Ileal U Pouch Reconstruction Proximal To Straight Sublevator Ileoanal Anastomosis Following Total Proctocolectomy For Low Rectal Cancer In The Setting of Familial Adenomatous Polyposis

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Abstract

The techniques of ileal pouch reconstruction and ileal pouch-anal anastomosis following the total proctocolectomy are considered as current surgical treatment options for intractable ulcerative colitis and familial adenomatous polyposis. While anastomotic dehiscence, pelvic sepsis, and pouch fistula are life-threatening complications seen in early postoperative period, there are also some other complications seen in the late postoperative period which affects quality of life such as pouchitis, fecal seepage, and increased defecation frequency. In our case study, We present the technique of the ileal U pouch reconstruction proximal to straight sublevator ileoanal anastomosis following the total proctocolectomy in a patient who had low rectal cancer as a component of multicentric colorectal cancer. Ileal U pouch was constructed approximately 30 cm proximal to the ileoanal anastomosis because the ileoanal anastomosis was performed in very narrow and deep area of the sublevator zone. Clinical outcome was satisfactory. Ileal U pouch reconstruction proximal to the ileo-anal anastomosis should be kept in mind when the sublevator ileoanal anastomosis is necessary.

KEYWORDS: - Multicentric colorectal cancer - Restorative proctocolectomy - Ileal U pouch - Straight ileo-anal anastomosis
Introduction

Total proctocolectomy and ileoanal anastomosis were first described by Ravitch and Sabiston in 1947 [1]. They used this procedure for the surgical treatment of certain benign diseases of the colon. In order to minimize the undesirable functional results of the straight ileoanal anastomosis, ileal pouch reconstruction and ileal pouch-anal anastomosis following total proctocolectomy were described by Parks and Nicholls in 1980 [2]. Ileal pouches were designed in three main types (J, S, and W pouches) [3-5]. Postoperative defecation frequency was 3-6 times/day. With respect to pouch capacity, there was an inverse correlation between the pouch capacity and the daily defecation count. When the pouch capacity was increased, daily defecation count and fecal seepage decreased. Difficult evacuation was another problem which was seen in the late postoperative period of the large pouches [6,7]. Additionally, pouchitis was the most common late complication with no respect to the pouch capacity [8].

Technical Report

On the colonoscopic examination of a 75 year-old male patient, multicentric colorectal adenocarcinoma was found in the setting of the familial adenomatous polyposis coli. By magnetic resonance imaging (MRI) staging, a T2N0M0 rectal adenocarcinoma was situated 4 cm from the anal verge as a component of the multicentric colorectal carcinoma. Restorative total proctocolectomy was planned.

The patient was placed on the operative table in Lloyd-Davis lithotomy position. Abdominal and perineal incisions were used for suprarelevator and sublevator rectal dissections. After the dissections were completed, proctocolectomy and total mesorectal excision was performed by continuing via the abdominal approach. The rectosigmoid resection was completed leaving a 2 cm distal margin away from the tumor mass by the sublevator perineal approach. Proximal excision of the external and internal anal sphincter muscles between the sublevator anastomotic line and the puborectalis muscle was performed. Distal parts of the external and internal anal sphincter muscles were protected for ileoanal anastomosis (Figure 1). The sublevator space was not suitable for ileal pouch reconstruction and ileal pouch-anal anastomosis.
Straight sublevator ileoanal anastomosis was performed by using perineal approach (Figure 2). The Ileal U pouch was constructed approximately 30 cm proximal to the ileoanal anastomotic line to prevent any excessive traction on the anastomotic line and to achieve a better anastomosis within the sublevator level (Figure 4). After construction of the pouch and achievement of a valid anastomosis, covering ileostomy was created just proximal to the U pouch. Abdominal and perineal incisions were closed respectively. In the early postoperative period, a minimal anastomotic dehiscence was encountered in the ileoanal anastomotic line. The dehiscence spontaneously regressed. The covering ileostomy was closed six weeks after the surgery.

Results

After the surgical healing, the ileal U pouch and straight ileoanal anastomosis were showed by 3D volume view (Figure 5). Appearance of the ileum and distal anal sphincter musculature in sublevator level were assessed by MRI (Figure 6). On the tenth week after the U pouch surgery, daily defecation count was 3-4 times/day. Postoperative anal continence was good despite the excision of the proximal anal sphincters. There was no problem with evacuation. The patient has had nocturnal fecal seepage. Pouchitis was not encountered as of yet.

Discussion

Current operative techniques for restorative proctocolectomy are based on to the technique of the ileal pouch-anal anastomosis after the ileal pouch reconstruction. We used the technique of the sublevator straight ileoanal anastomosis following the ileal U pouch reconstruction which based on to the technique of the sublevator rectal resection. The anatomic basis of the rectal resection techniques in the sublevator level was based on the transsphincteric rectal transection and the extrasphincteric rectal dissection [9]. While doing a rectal dissection in sublevator level by perineal incision, the distal rectum surrounded by anal sphincter musculature should be dissected from perirectal tissues. The rectum is dissected in the extrasphincteric plane. In the sublevator level, the rectal resection by the perineal approach is in fact a transsphincteric
rectal resection because the anal sphincter muscles surrounding the sublevator distal rectum should be intersected. After the transsphincteric resection of the rectum in the sublevator level, proximal excision of the anal sphincter muscles is done between the distal resection level and the puborectalis muscle because sublevator distal rectum is resected with the anal sphincter musculature which surrounds it. Anal continence is maintained despite the excision of proximal anal sphincter muscles.

The ileal U pouch reconstruction had previously been used for end ileostomy continence by Nahm-gun Oh [10]. However, we have used the technique of the ileal U pouch reconstruction for making ileoanal anastomosis in sublevator level of the pelvic cavity and for maintaining adequate anal continence. Our preliminary clinical outcome was satisfactory. It is beneficial to keep in mind the straight ileoanal anastomosis and ileal U pouch construction when sublevator ileoanal anastomosis is necessary.

References


Figure 1: Preparation of the distal anal sphincter for ileoanal anastomosis after proximal anal sphincter excision.
Figure 2: Sublevator straight ileoanal anastomosis
Figure 3: Illustration of the ileal U pouch and the straight sublevator straight ileoanal anastomosis. (a: ileal U pouch, b: the straight sublevator straight ileoanal anastomosis, c: remaining internal and external anal sphincter after resection of the proximal sphincter complex)
Figure 4: The preparation of the ileal U pouch reconstruction after the sublevator ileoanal anastomosis. (u: ileal U pouch, i: preanastomotic ileal segment)
Figure 5: Postoperative 3D view of the ileal U pouch and preanastomotic ileal segment (u: ileal U pouch, i: preanastomotic ileal segment)
Figure 6: Postoperative sagittal view of the sublevator ileoanal anastomosis (sp: symphysis pubis, br: bladder, p: prostate, s: sacrum, i: supralelevator ileum, sbi: sublevator ileal segment, eas: distal part of the external anal sphincter muscles)