Hemorrhoidectomy by Using Circular Stapler in Grade 3-4 Hemorrhoids

GRADE 3-4 HEMOROİDLERDE SİRKÜLER STAPLER KULLANIMI İLE YAPILAN HEMOROİDEKTOMİ

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Özet

Hemoroid hastalığının bir çok tedavisinin bilinmesi rağmen, Grade 3-4 vakalar için seçenekler fazla değildir. Sirküler stapler ile çepeçevre hemoroidal vasküler yatağın kesintiye uğratılması bu tip hemoroidler için uygun ve ağrısız yöntem olarak son zamanlarda kullanıma girdi.

Amaç: Yöntemin, hastanın kısa sürede normal işine dönmesine olanak sağlayan, postoperatif tahammül edilebilir ağrılı, anal fonksiyon ve dışkılama sıklığını düzenleyici etkisi olan prosedür olabileceğini göstermektir.

Hastalar ve Prosedür: 1999-2000 yılları arasında yaklaşık bir yıllık sürede Mevki Asker Hastanesi Genel Cerrahi Servisinde Grade 3-4 hemoroidli 29 hastada sirküler stapler ile hemoroidektomi (Antonio Longo yöntemi) ameliyatı yapıldı. Yaklaşık 6.5 aylık takip süresi ve ortaya çıkan erken/geç komplikasyonlar bu çalışma içinde anlatılmıştır. Ortalama yaş 36 (SD± 12.5) yıldır. Ortalama takip süresi 6.5 (1-13) aydır. Ortalama ameliyat süresi 14.65 (8-37) dakikadır. Hastalar için Kamm inkontinens skoru, VAS ağrı skalası ve normal işlerine dönme süreleri ile postoperatif memnuniyet takibi yapıldı.

Sonuç: Sınırlı hasta sayısı ve takip süresi olan bu çalışmada, Grade 3-4 hemoroidler için sirküler stapler ile hemoroidektomi, hastaların daha az ağrı duymaları, normal işlerine kısa sürede dönebilmeleri, ve dışkılama alışkanlığı ile anal fonksiyonlarında iyileşmenin gözlenmesi gibi cesaret verici sonuçlara ulaşılmıştır. Yöntemin kısa süreli ve kolay uygulanabilir olmasına rağmen pahalı olması ileride daha geniş kapsamlı ve uzun takip süreli prospektif randomize çalışmaları gerektirmektedir.

Anahtar Kelimeler: Grade 3-4 Hemoroid, Sirküler hemoroid stapleri, Hemoroidektomi

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Summary

Although many therapeutic procedures are known as an approach to exclude hemorrhoids, there are still few procedures for grade 3 and 4 hemorrhoids. The circular stapler has been described as a treatment of prolapsed hemorrhoids. The procedure provides stapling of both end branches of the superior hemorrhoidal artery and mucosa prolapsed just above anal canal.

Aim: The aim of this study which consist the results of 29 patients with grade 3, 4 hemorrhoids, demonstrates that hemorrhoidectomy procedure by using circular stapler results with less postoperative pain, returning to normal activity in a short time and improvement in anal function and defecation.

Patients and Procedure: Twentynine patients with grade 3-4 hemorrhoids had been undergone hemorrhoidectomy by using circular stapler (in a way named De Longo) in Mevki Military Hospital from January 1999 to January 2000. Mean follow-up period was 6,5 (1-13) months. Mean age was 36 (SD± 12,5) years. Mean operation time was 14.65 (8-37) minutes.

Conclusion: In Hemorrhoidal diseases, particularly grade 3-4, the procedure by circular stapler gave us encouraging outcomes regarding less postoperative pain, returning to normal activity in a short time, improving effect on anal functions, and restoring to habits of defecation in this study. The results of long term follow up need to be assessed. Although the stapler is expensive, prospective randomized studies should be performed to determine how useful this procedure is.

Key Words: Grade 3-4 hemorrhoids, Circular stapler for hemorrhoids, Hemorrhoidectomy

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There are many treatments such as injection sclerotherapy (IJ), rubber band ligation (RBL), infrared photocoagulation (IRC), cryotherapy, sclerotherapy, diathermy, internal sphincterotomy (IS), and manual dilatation of anus (MDA) for hemorrhoidal diseases. None of the above treatments are superior to each other (1). A surgical hemorrhoidectomy for treating grade 3-4 hemorrhoidal disease (grading was taken from Dennison's classification, 1988 (2)), which is irresponsible to diet, and to application of the local therapeutics is a more painful treatment. Milligan-Morgan, Ferguson-Heaton, and Whitehead hemorrhoidectomy procedures are the most popular surgical procedures performed.

Grade 3 - 4 prolapsed hemorrhoids are distressing situations for patients presenting itching, wetness around

anus and bleeding. Multiple-RBL has been considered as an effective treatment for patients; however, they may need further therapy. Mc Rae and colleagues were noted that the patients with (grade 3-4 hemorrhoids) treated by surgical hemorrhoidectomy had a better response than the patients treated with multiple-RBL (1). Surgical hemorrhoidectomy can lead to bleeding and is time consuming, and is a complex procedure for patients with prolapsed hemorrhoids. It is also considered more painful. The circular stapler (Ethicon PPH 33) has been described as a treatment of prolapsed hemorrhoids. This technique improves the anatomical relationship between the prolapsing masses and the anal mucosa. The mechanism is the stapling of both end branches of the superior hemorrhoidal artery and prolapsed mucosa performed above the anal mucosa that is very sensitive to pain.

The goal of this study is to present the results of circular hemorrhoidectomy. In particular the series of 29 patients has been assessed demonstrating less postoperative pain, returning to normal activity in a short time, and improved anal functions and defecation clinically.

Patients and Procedure

After necessary information was given, thirty-four patients were accepted as subjects for the procedure by using the circular stapler (Ethicon PPH 33). All patients had prolapsed hemorrhoid (mostly grade 3 and grade 4), wet anus, and pain during defecation, and/or bleeding. The prolapsed hemorrhoids were apparently seen at external position in all patients. Two patients suffered gas incontinence, and mucus soiling one or three times a week (Kamm's score 6). Additionally one patient had chronic anal fissure. Seven patients had some difficulties to defecate in order that chronic constipation and pain and or bleeding. They needed laxatives or bulking agents. No other diseases were detected. Full proctologic, anoscopic examination, rectoscopy, and fecal incontinence scoring (Kamm's incontinence scoring matrix) had been studied for each patient in the preoperative period (Table 1). Barium enema had been done for patients over 50 years.

Procedure features: The Fleet phospho-soda was given to patients the evening before the surgical procedure, so that the anal canal was emptied. No antibiotic was prescribed for any patients. Spinal anesthesia for ten patients and caudal anesthesia for the other 19 patients were given. Patients were taken to the operating table at jack-knife position. Bupivacaine (Marcaine, 1/200.000) 40 ml was injected around anus. Prolapsed hemorrhoids were positioned externally.

The anoscope was put into the anal canal while prolapsed hemoroidal piles was being extraverted by using forceps. The dentate line was identified. One 2/0 prolene suture was placed approximately to 3 cm from dentate line. The suture is aimed to catch the base of the piles. A stapler (Ethicon Inc., PPH 33 with detachable anvil) in the fully open position was inserted into the anal canal through the anoscope. It's anvil placed above the suture. The purse string was knitted on the shaft of the anvil and pulled down while the stapler was being closed slowly and tightly. The posterior vaginal wall was checked in the female patient before firing the stapler. Then stapler was fired, and held 20-30 seconds for homeostasis. The stapler was opened fully and removed. The staple line was inspected with attention. If any bleeding points were seen the 3/0 chromic suture was placed. The circular mucosal ring was examined to make sure if there was any entrapment or muscular fibers. The mucosal ring was sent to the pathology in order to be identified. A second stapler was not used for any patients.

Table 1. Kamm's incontinence scoring matrix

	Never	Rarely	Sometimes	Weekly	Daily
Incontinence for solid stool	0	1	2	3	4
Incontinence for liquid stool	0	1	2	3	4
Incontinence for gas	0	1	2	3	4
Alteration in lifestyle	0	1	2	3	4
				No	Yes
Need to wear a pad				0	2
Taking a medicine for constipating				0	2
Not to defer defecation more than 15 minutes				0	4

After the procedure indomethacin suppository (Endol, Ilsan Sti., Turkey) was put into the anal canal. Pethidine 50 mg intramuscularly was injected in 2 hours after procedure to avoid the pain that patients felt in early postoperative period. Methimazole 500 mg, 4 times a day was prescribed as required after surgical procedure. Postoperative pain was scheduled at 2, 4, 8, 16 and 36 hours by using VAS scale. A 10 cm long scale was used. The number ten signifies the most pain that a patient felt, while zero signifies no pain. Lactulose 40-ml dose a day was prescribed in the morning until normal bowel movement returned. The use of lactulose made the stool soft, which caused in less pain that patients felt during the first bowel movement.

Most of patients were discharged on 2nd day (first 48 h.) postoperatively. Of 29 patients, five were discharged on 4th day due to hematoma in the stapled line. Patients are reviewed at 1 week and 4 weeks postoperatively, in addition to 12 weeks postoperatively. Patients were asked to state their level of pain postoperatively along with return to

normal activity, improved anal functions and defecation for their satisfaction in the first and second outpatient's visit.

Results

Thirty-four patients have undergone hemorrhoidectomy by using the circular stapler for (Ethicon PPH 33) in Mevki Military Hospital, Ankara. This study was done from January 1999 to January 2000. There were five cases operated initially that were considered in the learning phase and not included in this study. The including criteria were prolapsed hemorrhoidal piles, wet anus, bleeding with bowel movements, and pain during defecation. Twenty-nine patients were included during this period. Nineteen patients had grade 3 hemorrhoids, all were male, and ten patients had grade-4 hemorrhoids. Mean age was 36 (SD ±12.5) years (range 20-67 years). One patient with prior surgery for anal fissure was female. The others were male. Mean follow up was 6.5 months (1-13 months). Mean duration of the operative procedure was 14.65 (8-37) minutes. A second stapler was not used for any patient. A bleeding at the stapled line in five cases (17%) was observed after the stapler was removed. Three and five hemostatic sutures were necessary to prevent bleeding. Two (6.7%) patients experienced thrombosis in their external piles immediately after stapled hemorrhoidectomy was performed. It spontaneously healed with warm sit baths and anti-inflammatory drugs ingested in 5 days. Seven patients (24.1%) experienced ecchymosis perianal skin that was healed until the first outpatient's visit. In four patients (13.5 %) the mucosal resections were not done as a whole ring. In another patient, the stapled area was very close to the dentate line (3.5%), which was seen after the procedure when checking the suture line (Table 2). Overall early complications were 31 % (Table 2). All mucosal tissues resected were sent to the pathology department in order to be examined. Of all fourteen (48.2%) specimen had smooth muscle fibers histologically.

A single dose Pethidine 50mg intramuscularly was injected for every patient. No patient needed another dose of pethidine during hospitalization. Seventeen patients (58.6%) did not require any analgesic except Indomethacin suppository put into the anal canal at the end of the procedure. The initial injection of Pethidine 50 mg intramuscularly was administered about 2 hours after the operation. Then the patients received three administrations of Methimazole 500 mg a day/per-oral as required postoperatively. Graph 1 depicts the patient's pain scale.

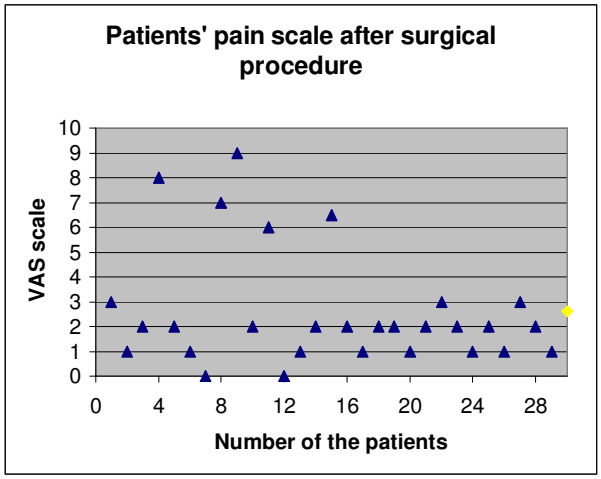
All patients except five were discharged in 48 hours postoperatively. Five were discharged in 4 days. Mean follow up is 6.5 (1-13) months. All patients came to the first outpatient's visit one week after surgical procedure. They had no major complications. Late complications in the second visit are showed in the Table 3.

Two patients (5.7 %) had experienced hemorrhoidal recurrences (Table 4). One had hemorrhoid Grade 1 with bleeding one month after surgical procedure. He was treated by sclerotherapy by injecting Polidocanol 2% into the piles. The sclerotherapy was successful for the patient.

Another patient experienced grade 2 hemorrhoids in the 4th months after the operation. He required surgical – Ferguson- hemorrhoidectomy. He had no prolapsed mucosa, wet anus, and mucous soiling in the follow up period.

Table 2. Early complication

Early complications	Total 9 patients	31.01 %
Bleeding after the stapler off	5	17.3 %
Urinary retention	1	3.5 %
Lower level anastomosis	1	3.5 %
Thrombosis in the external piles	2	6.7 %
Ecchymosis at perianal skin	7	24.1 %
Mucosal specimens, not complete ring	4	13.5 %



Graph 1. Patients' pain scale.

Table 3. Late complications

Late Complications	3 patients	3.5 %
Gas incontinence	1	3.5 %
Hypertrophic skin tags	-	-
Perianal abscess	-	-
Persistent pain in the perianal area	-	-
Anal canal narrowed (dilated by finger easily)	1	3.5 %
Complaints with defecation	-	-

Table 4. Recurrences in follow up

Hemorrhoidal Recurrence (3.5 %)	When happened	Treatment performed
1 Patient (Grade 1 with bleeding)	In 1st month after procedure	Sclerotherapy (he was fine in follow up)
1 Patient (Grade 2 with pain and bleeding)	In 4th month after procedure	Ferguson Surgical Hemorrhoidectomy

Patients had no episodes of mucous, liquid and solid incontinence, and no narrowing in their anal canal at the stapled line in the follow up period except one case dilated by finger easily at the third visit. The stapled line has been determined by an examination with anoscope and taking an x-ray film if necessary.

In their follow up 82% of patients were satisfied by the circular stapled hemorrhoidectomy in first visit, and 93% of them were satisfied in second visit. They returned to their jobs in 14 days.

Discussion

Grade 3 and 4 hemorrhoids with prolapsed mucosa could be associated with one and/or two of several symptoms such as bleeding, wet anus, pain, and mucus soiling and/or flatus incontinence. It is difficult to decide treatment methods to utilize. Manual dilatation of anus (MDA), if performed as a treatment processing, could be the procedure consistent with anal incontinence in higher incidence (1,8,10). In addition, the patients, treated MDA, need further therapy. Infrared photocoagulation (IRC) was not considered as a treatment for grade 3 hemorrhoids. Sclerotherapy was shown to be inferior in comparison with RBL for grade 3 hemorrhoids. Moreover, the findings of the patients undergoing IRC and sclerotherapy are likely to require further therapy. In the metaanalysis performed by MacRae and colleagues (1995) no difference was found in the response rate between hemorrhoidectomy and Rubber band ligation (RBL) for grade 3 hemorrhoids in 18 trials. There is slight difference favoring hemorrhoidectomy when compared both procedures (1, 2, 8). Surgical hemorrhoidectomy of Grade 3-4 hemorrhoids with prolapsed mucosa requires that surgeon should make more attention. It is difficult and time-consuming operation. This procedure has numerous per-postoperative serious complications such as difficult to control bleeding and stricture occurring at the anus (1,3-6).

The stapled hemorrhoidectomy involves an anastomosis while resecting the hemorrhoids and prolapsed mucosa. The procedure can be easily performed in 15 minutes with minimal postoperative pain. In this study we performed it in 14.65 minutes (8-32). Postoperative pain is serious complaint for the patient operated by hemorrhoidectomy. Longo, Mehigan, Monson and Hartley stated postoperative pain after Morgan-Milligan hemorrhoidectomy remained higher than that experienced after stapled hemorrhoidectomy following 10 days. They used visual analog scale (VAS) for pain (7,8,19). Rowsell and Hemingway also stated average pain was significantly much less for stapled hemorrhoidectomy compared with diathermy one in their particular series of 22 patients (14). Yik-Hong Ho and Seow-Cohen did the study randomized prospective on 119 patients with prolapsed irreducible hemorrhoids undergoing both conventional open diathermy or stapled hemorrhoidectomy. They found as a result that maximum pain in hospital and in 2 weeks after operation as well as pain at defecation was experienced much less and analgesic requirement was also less after stapled hemorrhoidectomy. 2-5 % of patients undergoing stapled hemorrhoidectomy experienced less pain both in hospital and in 2 weeks after operation (15,16). The initial access into anus in stapled hemorrhoidectomy is also hampered by a bulky stapler the procedure results in less postoperative pain (P=0.04) stated in the study made by Khalil, O'bichere, and Sellu from UK (17).

In this study patients experienced pain much less (average VAS score was 2.6) postoperatively. They did not need any stronger analgesic except both pethidine 50 mg one dose and Methimazole 500-mg per-oral. That analgesic combination controlled the postoperative pain mostly patients in this study. Spinal and caudal anesthesia achieved good control of immediate postoperative pain, but urinary retention could be seen frequently. Patients took stool softeners in order to prevent the pain during the first bowel movement. In this study, Lactulose 40 mg/day postoperatively was used as required for lessening pain. Although pain has not been a disturbing effect in this study, persistent pain up to 15 months after stapled hemorrhoidectomy has been declared 31% of 22 patients by Mortansen, Kamm, and Phillips from St. Marks Hospital (2000) (16,18). The mechanism behind persistent pain is not clear what was stated in that study.

Early discharged is not a main point in this study. Some formal documentation before discharging was necessary. We attempted to discharge our patients in the first 48 hours. All patients, except five who had hematoma at their stapled line after the circular stapler removed were discharged in the first 48 hours. They were discharged in 5 days. It took long due to their hesitation serious about pain. The subjects who could return to their active duty spent fifteen days off. Mehigan, and Hartley found the time for patients undergoing a stapled hemorrhoidectomy were

Table 5. Comparison to different studies

Author & series	No. of Px	Age year	Op. time Min.	Need analgesic	Follow up (mo)	Overall compl. (%)	Gas incont.	Mean Hosptz. (day)	Return normal (day)
Boccasanta-Perachia (1998)	100 55M, 45F	50.5	15	moderate	56.8 (6-108)	34 %	2.3%	4 (3-7)	NA
Altomore-Palasciano (1999)	18 10M-8F	32-71	15	37.8 % (7-18) don't need	20	NA	NA	3 (2-15) (33%px. first 48 h.)	NA
Kohlstad-Weber (1999)	42	55.5	5-15	0 - 3 VAS 50% px. don't need	Since Sept. 1998	14 %	2.3% (1/42 px. temp.)	24 h.	21
Cohen- Hong Ho (2000) (*)	119 57SH; 62 CH	-	17,6 11,4	Need in CH more than SH ($p<0.05$)	3	25,8 SH; 27,5 CH	3,2-3,5	NA	17,1 vs 22,9
Mehigan-Hartley (2000)	20 (M.6, F.14)	57.1	18	2.1 VAS (0.2-7.6)	10 week	10% (early)	5% (1/20 px.)	24 h. (60% px. first 24 h)	17
Rowsell, Hemingway (2000) (*) SH vs CH	44 22SH; 22 CH	-	17	No need	6	Same for both	none	1,09 vs 2,82	8,1 vs16,9
This study	29	36	14.6	2.6 VAS	6.5	31% early, 3.5% late	3.5% (1/29 px.)	48 h.(48h.-4 days)	14

(*) : **SH**: Stapled Hemorrhoidectomy; **CH**: Conventional Hemorrhoidectomy That was a comparing study for both group NA: Not Applicable

reduced than that underwent the surgical hemorrhoidectomy (17 days to 34 days) (7). Hunt and Hewett stated 50% of patients were unhappy to go home on the day of the surgical procedure called the day case of hemorrhoidectomy (8). Rowsell and colleagues declared hospitalization for the patients undergoing stapled hemorrhoidectomy was less than that for the patients undergoing conventional hemorrhoidectomy (1.09 versus 2.82 days). Moreover former group of patients returned to their normal life early (14,16).

Patankar, Ferrara, and Larach stated surgical hemorrhoidectomy was the third diagnostic reason (20%), why the patients experienced anal incontinence in their series (13). Bennett and Golliger (1962) showed minor defects of anal control in 26% patients with in the minimum follow up of 4 years, after performing Morgan-Milligan hemorrhoidectomy (7). Justin and Armitage (1999) stated 7.5% of patients in their series experienced the Kamm incontinence score of greater than 11 at follow up of 5 years (13). In the other hand the study from Taiwan (Chen, 1999) stated although minimally resting pressure was significantly decreased in the patients in post-hemorrhoidectomy period no major incontinence was noted (4). Ho and Seow-Cohen in their study searched how was the anal functions affected after stapled hemorrhoidectomy. They found changes between preoperative and postoperative anal manometry was similar (15). After performing low colorectal anastomosis by using circular stapler disorders of the anal functions could be demonstrated endosonographically. In same study Ho and Seow-Cohen showed the internal anal sphincter defect by endoanal ultrasound. But the patients were asymptomatic. The continence also has been thought as the short-term duration and self-limiting event in follow up period (7,9,14). In this study the anal functional status was obtained according to the Kamm's anal incontinence matrix (Carapeti, Cahill and Kamm, 1999) before performing this procedure (12). We found disorders of anal functions in two patients before performing stapled hemorrhoidectomy. Both complained gas incontinence and mucus soiling one or three times a week (Kamm's score translated to 6). During the follow up period one of two patients, undergoing prior anal surgery for anal fissure, kept experiencing gas incontinence more than one in last 4 weeks (Kamm's score was 3), after stapled hemorrhoidectomy. The severity of disorder of her anal function has decreased in the follow up period. Long term follow up of stapled hemorrhoidectomy on anal function needs further study.

Seven patients used to take laxatives or bulking agent before the procedure. Stool softeners were given to patients in order to prevent pain during the first bowel movement. Patients had also taken stool softeners in 5 days postoperatively. Soft stools made patients defecate easily after the operation. In the first and second outpatient visit, patients did not suffer any degree of constipation or diarrhea. All patients stopped taking stool softeners at the end of the first month. Table 5 shows all features considering above as the important points of this study, which compares five different studies from 1998 to 2000.

Conclusion

In the hemorrhoidal diseases grade 3-4, the circular stapled procedure gave us encouraging outcomes regarding less postoperative pain, returning to normal activity in a relatively short time, improving effect on anal functions, and restoring to habits of defecation in this study. However the stapler is still expensive. Surgeons should know how difficult to use for each disorder of hemorrhoids except the patient with grade 3-4 that needs the procedure.

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