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Laparoscopic suture Rectopexy versus Altemeier's procedure for the treatment of complete rectal prolapse: A hospital based comparative study

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Abstract
Objectives: This study was to compare the management of Laparoscopic Suture Rectopexy versus Altemeier's procedure for the surgical management of Complete Rectal Prolapse patients.
Methods: Detail history (age, sex, presenting features, intraoperative events, postoperative course, complications) clinical examinations and relevant investigations were performed to all complete rectal prolapse patients. A total of 40 patients of complete rectal prolapse were enrolled in this study. Laparoscopic Suture Rectopexy was performed in 22 patients. Altemeier's procedure was performed in 18 patients. The follow up was done for each patient for a period of one to two years and analysed with regard to the following parameters like faecal continence, constipation and recurrent prolapse.
Results: Data was analysed by using simple statistical methods with the help of MS-Office software. All data was tabulated and percentage was calculated.
Conclusions: Complete rectal prolapse was commonly seen in male and middle age group patients. Constipation and incontinence were common symptoms. Intermittent rectal prolapse was common indication for surgical procedure. Morbidity was more seen in Altemeier's procedure than laparoscopic suture rectopexy. Pre-existent constipation was common post-operative impact on bowel habits seen during follow up. Hence, Laparoscopic suture rectopexy because of its safety in experienced hands and comparable recurrent prolapse rates with other abdominal procedures and with an added advantage of less associated morbidity due to the procedure and shorter duration of hospital stay can be considered as the procedure of choice for patients who can tolerate general anaesthesia and constipation not dominating the symptomatology.

Keywords: complete rectal prolapse, laparoscopic suture Rectopexy, Altemeier's procedure

Introduction

Rectal prolapse is characterized by a full-thickness intussusception of the rectal wall, which protrudes externally through the anus. It is associated with a spectrum of coexisting anatomic abnormalities, such as diastasis of the levator ani, an abnormally deep cul-de-sac, a redundant sigmoid colon, a patulous anal sphincter, and loss or attenuation of the rectal sacral attachments. Some have hypothesized that the condition is associated with (and preceded by) internal rectal intussusception or a traumatic solitary rectal ulcer, although these associations have never been clearly proven [1, 2].

Rectal prolapse is classified into two types: complete or full-thickness prolapse and incomplete or partial thickness prolapse [3]. Complete prolapse represents a protrusion of the entire layer of the rectum to the outside of the anus and, thus, shows concentric folds. Incomplete prolapse is defined as a condition in which the protruding rectal wall is limited to the inside of the anal canal, which is also referred to as occult rectal prolapse or internal rectal intussusception. In clinical practice, mucosal prolapse is readily confused with rectal prolapse [3] Mucosal prolapse is not a protrusion of the whole layer of the rectal wall, but a portion of the rectal wall or only the anal mucosa. It should be differentiated from rectal prolapse as the surgical treatments are different [3].

Objective of this study was to compare the management of Laparoscopic Suture Rectopexy versus Altemeier's procedure for the surgical management of Complete Rectal Prolapse patients.

Materials & Methods

This present study was conducted in Department of Surgery, Government Doon Medical College and Hospital, Dehradun, Uttarakhand, India during a period from January 2019 to November 2019. Attendants/Entire subjects signed an informed consent approved by institutional ethical committee of Government Doon Medical College, Dehradun.

A detail history (age, sex, presenting features, intraoperative events, postoperative course, complications) clinical examinations and relevant investigations were performed to all complete rectal prolapse patients.

The follow up was done for each patient for a period of one to two years and analysed with regard to the following parameters like faecal continence, constipation and recurrent prolapse.

Inclusion Criteria of this study were the rectal prolapse visible with or without straining and age greater than 15 years. Exclusion Criteria were the patients who underwent abdominal or perineal procedures other than suture rectopexy and Altemeier's procedure, age less than 15 years and patients who had previous abdominal surgery for causes other than rectal prolapse.

Methods

A total of 40 patients of complete rectal prolapse were enrolled in this study. Out of total 40 patients, Laparoscopic Suture Rectopexy was performed in 22 patients. Altemeier's procedure was performed in 18 patients.

Surgical Technique

Laparoscopic Suture Rectopexy

The surgery was performed under general anaesthesia. Patients were catheterised and placed in Trendelenburg position. We used a four-port technique using two 10 mm and two 5 mm ports. The dissection was started by opening peritoneum on right side of rectum using harmonic scalpel/diathermy after identifying right ureter and safeguarding it. Then, dissecting rectum from presacral fascia in holy plane of safety staying close to rectum to avoid injury to autonomic nerves and presacral venous plexus. On left side dissection was done after identifying left ureter. Dissection was carried out downwards till pelvic floor. The anterior peritoneal fold in the rectovesical pouch were cut, lifting the rectum completely from sacral hollow. The lateral ligaments were not cut during the procedure. The rectum was hitched by suturing the mesorectum to the sacral promontory with 2-0 Prolene using one suture on either side.

Altemeier's Procedure

After subjecting the patient to regional anaesthesia, the patient was placed in lithotomy position. The prolapse was reduced and the dentate line was identified. One cm proximal to the dentate line, a full thickness incision was made and the dissection was continued proximally until the peritoneal reflection was identified. The peritoneum was opened and further redundancy of the sigmoid colon was assessed and the same redundant segment was sequentially devascularised. The redundant segment was excised and coloanal anastomosis was performed using 2.0 polyglactin (Vicryl) suture.

Decision for laparoscopic suture rectopexy or Altemeier's procedure as the treatment modality for an individual was as per the clinical judgement of the senior colorectal surgeons in the department and the senior anaesthetist. Patients with reducible rectal prolapse, fit to undergo general anaesthesia underwent laparoscopic suture rectopexy and patients with irreducible prolapse, incarcerated prolapse who needed emergency surgery, unfit for general anaesthesia underwent Altemeier's procedure.

Observations

A total 40 patients with age group 15 years to > 75 years of complete rectal prolapse were included in this study. Male and female ratio was 2.33:1.

Table 1: Gender wise distribution of complete rectal prolapse patients

Age	No. of patients	% of patients
15-30	2	5%
31-45	6	15%
46-60	24	60%
61-75	4	10%
>75	4	10%
Total	40	100%

In this present study, most of the patients 24(60%) were in age group 46-60 years. And 6(15%) patients were in age group of 31-45 years.

Table 2: Presenting symptoms of complete rectal prolapse patients

Symptoms	No. of patients	% of patients
Constipation	22	55%
Incontinence	12	30%
solitary rectal ulcer syndrome	6	15%
Total	40	100%

In this present study, patients with complete rectal prolapse were come with complain of 22(55%) constipation, 12(30%) incontinence and 6(15%) solitary rectal ulcer syndrome.

Table 3: Features for indication for surgical procedures

Symptoms	No of patients	% of patients
Intermittent rectal prolapse	34	85%
Irreducible rectal prolapse	4	10%
Recurrent rectal prolapse	2	5%
Total	40	100%

In this present study, operative procedure was indicated for intermittent rectal prolapse patients 34(85%), 4(10%) irreducible rectal prolapse and 2(5%) for recurrent rectal prolapse.

Table 4: Morbidity of patients during hospital stay

Morbidity			
LSR	No. of patients	AP	No. of patients
New-onset constipation	2	New-onset incontinence	2
Persistence constipation	2	Persistent incontinence	3
Paralytic ileus	1	Paralytic ileus	1
Pelvic abscess	0	Pelvic abscess	1
Wound infections	0	Wound infections	4

In this present study, morbidity of the patients in LSR procedure had 2(9%) new onset constipation and persistence constipation, 1(4.54%) paralytic ileus. And morbidity in AP procedure had 4(22.22%) wound infection, 2(11.11%) new onset incontinence, 3(16.67%) persistent incontinence, 1(5.56%) paralytic ileus and pelvic abscess.

Table 5: Impact on the Bowel Habits Post Surgery during follow up

Bowel habits	LSR	AP
Pre-existent constipation	8	9
Pre-existent incontinence	2	3
New onset constipation	1	0
New onset incontinence	1	1
Persistent constipation	2	0
Persistent incontinence	0	2
Total	14	15

In this present study, patients were come for follow up for 1-2 years after surgical procedure. In LSR group patients, 14(63.64%) had impact on bowel habit. Among them, they had 8(57.14%) pre-existent constipation, 2(14.29%) pre-existent incontinence, 2(14.29%) persistent constipation, 1(7.14%) new onset constipation and new onset incontinence. Similarly, In AP group patients, 15(83.33%) had impact on bowel habit. Among them, they had 9(60%) pre-existent constipation, 3(20%) pre-existent incontinence, 2(13.33%) persistent incontinence and 1(7.14%) new onset incontinence.

Discussion

Rectal prolapse describes a condition in which the entire layer of the rectal wall protrudes through the anal canal [3]. The most frequent symptoms are protrusion, hemorrhage, frequent bowel movement, and tenesmus. In the early phase, the protrusion is shown only during defecation, and with time, the protrusion becomes more frequent and severe. Symptoms, such as coughing or sneezing, are induced during increased abdominal pressure. Other common symptoms are fecal incontinence and mucous discharge through the anus. In most patients, decreased resting rectal pressure and relaxation of the anal sphincter cause the mucous discharge. Hemorrhage occurs frequently in cases in which the prolapsed rectum is left unreduced. If severe hemorrhage or strangulation is detected, emergency treatments should be administered. If rectal prolapse is persistent for a long time, urological impairments, such as bladder stones or urethral stricture, may be associated. Disorders of the pelvic floor, such as bladder prolapse or uterine prolapse, may also be combined [4].

In our present study, most of the complete rectal prolapse patients 24(60%) were in age group 46-60 years. And 6(15%) were in age group of 31-45 years. Male and female ratio was 2.33:1. Complete rectal prolapse was commonly seen in male. This distribution was consistent with previous studies reported from India [5, 6].

In this present study, majority of patients with complete rectal prolapse were come with complain of 22(55%) constipation, 12(30%) incontinence and 6(15%) solitary rectal ulcer syndrome.

A suture method for rectopexy was first described by Sudeck in 1922 [7]. This procedure includes complete mobilization of the rectum to the level of the levators [7]. Dorsal mobilization of the rectum induces fibrosis, which helps fix and hold the rectum in place [8]. Although low recurrence rates are documented [9], the recurrence rate increased to 20% in longer follow-up studies [10].

In this present study, operative procedure was indicated for intermittent rectal prolapse patients 34(85%), 4(10%) irreducible rectal prolapse and 2(5%) for recurrent rectal prolapse.

Sufficient rectal mobilization from the sacral promontorium is important to prevent recurrence [11]. Several studies have evaluated managing the lateral ligaments during surgery (i.e., division or preservation) [12]. Dividing the lateral rectal ligaments was associated with a decreased recurrence rate of 0%, but an increased constipation rate of 67% [12]. Lateral ligament division during rectopexy causes constipation but prevents recurrence, based on a prospective randomized study [13]. If the lateral stalks are divided, postoperative constipation may occur. Some medications may be required.

A rare complication of rectal prolapse is the strangulation (2-4%) [14, 15] and irreducibility. When the incarcerated rectal prolapse cannot be manually reduced, a few techniques may help the bowel return to its anatomic position such as sedation, Trendelenburg position and topical application of salt and sucrose, which may decrease bowel oedema and enable reduction. A strapping can be combined in order to maintain the reduction [15]. The definitive treatment of the prolapse is then carried out later. Failing to reduce or in case of necrosis, the only treatment is an emergent surgery. The intervention of choice is the Altemeier's procedure [14, 15].

In this present study, morbidity of the patients in LSR procedure had 2(9%) new onset constipation and persistence constipation, 1(4.54%) paralytic ileus. And morbidity in AP procedure had 4(22.22%) wound infection, 2(11.11%) new onset incontinence, 3(16.67%) persistent incontinence, 1(5.56%) paralytic ileus and pelvic abscess. The average length of hospital stay was less in laparoscopic group was 3.21 days and for Altemeier's procedure was 5.91 days

Laparoscopic surgery has revolutionised surgical practice over the years. Many operations that would have previously resulted in prolonged hospital admissions are managed within either the 'Short Stay' or even the 'Day Care' units. The impact of shorter lengths of stay has a beneficial effect on both patients' expectations and allocation of finite healthcare resources. By virtue of its minimally-invasive character with the lack of large wounds, recovery times are significantly reduced compared with open procedures. Laparoscopic application to rectopexy, therefore makes it a realistic option for day care surgery [16].

Constipation is a common problem after rectopexy particularly after prosthetic mesh rectopexy [17]. Studies have demonstrated that constipation increased from 10-47% and suggested a link with denervation of the left colon from rectum with possible kinking at the rectosigmoid junction, a redundant unresected sigmoid colon. This maybe especially so because the lateral ligaments containing the parasympathetic inflow to the left colon maybe cut during mobilisation [16]. M

In this present study, patients were come for follow up for 1-2 years after surgical procedure. In LSR group patients, 14(63.64%) had impact on bowel habit. Among them, they had 8(57.14%) pre-existent constipation, 2(14.29%) pre-existent incontinence, 2(14.29%) persistent constipation, 1(7.14%) new onset constipation and new onset incontinence. Similarly, In AP group patients, 15(83.33%) had impact on bowel habit. Among them, they had 9(60%) pre-existent constipation, 3(20%) pre-existent incontinence, 2(13.33%) persistent incontinence and 1(7.14%) new onset incontinence.

Parks *et al*. [18] suggested the theory of perineal nerve injury. In 1977, they performed biopsies of the pelvic floor in patients undergoing posterior repair for fecal incontinence and rectal prolapse, and confirmed injury of the perineal

nerve histologically. They explained that the cause of rectal prolapse was a weakening of the pelvic floor muscles due to injury of the perineal nerve. Perineal nerve injury also causes fecal incontinence. Possible reasons for nerve injury are descent of the pelvic floor, vaginal delivery, or excessive straining during defecation.

Conclusion

This present study concluded that the complete rectal prolapse was commonly seen in male and middle age group patients. Constipation and incontinence were common symptoms. Intermittent rectal prolapse was common indication for surgical procedure. Morbidity was more seen in Altemeier's procedure than laparoscopic suture rectopexy. Pre-existent constipation was common post-operative impact on bowel habits seen during follow up. Hence, Laparoscopic suture rectopexy because of its safety in experienced hands and comparable recurrent prolapse rates with other abdominal procedures and with an added advantage of less associated morbidity due to the procedure and shorter duration of hospital stay can be considered as the procedure of choice for patients who can tolerate general anaesthesia and constipation not dominating the symptomatology.

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