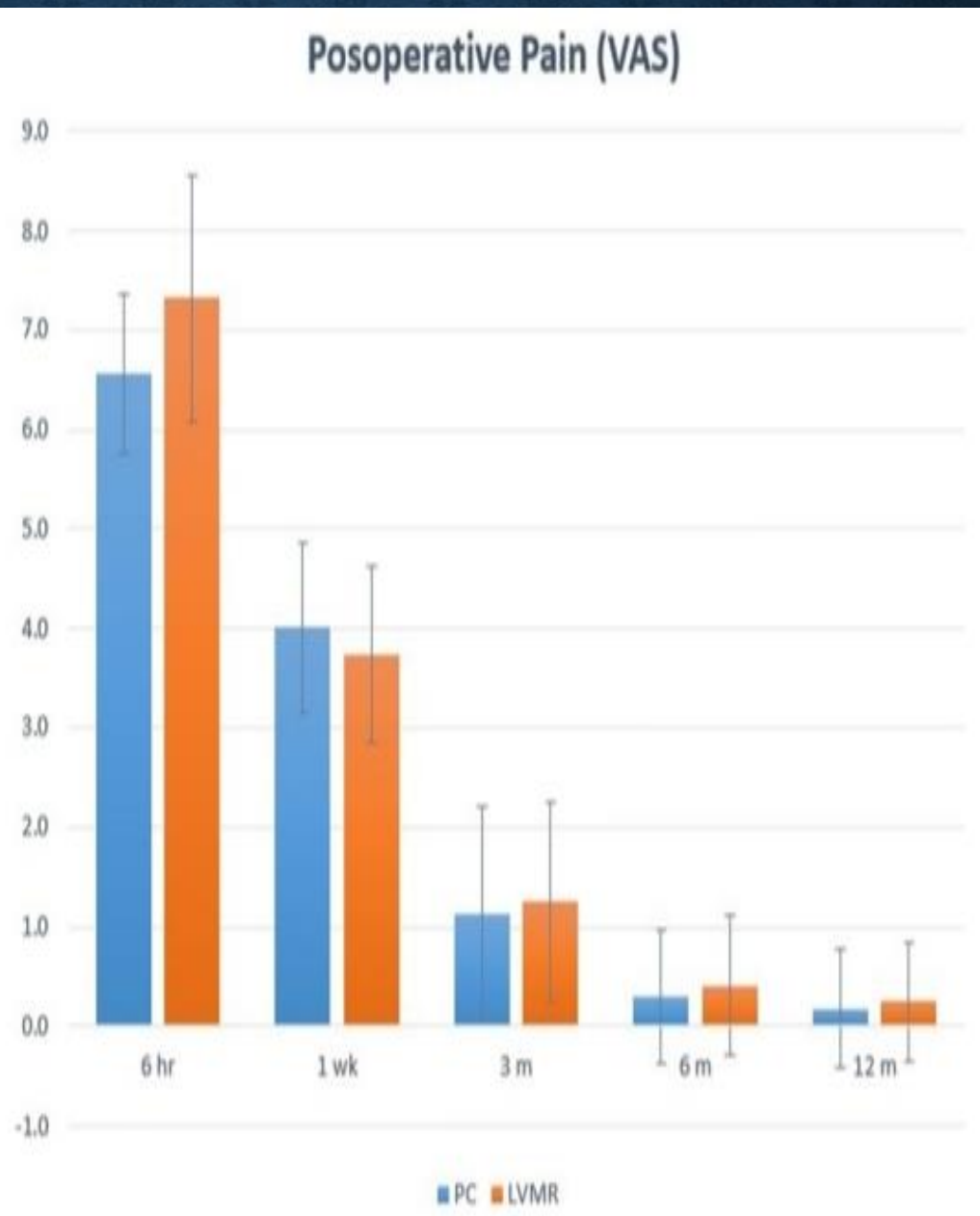

Table 6 Physiologic assessment by high-resolution anorectal manometry

Variable	PC ($n = 159$)	LVMR ($n = 72$)	p Value
MRP (preoperative)	65.3 ± 10	63.6 ± 10.3	0.24
MRP (postoperative)	52.7 ± 11.2	46.5 ± 6.2	< 0.0001
p Value	< 0.0001	< 0.0001	
MSP (preoperative)	127.5 ± 16.9	127.8 ± 20.6	0.91
MSP (postoperative)	96.2 ± 17.1	93.7 ± 16.9	0.3
p Value	< 0.0001	< 0.0001	
REP (preoperative)	61.2 ± 12.2	62.3 ± 13.0	0.53
REP (postoperative)	66.0 ± 13.9	68.1 ± 13.0	0.28
p Value	0.001	0.008	
RAIR (preoperative)	89.2 ± 23.9	87.8 ± 18.8	0.66
RAIR (postoperative)	45.4 ± 14.3	37.1 ± 12.3	< 0.0001
p Value	< 0.0001	< 0.0001	
DD (preoperative)	152.7 ± 20.2	154.0 ± 21.1	0.66
DD (postoperative)	97.3 ± 13.6	78.6 ± 13.8	< 0.0001
p Value	< 0.0001	< 0.0001	
MTV (preoperative)	195.1 ± 26.8	199.6 ± 30.6	0.26
MTV (postoperative)	140.4 ± 25.1	132.5 ± 24.7	0.03
p Value	< 0.0001	< 0.0001	

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *MRP* maximum resting pressure, *MSP* maximum squeeze pressure, *ARP* anal residual pressure, *SR%* percent of sphincter relaxation, *REP* rectal expulsion pressure, *DI* defecation index, *DD* desire to defecate, *MTV* maximum tolerable volume

Table 7 Operation time and complications in the two groups

Item	PC (mean ± SD)	LVMR (mean ± SD)	*p* Value
Operation time	45.4 ± 9.3	73.9 ± 8.2	< 0.0001
Time to healing	16.3 ± 4.1	9.8 ± 3.4	< 0.0001
Complications			
- Bleeding (%)	9 (5.7)	2 (2.8)	0.5
- SSI (%)	8 (5)	2 (2.8)	0.7
- Wound dehiscence (%)	4 (2.5)	0 (0)	0.3

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *SSI* surgical site infection

Table 8 Outcome of PC and LVMR after exclusion of patients with internal rectal prolapse and patients who received internal anal sphincterotomy

Item		PC ($N = 142$)	LVMR ($N = 57$)	p Value
Age in years (mean ± SD)		38 ± 13	41 ± 11.4	0.13
CCCS	Preoperative	14.2 ± 1.4	14.6 ± 1.6	0.08
	6 months postoperative	9.6 ± 1.2	7.5 ± 1.9	< 0.0001
	12 months postoperative	9.2 ± 1.1	5.9 ± 2.2	< 0.0001
p Value		< 0.0001	< 0.0001	
PISQ-12	Preoperative	27.9 ± 2	28.5 ± 2.2	0.06
	6 months postoperative	31.3 ± 2.6	35.3 ± 3.4	< 0.0001
	12 months postoperative	35.6 ± 2.2	39.1 ± 2.8	< 0.0001
p Value		< 0.0001	< 0.0001	
Complications (%)		16 (11.3)	4 (7)	0.44

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *CCCS* Cleveland Clinic Constipation Score

Table 9 Complications after both procedures with and without adding internal anal sphincterotomy

Item	PC ($N = 159$)	LVMR ($N = 72$)	p Value
Complications when PLIS was added ($n = 24$)	2/17	0/7	0.99
Complications when PLIS was not added ($n = 207$)	19/142	4/65	0.15
p Value	0.99	0.99	

PC posterior colporrhaphy, *LVMR* laparoscopic ventral mesh rectopexy, *PLIS* posterolateral internal sphincterotomy

CONCLUSION

PC and LVMR are both effective treatment options for treatment of rectocele.

LVMR was associated with better anatomic correction and greater improvement in constipation, sexual symptoms, and quality of life compared with PC.

Although, LVMR had a longer operation time than PC, the complication rate of the two procedures was comparable.

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