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Rectal eversion and double-stapled ileal pouch anal anastomosis in familial adenomatous polyposis syndrome



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ABSTRACT

INTRODUCTION: Surgery is the only treatment option for familial adenomatous polyposis (FAP). Aim of surgery in FAP is to minimize colorectal cancer risk without need for permanent stoma. There are especially two operation options; Total colectomy with ileorectal anastomosis (IRA) and total proctocolectomy with ileo-pouch anal anastomosis (IPAA). We report here a patient with FAP who had resection via rectal eversion just over the dentate line under direct visualization and ileoanal-J pouch anastomosis by double-stapler technique.

PRESENTATION OF CASE: A 40 yr. old female patient with FAP underwent surgery. Firstly, colon and the rectum mobilized completely, and then from the 10 cm. proximal to the ileo-caecal valve to the recto-sigmoid junction total colectomy was performed. Rectum was everted by a grasping forceps which was introduced through the anus and then resection was performed by a linear stapler just over the dentate line. A stapled J-shaped ileal reservoir construction followed by intraluminal stapler-facilitated ileoanal anastomosis. Follow up at six months anal sphincter function was found normal.

DISCUSSION: There is only surgical management option for FAP patients up to now. Total colectomy with IRA and restorative proctocolectomy with IPAA is surgical options for FAP patients that avoid the need for a permanent stoma. Anorectal eversion may be used in the surgical treatment of FAP, chronic ulcerative colitis and early stage distal rectal cancer patients.

CONCLUSION: J-pouch ileoanal anastomosis can safely be performed by rectal eversion and double stapler technique in FAP patients.

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1. Introduction

Familial adenomatous polyposis (FAP) is an autosomal dominant syndrome caused by a germ line mutation of the adenomatous polyposis coli (APC) gene.¹ FAP is characterized by more than one hundred polyps in colon and rectum. There is no optimal treatment option of FAP other than surgery till now. Surgery for FAP aims to minimize colorectal cancer risk while providing good functional and socially acceptable outcomes. Curative surgical treatment is total proctocolectomy with permanent ileostomy, but permanent stoma is an undesirable situation.² Total colectomy with ileorectal anastomosis (IRA) and total proctocolectomy with ileal pouch-anal anastomosis (IPAA) are procedures of choice without need for permanent stoma.² Both operations minimize or reduce the colorectal cancer risk while preserving the fecal continence.³ The risk of rectal cancer due to the remaining rectal stump in IRA

continues to be the most important problem.⁴ The risk of developing cancer in the rectal stump is 4 per cent at 5 years and 25 per cent at 20 years.⁵ The result of a meta-analysis showed that functional outcome and quality of life were better after IRA than IPAA.² On the other hand same meta-analysis show that cancer occurring in 5.5 per cent after IRA compared with zero after IPAA.² As the risk of cancer and socially acceptable outcomes are the major considerations in deciding the best operative strategy for patients with FAP. IPAA may be the gold standard procedure. The aim of the IPAA is to remove the entire disease prone colorectal mucosa.

Technically it can be more difficult by abdominal approach to transect the rectum just on the dentate line and to perform a ileal pouch-anal anastomosis. Anorectal eversion may allow the assessment of the mucosa under direct visualization and resection remaining very little rectal mucosa and eases the hand-sewn or stapler-facilitated anastomosis.

We report here a patient with FAP, who had total proctocolectomy resection via rectal eversion over the dentate line under direct visualization and ileoanal-J pouch anastomosis by double-stapler technique.

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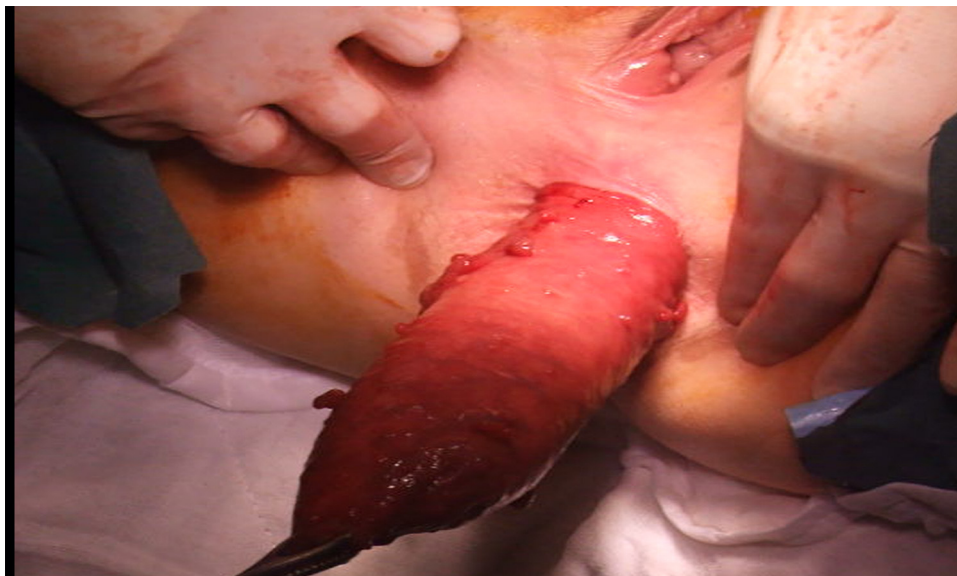
Picture 1. Insertion of a grasping forceps through the anus was seen.

2. Presentation of case

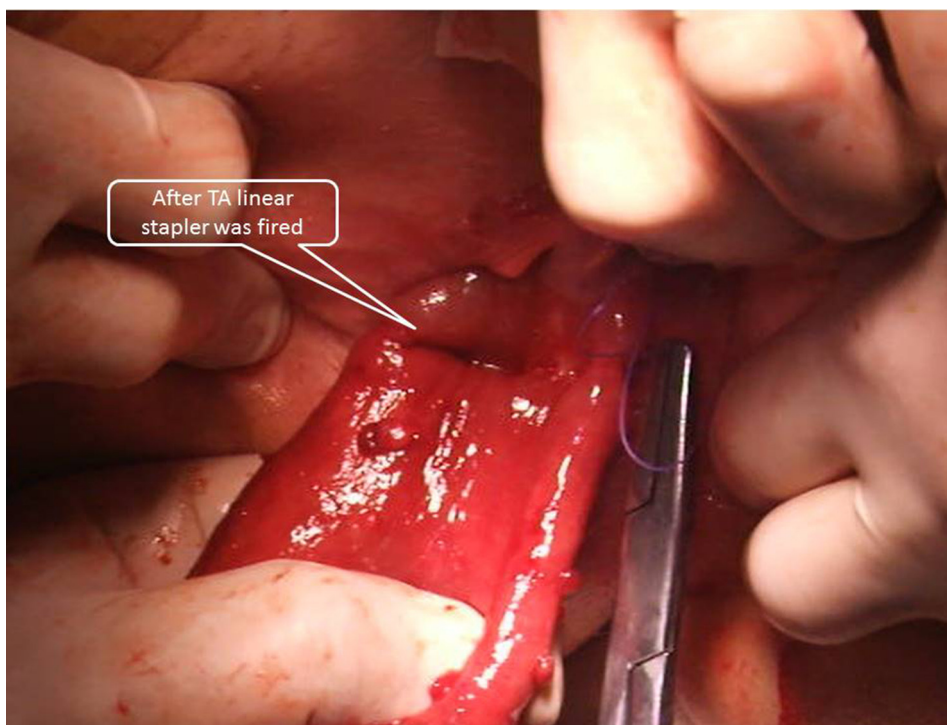
A 40-year-old female patient with a family history of colorectal cancer who has multiple adenomatous polyps from 4 cm proximal to the dentate line to the entire colon on colonoscopy was diagnosed as FAP. The operation was performed in the lithotomy position under general anesthesia. Through the midline incision first of all colon and the rectum mobilized completely and routine colectomy was performed from 10 cm proximal to ileo-caecal valve to the rectosigmoid junction by a 50 mm linear stapler (GIA DST, Covidien, Mansfield, MA, USA). By gentle dissection the rectum was mobilized completely down to the levator ani muscle. Ileal

J-pouch constructed from the distal ileum by a 100 mm linear stapler (GIA DST, Covidien, Mansfield, MA, USA). The relaxing incisions were made on both sides of the meso-ileum to diminish the tension on the anastomosis. After the relaxation incision the tip of reservoir easily reaches 3 cm beyond the lower margin of the symphysis pubis.

By perineal approach rectal stump irrigation with an anti-septic solution was done followed by insertion of a grasping forceps through the anus ([Picture 1](#)) and the rectal stump was everted through the anus by the mucosa turning inside-out ([Picture 2](#)) Dentate line identified and the mucosa evaluated for the polyps. The remaining 15 cm long rectal stump



Picture 2. The rectal stump was everted through the anus by the mucosa turning inside-out.



Picture 3. TA linear cutter was fired just over the dentate line. Dentate line and stapling line was seen.

resected just on the dentate line by TA linear cutter (GIA DST, Covidien, Mansfield, MA, USA). (Pictures 3 and 4) Then ileal j-pouch -anal anastomosis was performed by 29mm circular stapler (SDH29A, Ethicon, CA, USA). Protective temporary ileostomy was performed and the apertures on the mesoileum were sutured. One suction silicon drain was inserted into the pelvis.

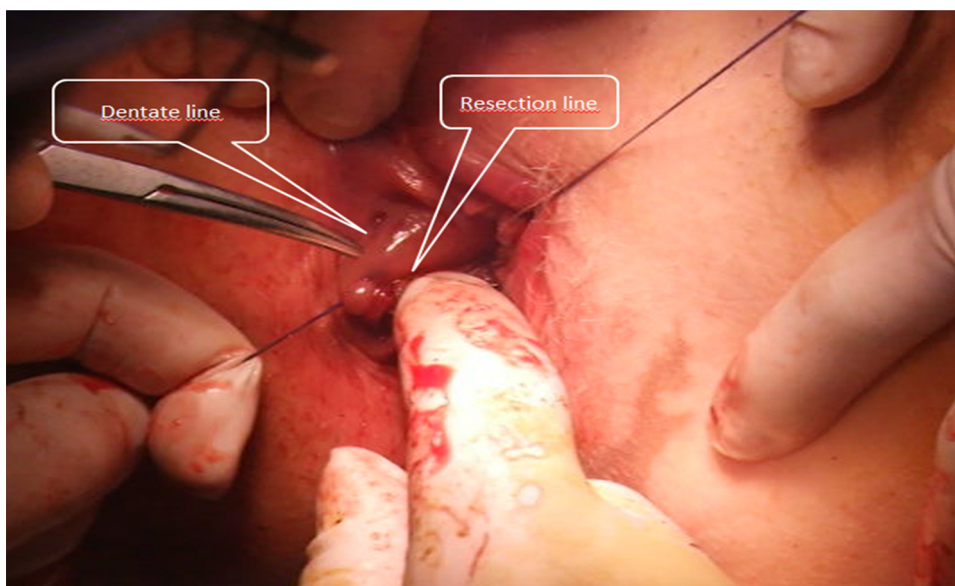
No postoperative complication occurred and the patient discharged postoperative 10th day.

Follows at 6th months the patient had no problem related to the anal incontinence and on digital examination anal sphincter functions found normal.

3. Discussion

Surgical options for FAP patients that avoid the need for a permanent stoma include total colectomy with IRA and restorative proctocolectomy with IPAA. IPAA, which was first described by Parks in 1978 for ulcerative colitis that permits total removal of all disease-prone mucosa but avoids the need for a permanent ileostomy while preserving anal continence and intestinal continuity.⁶

A meta-analysis showed that functional outcome was better preserved after IRA than IPAA for FAP, with regard to stool frequency, need for defecation at night, incontinence and the need for



Picture 4. The remaining 15 cm long rectal stump resected just on the dentate line by TA linear cutter.

pads. These findings were expected in the patient with a retained, functioning rectum however, surprisingly, IPAA was not significantly different from IRA with regard to stool frequency at night, day-time incontinence and need for antidiarrheal medication.² Whether stapled or handsewn IPAA offers a better functional outcome has not been determined yet. For IPAA, it has been suggested that functional outcome is better for FAP than ulcerative colitis.⁷ It has also been suggested that secondary IPAA, often performed following failed IRA is associated with poorer functional outcome.⁸

The most important consideration in deciding the best operative strategy for FAP patients is the risk of cancer development. Aziz et al. showed that cancer occurring in 5.5 per cent after IRA due to the remaining rectal stump compared with zero after IPAA in a meta-analysis. It is reported that there is no significant difference between IPAA and IRA with respect to bowel obstruction, hemorrhage, intra-abdominal sepsis, anastomotic separation and wound infection in the same meta-analysis.²

Controversy still exists about the technique to be used for the pouch-anal anastomosis. Mucosectomy and handsewn anastomosis are necessary to remove the rectal mucosa as completely as possible. But this technique takes longer time and has a relatively high risk of postoperative functional problems related to leakage and incontinence due to prolonged anal manipulation.⁹

Stapling IPAA was first described by Heald and Allen¹⁰ in 1987 and is widely accepted to use for creation of the ileal pouches and IPAA. This technique is simpler and less likely to result in functional problems.¹¹ However to allow transanal insertion of the stapler head, it is usually unavoidable to leave a 1–2 cm segment of rectal mucosa over the dentate line that carries a risk of developing adenomas and cancer.⁹ Adenomatous polyps, colonic metaplasia, and adenocarcinoma can occur in the terminal ileum of patients with FAP, although the long term risk of pouch and dentate line cancer is not known.⁹

Studies comparing handsewn versus stapled IPAA have reported variable results. In a study of large number of patients of a single institution had found that stapled IPAA had better outcomes and quality of life (QOL) scores than those undergoing a handsewn IPAA.¹² Technical difficulties can still arise with the stapled IPAA technique, particularly with respect to accurate transection and closure of the anal canal at the anorectal junction by abdominal approach.¹³

Rectal eversion permits the direct visualization of the mucosa and dentate line and has been suggested as a means of facilitating accurate anal transection and closure by use of either a handsewn purse-string suture or a linear stapler.¹⁴

However, there has been some concern regarding the potential of anorectal eversion to impair anal continence by causing traction injury to the anal sphincter complex or its nerve supply and thus worsen the functional outcome of restorative proctocolectomy.^{15,16} Williamson et al. reported in a 50 patients series one year after restorative proctocolectomy with rectal eversion, all patients were continent, although two experienced leakage of mucus requiring a pad. Forty-two patients (84 per cent) could discriminate between faeces and flatus. They noted that the eversion of the anorectum during restorative proctocolectomy impairs the motor and sensory functions of the anal sphincter but most patients achieved satisfactory anal continence, however, despite these physiological changes.¹⁶ DeFriend et al.¹³ have reviewed the median 4 years follow-up clinical results of consecutive series of 41 patients operated with rectal eversion and reported that no patients had major incontinence and only 2 (6%) had minor leakage.

Anorectal eversion may be achieved by the method described above, grasping forceps being introduced transanally to pull down the transected lower rectum,¹³ or by an alternative method described by Scotte et al. whereby the lower rectum is cross-stapled over a corrugated drain, introduced transanally, which can be used to facilitate eversion of the anorectum by traction from proximal end point of colon after rectal transection.

We conclude that, to facilitate accurate fashioning of stapled IPAA, anorectal eversion can be put into practice during restorative proctocolectomy.

Conflict of interest

None declared.

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None.

Ethical approval

We got fully informed written consent.

Author contributions

Muhittin Aygar: data collection, data analysis, writing; Fahri Yetişir: study design, data collections, data analysis, writing; Ebru Şarer: data collections, data analysis; Murat Baki Yıldırım: data collections; Mesut Özdedeoğlu: data analysis; Doğan Durak: data collections; Abdüssamet Yalçın, data analysis.

Key learning points

- Anorectal eversion can be put into practice during restorative proctocolectomy.

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