



## LAPAROSCOPIC ANTERIOR RECTOPEXY FOR FULL THICKNESS RECTAL PROLAPSE: IS IT THE ANSWER?

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**ABSTRACT** **Background:** The various procedures (perineal and abdominal) described for complete rectal prolapse differ in technique, peritoneal dissection (anterior/posterior), use of mesh/sutures/tackers, sigmoid resection etc and so varying results in different studies. We assessed the effectiveness, complications and recurrence rate of laparoscopic anterior rectopexy (LAR). **Materials and Method:** All the confirmed cases of complete rectal prolapse who underwent LAR (D'Hoore modification, involving peritoneal incision and mesh fixation, proximally at sacral promontory and distally with left lateral rectal ligament) were considered for the study. MRI pelvis, colonoscopy and Pre-anaesthetic check-up was done and informed consent was taken from all. **Exclusion Criteria:** Patients unfit for abdominal surgeries/general anaesthesia, those requiring conversion to open or sigmoid resection, preferring perineal procedure, having rectal gangrene, or uncontrolled psychiatric illness. **Duration:** (Feb 16 to Jun 18) Post-op follow-up: OPD basis (at least once at 6-12 weeks) & subsequently telephonically/ or SOS. **Results:** 12 underwent LAR, (11: male::01 female), 7: serving personnel, mean duration of symptoms: 4 year (min: 18 mon:: max: 11 year), mean age: 43 years (min: 29:: max: 63), 4 had incontinence, 3 had blood spottings, 6 had Constipation, & 1 had pain pre-op. Two had recurrence after previous perineal surgeries. Mean op time: 2hr 12 minutes (min: 1hr 24 minute:: max: 3hr 04 minutes). We had nil conversion, recurrence or complications over mean follow-up of 14 months. Improvement occurred in all cases of incontinence & bleeding per-rectum, and 4/6 cases of constipation. **Conclusion:** Laparoscopic anterior rectopexy may be considered as the procedure of choice for complete rectal prolapse, especially in serving personnel because of fast recovery and early return to work.

**KEYWORDS :** complete rectal prolapse; laparoscopic anterior, rectopexy; mesh; sacral promontory; peritoneum; lateral rectal ligaments

### INTRODUCTION

Proctodia is the complete prolapse of the entire thickness of the rectum through anus. Transient, minor prolapse of just the rectal mucosa sometimes occurs in normal infants. Mucosal prolapse in adults persists & may worsen over a period of time.<sup>1</sup>

The majority of cases are elderly women, which highlights the importance of obstetric injuries. But it can occur in both the sexes of any age.<sup>2</sup>

The primary cause of rectal prolapse is unclear but many anatomical disturbances are found in such patients. These include weak fascial attachments of the rectum with the sacrum, a redundant sigmoid, a deep Douglas pouch, a diastasis of levator ani and a patulous anus.<sup>3</sup>

Typically, patient presents with a lump at anal verge after defecation which either reduces spontaneously or requires digital manipulation. It may cause pain, ulceration, bleeding, incarceration & gangrene.<sup>4,5</sup> Many patients complain of faecal incontinence, or mucus discharge (soiling), There may be history of slow transit constipation or obstructed defecation syndrome (ODS) which is characterized by sensation of blockage, or incomplete evacuation, or hard stools which may require digital evacuation or sometimes abnormal posturing during defecation.

It is clinically differentiated from haemorrhoids by the presence of circumferential mucosal folds & diminished sphincter tone. The thickness in complete rectal prolapse is more due to involvement of all the layers of the rectum. Sigmoidoscopy / colonoscopy or barium enema of the colon must be done to look for other disease.<sup>6</sup>

Several Procedures have been described to correct the full thickness rectal prolapse. Mainly two approaches; perineal & abdominal (both laparoscopic & open) have been described. The perineal approaches including Theirsch, Delorme & Altemeier procedure have high recurrence rate and are done for patients, who are unfit for abdominal surgeries.<sup>6,7,8</sup> Now days abdominal operational including rectopexy to the sacral promontory are preferred due to lower recurrence rate and better functional outcome.<sup>9</sup>

The aim of our study was to assess the efficacy, complications, and recurrence rate of laparoscopic anterior rectopexy in treatment of complete rectal prolapse.

### MATERIALS & METHODS

All the cases presenting to the surgical OPD at Air Force zonal hospital or transferred in from peripheral hospitals with history suggestive of rectal prolapse were clinically examined by the surgical team. In doubtful cases, the patients were asked to strain while sitting on a commode (fig- 1). The diagnosis of full thickness rectal prolapse was made only after conclusive clinical evidence. The details of co-morbid conditions were taken into account and general examination and abdomen examination was carried out for each patient. The per rectal examination was done for all. The patients were explained about the condition and the surgical options available. The procedure was described to each one in detail and the listing of cases was done after pre-anaesthetic check-up. All the patients underwent colonoscopy to rule out associated colonic pathology. Informed written consent was taken from all the patients.

**Inclusion Criteria:** All the patients with full thickness rectal prolapse who were subjected to laparoscopic anterior rectopexy.

#### Exclusion Criteria:

- Patients unfit for abdominal surgeries/ general anaesthesia for medical reason.
- Patients requiring conversion to open or simultaneous sigmoid resection.
- Patient preferring perineal procedure over abdominal rectopexy.
- Gangrenous rectal prolapse
- uncontrolled psychiatric illness

The duration of the study was from Feb 16 to Jun 18. All the cases were managed at our zonal Air Force Hospital.

#### Procedure

The surgery was done under general anaesthesia and the bladder catheterization was done in all cases. The prophylactic antibiotics

(Injection Ceftriaxone 1 gm and Amikacin 500 mg ) were given at the time of induction of anaesthesia. The parts of the patient were cleaned and draped with patient in supine position. Four ports (1 of 10mm at supra-umbilical and 3 of 5mm on either side) were used and CO<sub>2</sub> was used for pneumoperitoneum. In case of difficult dissection extra port of 5mm was placed. Head down (20 degree) position was used while performing the pelvic dissection. In cases of females the uterus was suture fixed to anterior abdominal wall, during the procedure for providing better view of pelvis. We used D' Hoore modification of anterior rectopexy in which the posterior dissection is only limited to the exposure of the sacral promontory (fig-2). We used harmonic scalpel/ monopolar hook for the peritoneal dissection. The dissection then continued distally by incising the peritoneum on the right side of rectum saving the ureter and the main vessels. The peritoneum of the utero-vesical or recto-vesical pouch was incised on the right side (in continuity) and then incision continued on to the left of rectum by curving along the peritoneal pouch anterior to rectum, carefully saving the visceral structures (fig-3,4). A gentle traction was applied to the rectum to draw it out of the pelvis.

The space was created for placement of the mesh by dissection of the pelvic connective tissue. Polypropylene mesh of size ranging from 11x3 cm to 15x3 cm were used. The securing of the mesh was distally done using 3/0 PDS sutures with the left lateral ligament or the connective tissue (fig-5) and proximally using tackers at the level of sacral promontory. Both, absorbable and non-absorbable tackers were used based on the availability (fig-6). The mesh was properly tucked in the created space and the peritoneum over it was sutured in a continuous fashion using 3/0 PDS or V-loc sutures (fig-7,8). Suction drain was placed in the pelvis at the surgeon's discretion.

The patients were ambulated on the evening of surgery and allowed to take liquid diet. The antibiotics were continued till next day morning (a total of 3 doses). The catheter was removed on post-op day 1. Incentive spirometry was advised till hospitalization. The pureed diet was advised for about two weeks. The laxatives and stool softener were also advised for about 2 weeks and continued on SOS basis. Patients were advised to take high fibre diet when placed on normal diets and told to avoid straining at stools and not to consume food causing constipations. Kegel's manoeuvre was advised to patients who had stool incontinence pre-op. The drains, if kept were removed based on the amount and the character of the drain output.

The serving soldiers coming from outstation were kept admitted in the ward till staple removal (for administrative reasons), rest all were discharged on 3<sup>rd</sup> post-op day. The staples were removed on 7<sup>th</sup> to 10<sup>th</sup> post-op day, either in the ward or on OPD basis. The serving soldiers were sent on 4 weeks sick leave and placed in low medical category of P3 or equivalent for 12 weeks on review after sick leave. The others were advised to carry on with their routine work after discharge but with a caveat of not putting undue strain on abdomen for 3 months.

The review of serving personnel was done after the period of sheltered appointment of 12 weeks. Other cases were reviewed at least once at 6 to 12 weeks post-op. Further follow-up was done on required basis and updates were taken about the condition at three monthly intervals, telephonically.

## RESULTS

A total of 13 patients were detected to have complete rectal prolapse. Twelve patients underwent laparoscopic anterior rectopexy and 1 underwent Altemeier procedure (as per patient's choice). Eleven were males and one was female. The mean age was 43 years (minimum of 29 years and maximum of 63 years). Seven out of 12 were serving soldiers. The mean duration of symptoms was 4 years (minimum of 18 months and maximum of 11 years). Four out of 12 had incontinence, 3 had occasional blood spottings per rectum during the episode of prolapse. Constipation was present in 6 cases. Pain history was significant in only 1 case, rest all felt only dragging sensation or mild pain. All the cases required digital repositioning after prolapse. One patient had undergone Delorme's procedure 4 years back and had recurrence from last 28 months and 1 had undergone Thiersch surgery 3 years back and had recurrence from last 18 months.

One patient had iron deficiency anaemia and his haemoglobin was built up to 11 gm% before he was taken up for surgery. One had diabetes mellitus, well controlled with drugs. One patient presented with acute appendicitis and his surgery for rectal prolapse was done when he had recovered from his first surgery. The same patient was

found to have dense adhesions in pelvis and required maximum operating time. One patient had poly-somatic complaints and required psychiatric review after ruling out other organic pathology.

He improved with counselling and then underwent surgery for rectal prolapse. The mean operative time was 2 hr & 12 min (minimum of 1 hr & 24 min and maximum of 3 hr & 4 min). The mean admission time was 5.5 days. The mean follow-up time was 14 months (minimum of 3 months and maximum of 26 months). None of the patient was found to have associated colonic pathology in colonoscopy and none had significant MRI findings.

Five out of 12 were detected to have redundant sigmoid and 6 patients had deep peritoneal pouch. Two patients had thickened mesorectum/mesosigmoid and 4 had bowel adhesions (mainly of sigmoid). Two patients had bleeding requiring hemostasis with harmonic scalpel. Two required extra 5mm port to help in adhesiolysis, handling of redundant sigmoid and for keeping the bladder away in case of deep peritoneal pouch. The pelvic suction drain was put in 2 cases who required adhesiolysis and had some bleeding per-op.

We had nil conversion rate and nil recurrence rate in our study. The incontinence improved in all 4 cases post-op; and 4 of the 6 constipation cases also improved and none of the 3 had bleeding per rectum after surgery.

One patient developed mucosal prolapse of about 1 cm at 6 weeks of follow-up and that remained static during follow-up of 18 months. We had no case of mesh related complications, but one patient had significant post-op pain and required analgesics for about 6 weeks and improved after that. There was no urinary tract infection (UTI) or surgical site infection (SSI) but one had port site seroma which required staple removal and dressings.

## DISCUSSION

The abdominal rectopexy can be done either by open or laparoscopic method. There are variations in the extent of mobilization of rectum (anterior vs posterior vs complete), excision or incision of pouch of Douglas or recto-vesical pouch, type of mesh/suture & addition of sigmoid resection. It is because of these variations the outcome varies in various series.

Laparoscopic rectopexy has many advantages over the open method in term of reduction of postop pain, hospital stay, return to work, recovery & cosmesis.<sup>10-15</sup>

The complete mobilization of rectum up to levator ani muscle as done in posterior mesh rectopexy has high incidence of post-operative constipation and outlet obstruction and this occurs due to damage to the nerve fibres of pelvis plexus.<sup>16,17</sup> So, the interest of surgeons has gone down drastically in this procedure. We used D'Hoore modification of anterior rectopexy in which posterior desertion is limited to the exposure of sacral promontory, the peritoneal pouch is only incised & 3cm wide mesh is fixed antero-laterally to rectum.

Both synthetic & biological mesh have been described for rectal fixation. The biological mesh is costlier & likely to have more recurrence rate in the long term.<sup>18,19</sup> Although the mesh related complications are lesser in short term when biological mesh is used.<sup>20</sup> We used polypropylene mesh in all of our cases.

Robotic surgery is time assuming & costlier & routine use is not recommended.<sup>21</sup>

Altemeier procedure also has evidence supporting it although with variable recurrence rate.<sup>1-4,6,8,9</sup> So, the gold standard treatment for complete rectal prolapse is yet to be labelled.

We had more number of male patients in our study as the dependant population is relatively less in the drainage area of our hospital and we get referrals of mainly serving personnel from the peripheral hospitals.

As per systemic review of 12 non-randomized case series studies including 574 patients by Jean-luc et al published in world journal of gastroenterology,<sup>22</sup> about technical and functional results of anterior rectopexy for full thickness rectal prolapse the recurrence rate is about 4.7% with a conversion rate of about 3%, mesh related complications of about 1.2% and other complications including UTI, urinary retention, SSI, bowel perforations, ileus, ureter injuries and

anaesthesia related complications of about 17.4%, with a mean follow-up of 23 months. We had nil such cases in our study of 14 months of mean follow-up time.

The significant pain was observed only in 1 case which settled down gradually over 6 weeks.

Two patients with thick mesosigmoid and adhesions developed serosal tear of rectum which was suture repaired with 3/0 PDS. Majority of our patients passed flatus on post-op day 1 or 2 and stools on 3<sup>rd</sup> to 5<sup>th</sup> day. Mean hospital stay of our patient was longer because majority of our patients were serving soldiers and referred from outstation and they had to be kept admitted till staple removal.

**CONCLUSION**

Laparoscopic anterior rectopexy is easy to learn & perform, has low recurrence rate, low conversion rates, very low complication rates & leads to improvement in stool incontinence & may be considered as procedure of choice for complete rectal prolapse. This is highly recommended for serving soldiers with above mentioned problems because of fast recovery & early return to duty. However, large prospective randomized studies comparing laparoscopic anterior rectopexy & other procedure like Altemeier are needed to further clarify the issues.

**FIG 1 : FULL THICKNESS RECTAL PROLAPSE**



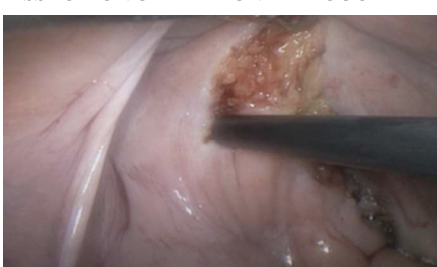
**FIG 2 : PERITONEAL DISSECTION AT SACRAL PROMONTORY**



**FIG 3 : DISTAL PERITONEAL DISSECTION**



**FIG 4 : DISSECTION OF PERITONEAL POUCH**



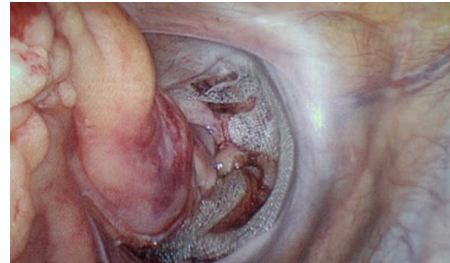
**FIG 5 : DISTAL MESH SECURING WITH SUTURES**



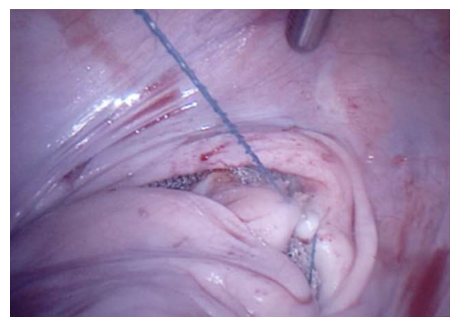
**FIG 6 : PROXIMAL MESH SECURING WITH TACKERS**



**FIG 7 : TUCKING OF MESH**



**FIG 8 : SUTURING OF PERITONEUM OVER THE MESH**



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