

# Quality of life after laparoscopic resection rectopexy

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## Abstract

**Purpose** This study evaluated continence, constipation, and quality of life (QoL) after laparoscopic resection rectopexy (LRR) for full-thickness rectal prolapse. Results were compared with existing data after perineal rectosigmoidectomy (PRS).

**Methods** From May 2003 to February 2008, consecutive patients suffering from full-thickness rectal prolapse undergoing LRR were retrospectively studied. A standardized questionnaire including the Cleveland Clinic Constipation and Incontinence Scores (CCCS and CCIS) as well as general and constipation-related QoL scores (EQ-5D and PAC-QOL) was administered. Results were compared with those after PRS. For statistic analysis, the Wilcoxon test (EQ-5D and EQ-VAS) and two-sample Student's *t* test (CCCS, CCIS, and PAC-QOL) were used for LRR, for the comparison of both procedures Mann–Whitney test (EQ-5D) and two-sample Student's *t* test (EQ-VAS, CCCS, CCIS, and PAC-QOL).

**Results** Eighteen patients, 15 female, aged 58.1 ( $\pm 20.2$ ) years underwent LRR. Eleven patients completed follow-up. Post-operatively, neither functional outcome nor QoL improved. Two recurrences occurred, morbidity was  $n=2$ , and mortality  $n=1$ . In comparison, patients after PRS benefit from

improved constipation, general QoL measures, status of health, and all dimensions of constipation-related QoL.

**Conclusions** Patients after LRR do not benefit from improved general nor constipation-related QoL nor improved functional results compared to PRS.

**Keywords** Rectal prolapse · Quality of life · Laparoscopic resection rectopexy · Transperineal rectosigmoidectomy

## Introduction

Patients with full-thickness rectal prolapse may suffer from incontinence, obstructed defecation, and a decline in their quality of life [1]. Although numerous surgical interventions (transabdominal or transperineal) for the treatment of full-thickness rectal prolapse exist, there is a lack of high quality randomized clinical trials in the literature. Therefore, no recommendation can be made as to whether an abdominal or a perineal approach should be preferred [2].

Recently published data demonstrated that patients after perineal rectosigmoidectomy (PRS) or Altemeier's procedure benefit from improved functional outcome and quality of life [1]. To date, there are no prospective quality of life data on an abdominal approach for the correction of full-thickness rectal prolapse.

The aims of this study were to evaluate continence, constipation, and quality of life before and after laparoscopic resection rectopexy (LRR) in patients with full-thickness rectal prolapse and to compare the results with existing data after perineal rectosigmoidectomy (PRS).

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## Materials and methods

### Study population

Preoperatively, all patients underwent clinical examination, proctoscopy, and colonoscopy. Patients after LRR retrospectively completed a standardized questionnaire, including the Cleveland Clinic Incontinence Score (CCIS) [3], Cleveland Clinic Constipation Score (CCCS) [4], EuroQol-Five-Dimension-Quality of Life-Score (EQ-5D), EuroQol-Visual Analog Scale (EQ-VAS) [5], and Patient Assessment of Constipation—Quality of Life (PAC-QOL) [6]. The outcome was compared to existing, prospectively collected data on patients after PRS [1]. All patients gave their informed consent.

### Incontinence and constipation

The CCIS quantifies the degree of incontinence on a scale of 0–20 points, with a score of 20 indicating total incontinence [3]. The CCCS quantifies constipation on a scale of 0–31 points, with a higher score indicating worse constipation [4].

### Quality of life

EQ-5D assesses generic quality of life including five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety, each quantified on a three-point scale. The higher the score, the worse the quality of life.

EQ-VAS assesses subjective health status with 0% being the worst and 100% being the best imaginable health [5]. PAC-QOL indicates quality of life in constipated patients. It assesses the four following dimensions by 28 different items: physical (4 items), psychosocial discomfort (8 items), worries/concerns (11 items), and satisfaction (5 items). The higher the score, the worse is the quality of life [6].

### Inclusion and exclusion criteria

Patients were selected for either LRR or PRS, if they fulfilled the following criteria: rectal procidentia >5 cm, no psychiatric disorder, no contraindication to surgery, no inflammatory bowel disease, and no colorectal neoplasia.

### Surgical technique

Preoperatively, patients received an enema and a single dose of 2 g cefotaxime and 500 mg metronidazole. For LRR, all patients were positioned in the supine position under general anesthesia. The operation was performed according to Stevenson et al. with a suture rectopexy between the presacral fascia over the inferior aspect of the sacral promontory and the lateral perirectal tissue of the upper rectum, distal to the anastomosis [7].

Patients for PRS were positioned in the prone jack-knife position under general anesthesia, and the operation was performed as described by Altmeier et al. [8]. Patients were discharged home after the first bowel movement and resumption of a normal diet.

### Follow-up

For LRR, the follow-up was conducted retrospectively by telephone survey after a median of 40 months (range 12–68). The follow-up for PRS was accomplished prospectively by outpatient review after a median of 24 months (range 6–48).

### Statistics

Testing for normality of distribution was performed using the Kolmogorov–Smirnov test. Statistical analysis was conducted using the Wilcoxon test (EQ-5D) and two-sample Student's *t* test (EQ-VAS, CCCS, CCIS, and PAC-QOL). For the comparison of LRR and PRS, preoperative results were subtracted from postoperative values: a negative difference indicating an improvement and a positive difference indicating a worsening of symptoms. For EQ-VAS, the interpretation is vice versa. Comparison of the differences was performed using the Chi<sup>2</sup>-test (EQ-5D) and two-sample Student's *t* test (EQ-VAS, CCCS, CCIS, PAC-QOL), with a *p* value of ≤0.003 taken as being significant. The Mann–Whitney *U* test was used for comparison of age, American Society of Anaesthesiologist (ASA) score, operating time, and hospital stay.

## Results

### Laparoscopic resection rectopexy

#### Patients

From December 2003 until August 2008, 18 consecutive patients suffering from full-thickness external rectal prolapse underwent LRR. The mean age was 58.1 (±20.2) years; 15 patients were female.

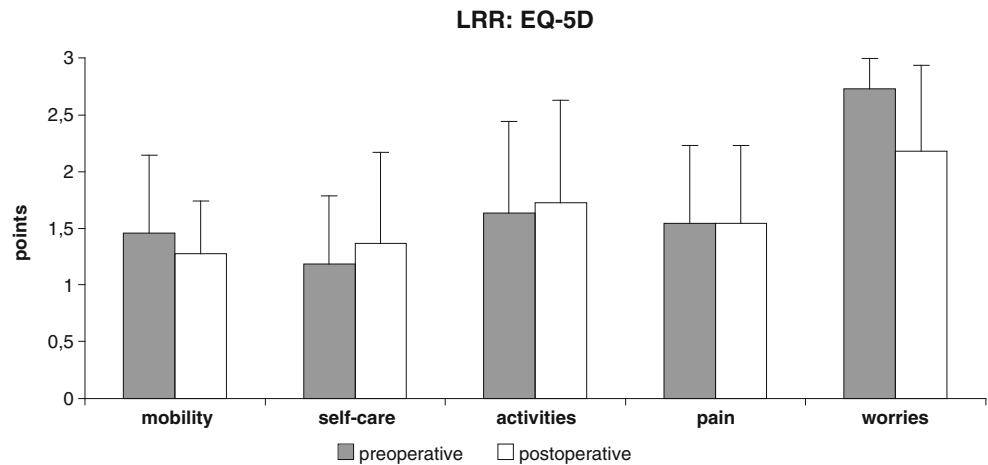
#### Operative outcomes

The mean operating time was 157 (±34) min and no blood transfusion was needed. Patients left hospital 8.1 (±2.3) days after surgery.

#### Mortality

Postoperative surveillance was for a median of 40 months (range 12–68). Five patients were lost to follow-up, one

**Fig. 1** General quality of life assessment before and after LRR. Data are means±standard deviation. Results were not significant (mobility  $p=0.5$ , self-care  $p=1$ , activities  $p=1$ , pain  $p=1$ , worries  $p=0.18$ )



patient died during follow-up unrelated to the operation, and one patient died on the 21st postoperative day. In total, 11 patients had complete data for analysis.

*Morbidity and recurrence*

In addition to the postoperative death, two other major complications occurred. One patient suffered an abdominal wall hematoma and one developed anastomotic stenosis requiring operative intervention. One patient suffered a urinary tract infection. In two patients, full-thickness rectal prolapse recurred at 2 and 7 months following surgery.

*Continence and constipation*

Preoperatively, 6/11 patients (54.55%) suffered from fecal incontinence, as determined by a CCIS of  $\geq 5$ . The mean preoperative CCIS was 7.27 ( $\pm 6.68$ ). Postoperatively, 8/11 patients (72.73%) were affected by incontinence with a mean CCIS of 8.55 ( $\pm 7.13$ ), with two patients demonstrating a deterioration in incontinence. The severity of incontinence did not change significantly ( $p=0.527$ ).

Seven of 11 patients (63.64%) reported constipation preoperatively, with a mean CCCS of 8.09 ( $\pm 7.23$ ). Postoperatively, 8/11 patients (72.73%) were affected by constipation with a mean CCCS of 11 ( $\pm 9.54$ ), with one patient demonstrating worsening constipation. The differences were not significant ( $p=0.204$ ).

*Quality of life*

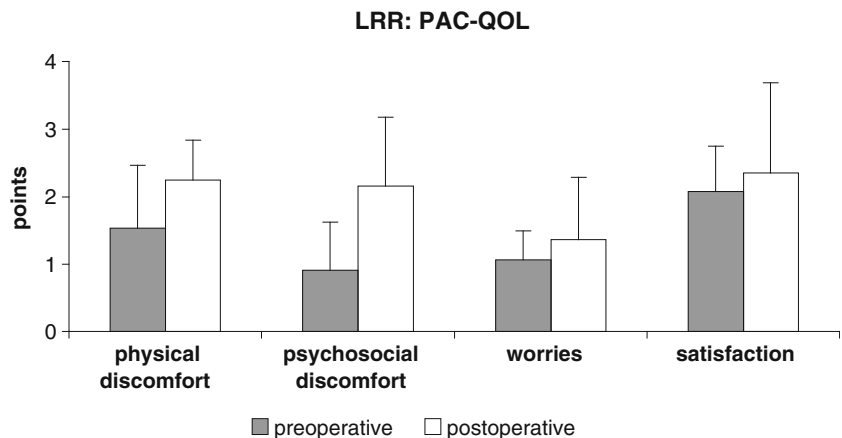
Generic quality of life (EQ-5D) showed no change in any dimension (Fig. 1). Similarly, there was no detectable improvement in the EQ-VAS score (mean preoperative score=40 ( $\pm 17.89$ ), mean postoperative score=50.09 ( $\pm 23.02$ ),  $p=0.334$ ). There was no change in the constipation-related quality of life score (PAC-QOL) (Fig. 2).

*Perineal rectosigmoidectomy*

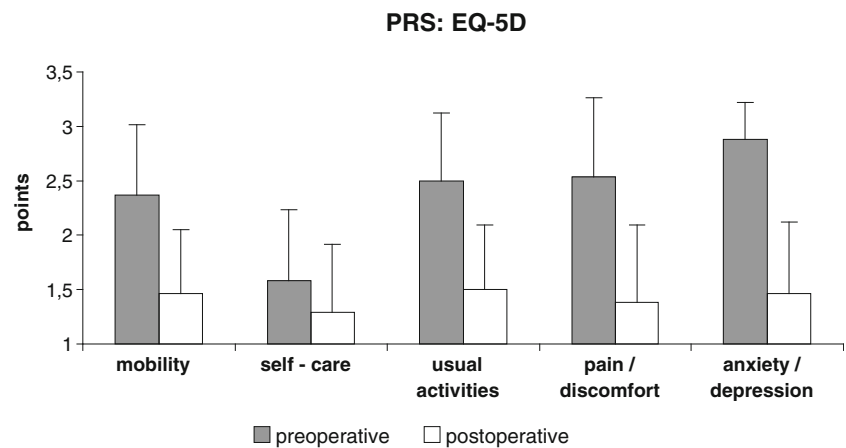
*Patients*

From May 2004 until June 2008, 38 consecutive patients suffering from full-thickness external rectal prolapse un-

**Fig. 2** Constipation-related quality of life before and after LRR. Data are means±standard deviation. Results were not significant (physical discomfort  $p=0.042$ , psychosocial discomfort  $p=0.041$ , worries  $p=0.577$ , satisfaction  $p=0.529$ )



**Fig. 3** General quality of life assessment before and after PRS. Data are means±standard deviation. Results were significant concerning mobility, activities, pain, and worries ( $p<0.001$ ). Self-care was not significant ( $p=0.008$ )



derwent Altemeier's rectosigmoidectomy procedure. The mean age was 75 ( $\pm 12.49$ ) years and 32 patients were female.

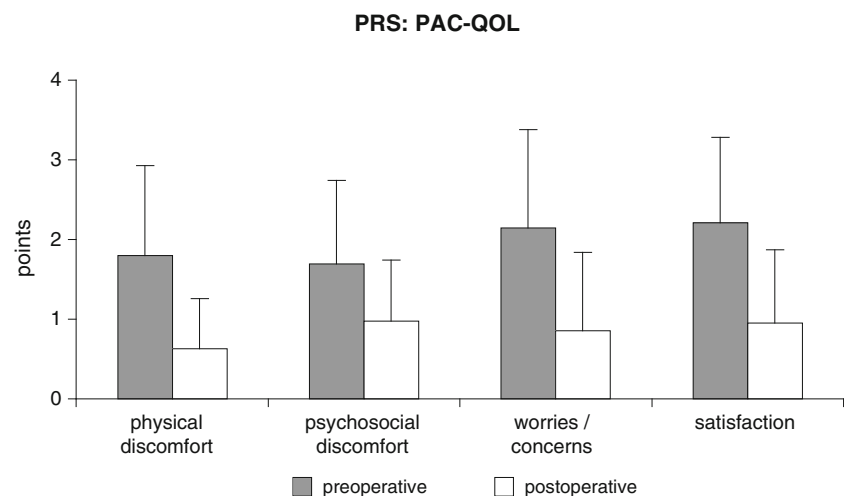
#### Operative outcomes

The mean operating time was 88 ( $\pm 34$ ) min and no blood transfusion was needed. Patients left hospital 6 ( $\pm 2.5$ ) days after surgery.

#### Mortality

Postoperative follow-up was for a median of 24 months (range 6–48). Six patients did not complete the follow-up, and two patients died during the course of follow-up unrelated to the operation. One patient classified as ASA IV died due to cardiac failure on the 13th postoperative day. In total, 29 patients had complete data for analysis.

**Fig. 4** Constipation-related quality of life before and after PRS. Data are means±standard deviation. Results were significant concerning all dimensions between pre- and postoperative data ( $p<0.001$ )



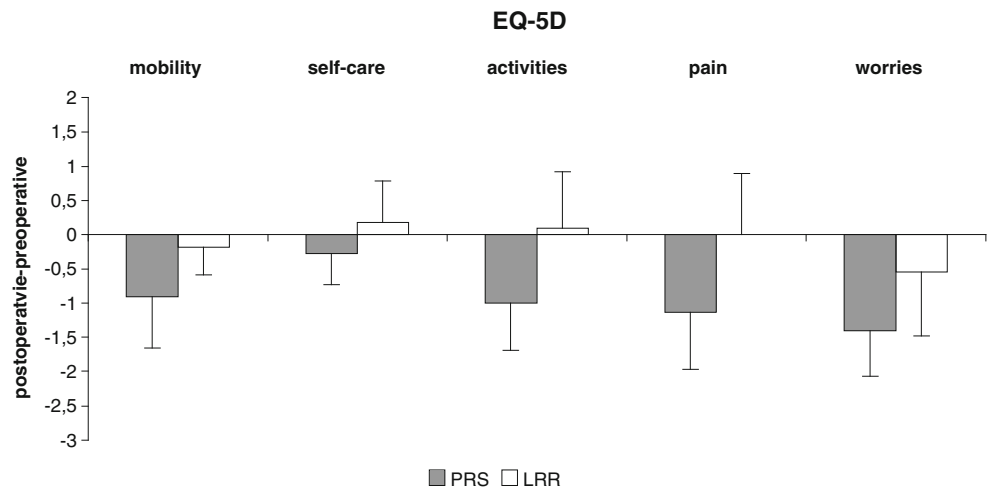
#### Morbidity and recurrence

One patient suffered from pneumonia and one developed a cardiac dysrhythmia. There were no other major complications, in particular no incidence of anastomotic leak, anastomotic stenosis, rectovaginal fistula, or bleeding. Five patients were affected by minor complications: urinary retention (one patient) and urinary tract infection (four patients). One patient suffered a recurrence of full-thickness rectal prolapse 5 months after surgery and underwent a further Altemeier's procedure.

#### Continence and constipation

Preoperatively, 21/29 patients (72.41%) suffered from fecal incontinence (CCIS of  $\geq 5$ ). The mean preoperative CCIS was 14.17 ( $\pm 6.87$ ). Postoperatively, the same 21 patients were affected by incontinence but with a significantly decreased CCIS score of 11.42 ( $\pm 6.38$ ) ( $p<0.001$ ).

**Fig. 5** General quality of life assessment. Comparison of differences postoperative–preoperative between PRS and LRR. Data are means±standard deviation. Results were significant concerning activities ( $p=0.001$ ) and pain ( $p=0.003$ ). Mobility ( $p=0.006$ ), self-care ( $p=0.028$ ), and worries ( $p=0.009$ ) were not significant



Twenty of 29 patients (68.97%) suffered from constipation preoperatively, with a mean CCCS of 10.21 ( $\pm 6.76$ ). Postoperatively, 18/29 patients (62.07%) were affected by constipation and CCCS significantly decreased to 3.58 ( $\pm 3.26$ ) ( $p < 0.001$ ).

*Quality of life*

Generic quality of life (EQ-5D) significantly improved through all fields except self-care (Fig. 3). Subjective status of health score (EQ-VAS) similarly improved. The mean preoperative value was 26.29 ( $\pm 21.38$ ) and postoperative value was 74.29 ( $\pm 22.43$ ) ( $p < 0.001$ ). All constipation-related quality of life scores (PAC-QOL) improved postoperatively ( $p < 0.001$ ) (Fig. 4).

Comparison of laparoscopic resection rectopexy versus perineal rectosigmoidectomy

*Patients and operative outcomes*

Patients undergoing LRR were significantly younger than those undergoing PRS (LRR 58.11  $\pm$  20.23 years; PRS 75  $\pm$

12.49 years,  $p=0.004$ ) and had a significantly lower ASA score (LRR 2  $\pm$  0.69; PRS 2.7  $\pm$  0.46,  $p < 0.001$ ). Operative time was significantly longer for LRR (LRR 157  $\pm$  49 min; PRS 88  $\pm$  34 min,  $p < 0.001$ ) and patients stayed significantly longer in the hospital (LRR 8.17  $\pm$  2.33 days; PRS 6  $\pm$  2.5 days,  $p=0.002$ ).

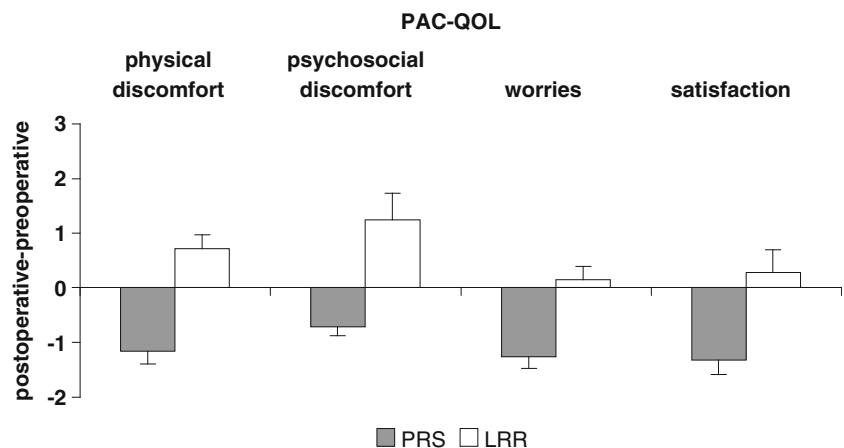
*Continence and constipation*

No significant difference was observed in the preoperative continence and constipation scores between patients undergoing LRR and PRS. However, patients undergoing PRS showed an improved constipation score postoperatively compared to those undergoing LRR (PRS -6.23  $\pm$  5.95; LRR 2.91  $\pm$  7.11,  $p < 0.001$ ). Also, continence showed a greater improvement after PRS compared to LRR, but differences were not significant (PRS -2.68  $\pm$  3.24; LRR 1.27  $\pm$  6.44,  $p=0.024$ ).

*Quality of life*

No significant difference was observed in the preoperative quality of life scores or individual domains comparing LRR

**Fig. 6** Constipation-related quality of life. Comparison of differences postoperative–preoperative between PRS and LRR. Data are means±standard deviation. Results were significant concerning all dimensions (physical discomfort and psychosocial discomfort  $p < 0.001$ , worries  $p=0.001$ , satisfaction  $p=0.003$ )



and PRS. A significant improvement in postoperative general quality of life was seen following PRS for the domains “usual activities” and “pain” (Fig. 5). There was also a significant improvement in subjective status of health (PRS  $47.91 \pm 5.74$ ; LRR  $10.09 \pm 9.95$ ,  $p=0.001$ ) and in all dimensions of constipation-related quality of life (Fig. 6).

## Discussion

There is a tendency to carry out abdominal procedures in young and fit patients with full-thickness rectal prolapse because of a perceived reduction in recurrence and improved functional outcome [2, 9]. Accordingly, patients undergoing LRR in the present study were significantly younger and fitter than those undergoing PRS.

Morbidity of 3/18 (16.67%), mortality of 2/18 (11.11%), and a recurrence rate of 2/18 (11.11%) after LRR are comparable to other reported data [10, 11]. There is only one prospective trial comparing Altemeier’s procedure with open resection rectopexy, which included 20 patients. Morbidity was 33.33% after open resection rectopexy with no morbidity after PRS. Recurrence was observed in 10% after PRS (1/10 patients) with no recurrence after abdominal resection rectopexy [12].

Neither continence nor constipation changed for the better following LRR in the current study. Patients undergoing PRS showed a significant improvement in functional outcome compared to patients after LRR. Boccasanta et al. showed a significant improvement in continence after abdominal as well as perineal procedures in their study of three patients undergoing LRR and six patients undergoing PRS [13]. In the prospective trial of Deen et al., there was a nonsignificant trend to improved continence after open resection rectopexy ( $n=10$ ) as well as after PRS ( $n=10$ ) [12].

To date, little attention has been given to quality of life in rectal prolapse surgery. Only one prospective trial showed a significant improvement through nearly all dimensions of general and constipation-related quality of life after PRS [1]. One retrospective study compared exclusively the postoperative quality of life data of six abdominal with two perineal procedures. Patients for perineal procedures were significantly older and suffered from more comorbidities. Consequently, these patients showed all in all a depressed quality of life compared to the younger and fitter patients after abdominal procedures [14]. Glasgow et al. evaluated postoperative quality of life questionnaire of 38 patients after the Altemeier procedure. The authors compared postoperative quality of life measured by Gastrointestinal Quality of Life Index (GIQLI) questionnaire with a healthy cohort and stated that postoperative quality of life was similar to a healthy historical control [15].

For abdominal approaches, two studies analyzed quality of life in laparoscopic resection mesh rectopexy in a cohort including mainly young men. The postoperative quality of life was evaluated by Quality of Life-Fecal Incontinence score. Sezai et al. stated an improved quality of life after laparoscopic resection mesh rectopexy compared to laparoscopic mesh rectopexy alone [16]. Demirbas et al. demonstrated that postoperative quality was similar between open procedure (modified Ripstein procedure) and laparoscopic approaches (laparoscopic resection mesh rectopexy and mesh rectopexy alone) [17].

In the present study, no significant improvement in the general and constipation-related quality of life was detected comparing data before and after LRR. In contrast, a significant improvement in most quality of life dimensions was observed following PRS as compared to LRR. Comparing PRS and LRR, patients after PRS did benefit from improved quality of life.

All in all, the few existing studies addressing quality of life in patients with full-thickness rectal prolapse are diverse in terms of study cohort (male), inclusion criteria (Rehn-Delorme, six different abdominal procedures), quality of life assessment (GIQLI, SF36), and compare group (healthy cohort). Therefore, the rare results of the different quality of life studies are not comparable.

The authors recognize the limitations of the current study with its retrospective design and relatively small number of patients. But accepting these criticisms, it is the first study to demonstrate a potential superiority of PRS as compared to LRR in terms of better functional outcomes and improved quality of life. The presented findings resulted after stratifying patients according to age and comorbidities as generally proposed [9]. Therefore, according to the clinically practiced recommendation to perform transperineal approaches in the old and disabled and abdominal procedures in the young and fit, the groups in our study do not match concerning age and comorbidities. It remains to ascertain, if these results can be confirmed by a prospective randomized trial.

## References

1. Kim M, Reibetanz J, Boenicke L, Germer CT, Jayne D, Isbert C (2009) Quality of life after perineal rectosigmoidectomy. *Br J Surg* 97:269–272
2. Tou S, Brown SR, Malik AI, Nelson RL (2008) Surgery for complete rectal prolapse in adults. *Cochrane Database Syst Rev* (4):CD001758. doi: 10.1002/14651858
3. Jorge JM, Wexner SD (1993) Etiology and management of fecal incontinence. *Dis Colon Rectum* 36:77–97
4. Agachan F, Chen T, Pfeifer J, Reissman P, Wexner SD (1996) A constipation scoring system to simplify evaluation and management of constipated patients. *Dis Colon Rectum* 39:681–685

5. Rabin R, de Charro F (2001) EQ-5D: a measure of health status from the EuroQol Group. *Ann Med* 33:337–343
6. Marquis P, De la Loge C, Dubois D, McDermott A, Chassany O (2005) Development and validation of the patient assessment of constipation quality of life questionnaire. *Scand J Gastroenterol* 40:540–551
7. Stevenson AR, Stitz RW, Lumley JW (1998) Laparoscopic-assisted resection-rectopexy for rectal prolapse: early and medium follow-up. *Dis Colon Rectum* 41:46–54
8. Altemeier WA, Culbertson WR, Schowengerdt C, Hunt J (1971) Nineteen years' experience with the one-stage perineal repair of rectal prolapse. *Ann Surg* 173:993–1006
9. Madiba TE, Baig MK, Wexner SD (2005) Surgical management of rectal prolapse. *Arch Surg* 140:63–73
10. Solomon MJ, Young CJ, Evers AA, Roberts RA (2002) Randomized clinical trial of laparoscopic versus open abdominal rectopexy for rectal prolapse. *Br J Surg* 89:35–39
11. Kariv Y, Delaney CP, Casillas S, Hammel J, Nocero J, Bast J, Brady K et al (2006) Long-term outcome after laparoscopic and open surgery for rectal prolapse: a case-control study. *Surg Endosc* 20:35–42
12. Deen KI, Grant E, Billingham C, Keighley MR (1994) Abdominal resection rectopexy with pelvic floor repair versus perineal rectosigmoidectomy and pelvic floor repair for full-thickness rectal prolapse. *Br J Surg* 81:302–304
13. Boccasanta P, Rosati R, Venturi M, Cioffi U, De Simone M, Montorsi M, Peracchia A (1999) Surgical treatment of complete rectal prolapse: results of abdominal and perineal approaches. *J Laparoendosc Adv Surg Tech A* 9:235–238
14. Riansuwan W, Hull TL, Bast J, Hammel JP, Church JM (2010) Comparison of perineal operations with abdominal operations for full-thickness rectal prolapse. *World J Surg* 34:1116–1122
15. Glasgow SC, Birnbaum EH, Kodner IJ, Fleshman JW Jr, Dietz DW (2008) Recurrence and quality of life following perineal proctectomy for rectal prolapse. *J Gastrointest Surg* 12:1446–1451
16. Sezai D, Demirbas S, Akin L, Kurt Y, Oğün I, Celenk T (2005) The impact of laparoscopic resection rectopexy in patients with total rectal prolapse. *Mil Med* 170:743–747
17. Demirbas S, Akin ML, Kalemoglu M, Oğün I, Celenk T (2005) Comparison of laparoscopic and open surgery for total rectal prolapse. *Surg Today* 35:446–452