

Original Article

Impact of Placement of Anal Tampon on Quality of In-patient Care in Stapled Hemorrhoidopexy Patients: Comparison between Short-term Placement and Overnight Placement

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Key Words

Care quality;
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Purpose. Elucidate the quality of in-patient care in accordance with removal of anal tampon at different duration after stapled hemorrhoidopexy procedure.

Methods. Between 2003 and 2012, 320 patients with prolapsed hemorrhoids underwent stapled hemorrhoidopexy in a single colorectal practice. Demographic data, varying duration of placement of anal tampon (*i.e.* short-term placement, overnight placement), complication of hospital stay and satisfaction of patients, were collected from review of patient's charts and queries. Statistical analysis was utilized with chi-square test for categorical data and Mann-Whitney U-test for continuous data.

Results. There were acceptably favorable evidences in the short-term placement group (SP) than the overnight placement group (OP) in procedure-related bleeding, urinary catheterization, narcotic analgesia injection and pain intensity.

Conclusions. Based on our study, we supported that timely removal of anal tampon immediately after the patient regained the anorectal sensation would enhance the in-patient care quality and not compromise the surgical outcome of this novel surgical intervention.

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The stapled hemorrhoidopexy (SH) proposed by Longo¹ in 1998 had earned the popularized reputation in the worldwide since then as a painless and effective treatment for prolapsed hemorrhoidal disease. A lot of randomized studies have shown superior postoperative pain control, less time lapse from the work and an acceptable long-term result compared to con-

ventional hemorrhoidal surgery.²⁻⁶

Anal tampon was left intra-anally at the end of surgical procedure usually to enhance hemostasis of potential staple line hemorrhage. Nevertheless, the duration of placement of anal tampon was not completely clarified. Jongen et al.⁷ pointed out that non-significantly decreased rate of postoperative urinary reten-

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tion and significantly reduced bleeding rate in cases of no anal tampon left than the ones with anal tampon left after stapled anopexy in their 499-case study. Tenesmus, intent-to-defecation and anal discomfort were relieved most once the anal tampon was extracted in the stapled hemorrhoidopexy patients in our interior report, but no definite data could inform of us about whether the procedure-related hemorrhage rate may raise consequently. Essentially, stapled hemorrhoidopexy could provide a less painful surgical approach to treat hemorrhoidal disease.²⁻⁶ No report about increased analgesics consumption in patients with postoperative prolonged insertion of anal tampon was documented. The objective of our study was to evaluate the impact of early or late removal of anal packing on quality of in-patient care in the patients performed of staple hemorrhoidopexy at our institution.

Patients and Methods

Preoperative evaluation

The study was conducted in the Division of Colorectal Surgery, Department of Surgery, Chang Gung Memorial Hospital at Chiayi in Taiwan, and went from January 2003 to May 2012. A detailed written consent concerning surgical hemorrhoidal management was taken. Three hundred and forty-eight patients with Grade III hemorrhoids underwent stapled hemorrhoidopexy except those having any associated anorectal pathology like fissure, abscess, fistula, prominent external components, and so on. Patients were instructed to complete a postoperative pain survey using a visual analog scale (1-10) during the postoperative periods.

Operative technique

All operations were performed by well-trained proctologists at CGMH-Chiayi. All operations were performed using a Fleet[®] enema (CB Fleet Co., Inc., Lynchburg, VA, USA) preoperatively. All operations were using spinal/intravenous general anesthesia depending on their coagulation status. Patients were

placed in a lithotomy position consistently.

SH was performed using the procedure described by Longo.¹ In all cases; prolapsing hemorrhoids were reducible following spinal anesthesia and four-finger anal dilation to facilitate insertion of an anal dilator along with an obturator into the anal canal. The obturator was then removed and the pursestring suture anoscope was inserted via the dilating anoscope to facilitate placement of a circumferential pursestring suture. Special attention was paid to place the upper margin of the circular anal dilator completely above the circumferential dentate line. Once the stapler is completely closed, a vaginal examination was performed to exclude vaginal wall impingement in the female patients. With anal dilator left in the anal orifice, bleeding at the staple line was controlled by electrocauterization or a mass suture with 4-O Polysorb[®] thread (Ethicon Endo-Surgery, Inc., Cincinnati, OH, USA) over the bleeder. We placed the various numbers of stitches in the patients with the intent of hemostasis of staple line during the operative procedure. Eventually, anal tampon was left intra-anally at the end of surgical procedure to enhance hemostasis of potential staple line hemorrhage.

A small self-made rod of Vaseline[®] gauze with uniform size was placed intra-anally just across the staple line to facilitate hemostasis and removed at different duration. Intraoperative conditions in both groups, blood loss and operative duration, were documented in the operation records.

Postoperative care and patient survey

Patients were sent to a recovery room and subsequently admitted to proctologic ward for overnight observation. During the postoperative period, the following analgesics were administered: oral acetaminophen, 500 mg, four times daily and, oral mefenamic acid (ponstan acid), 250 mg, four times daily. Oral magnesium oxide, 500 mg, nightly was used to prevent firm stool passage. Intramuscular injection of meperidine (50 mg) was administered on an as-needed basis. The analgesics required (frequency and dosage) was recorded. In some patients, the Vaseline[®] rod was not removed until 6-8 h after procedure or voluntary

extraction by patients themselves at an interval less than 6-8 h after surgery or the next morning after surgery. Warm sitz bath was conducted in all the patients following extraction of anal packing and postoperative pain assessment was made consequently using a visual analog score (VAS) starting at 30 min after extraction of anal tampon (the patient fulfilled warm sitz bath), at 12 h after surgery and at 24 hours after surgery in the hospital stay. A score of 10 represented the worst pain experienced or imagined and 0 mean no suffering.⁸ Urinary retention was defined as the need for catheterization within 24 h after surgery. Catheterization was performed immediately the patient was diagnosed as urinary retention. The patients were discharged if no more adjunct narcotic analgesics would be given in the last 12 hours, and passage of the first motion after operation was not considered necessary for discharge. At the time of discharge, oral analgesics and stool softening agents, typically magnesium oxide, were prescribed. The hospital stays from both groups were recorded.

In-hospital postoperative procedure-related complications, such as urine catheterization/dysuria, stool impaction, hemorrhage and anal sepsis were documented by surgeons.

Statistical analyses

Eventually, a sum of 320 patients completed all the queries and comprehensive follow-up: 161 patients in the SP group (short-term placement, namely removing the tampon by patients themselves less than 6 h or 6-8 h by nursing staff after surgery) and 159 patients in the OP group (overnight placement, namely removing the tampon at the next morning to the surgery).

All data were tabulated and analyzed. Quantitative parameters are expressed as means \pm standard deviation. A *t*-test was applied to test for differences in means between two groups when data was normally distributed; otherwise the Mann-Whitney *U* test was utilized. A value of $p < 0.05$ was statistically significant. Additionally, the chi-square test was applied to differentiate dichotomous data for characteristics such as gender, grading... etc.

Results

A total of 320 patients enrolled to the final data analysis, 161 patients in the SP group, and 159 patients in the OP group, respectively. The demographic and clinical data of the patients are shown in Table 1. The two groups were well matched for age, sex, and symptoms of hemorrhoids. The age difference between the 2 groups was not statistically significant ($p = 0.42$, i.e., > 0.05). Neither men nor women were put in stapled hemorrhoidopexy dominantly ($p = 0.56$). Most of the patients presented with hemorrhage as their leading complaint.

Operating time, blood loss and hospital stay

The time consumption to practice stapled hemorrhoidopexy was not significantly different between these two groups: mean 21.86 minutes vs. 22.52 minutes (the SP group vs. the OP group). We calculated the blood loss delicately by the net weight of blood-soaked gauze plus the amount of blood sucked during the procedure; the blood loss of the SP group, 31.54 ± 5.58 mL (mean \pm SD), was not significantly more than that in the other group, 30.86 ± 5.14 mL (mean \pm SD), with a p value of > 0.05 . Hemorrhoidectomy is not a day-case procedure on account of the healthcare insurance constraints in Taiwan. So, we summarized the period of hospital stay in both groups and found the hospital stay was the same in the SP group (1.33 ± 0.71 days, mean \pm SD) as the OP group (1.35 ± 0.68 days, mean \pm SD). All data were presented in Table 2.

Table 1. Patients characteristics

	SP (%) N = 161	OP (%) N = 159	<i>p</i> value
Mean age (range, SD)	46.8 (19-76, 12.7)	45.9 (20-73, 12.2)	.42 > .05
Gender			.56 > .05
Male	89 (55)	89 (56)	
Female	72 (45)	70 (44)	
Leading complaints			
Bleeding	104 (65)	116 (73)	
Prolapse	57 (35)	43 (27)	

SP: Short-term Placement group; OP: Overnight Placement group; SD: Standard Deviation.

Table 2. Results of operating time, blood loss and hospital stay

	SP [mean, (SD)]	OP [mean, (SD)]	<i>p</i> value
Op duration	21.86 (3.19)	22.52 (3.78)	.71 > .05
Blood loss (mL)	31.54 (5.58)	30.86 (5.14)	.53 > .05
Hospital stay (days)	1.33 (0.71)	1.35 (0.68)	.82 > .05

Postoperative outcome

Postoperative pain intensity measurement at different post-operative periods, frequency of catheterization for urinary retention, frequency of narcotic analgesics injection required and incidence of post-operative stapling bleeding in the hospital-stay were summarized in Tables 3 and 4. The patients in the SP group experienced less pain at the first evaluation after warm sitz bath following extraction of anal tampon than the OP group, VAS: 5.85 ± 1.49 vs. 7.51 ± 1.07 (mean \pm SD), respectively. The SP group patients obviously complained of less pain at different postoperative period than the OP group by presenting the VAS as: 4.25 ± 2.63 vs. 5.71 ± 3.86 (mean \pm SD, at 12 h after surgery) and 3.76 ± 1.88 vs. 6.59 ± 2.74 (mean \pm SD, at 24 h after surgery), respectively.

Narcotic analgesics with Meperidine (50 mg/ampule) is an adjunctive pain-killing adjunctive agent to rescue the post-hemorrhoidectomy wound pain in our institution. Even though the patient had been prescribed routinely of oral pain-killer medication, the patient still required extra pain-killing agent injection. There is no need to have Meperidine injection in most of the patients in the SP group than those in the OP group (15 percents vs. 34 percents, $p = 0.02$). However, much more frequent Meperidine injection was provided in the OP group in case of the patients should have narcotic analgesics to rescue intractable pain, as was shown in Table 4.

In addition, we identified the fact that patients in the SP group need much less frequency of urinary catheterization with anal tampon intra-anally placed than OP group (14 percent vs. 32 percent, $p = 0.03$) after exclusive of the effect of the spinal anesthesia, as was shown in Table 4. In the OP group, there 4 percent of the cases brought the Foley catheter with patients

Table 3. Postoperative outcome (1)

	SP [mean, (SD)]	OP [mean, (SD)]	<i>p</i> value
VAS			
First assessment	5.85 (1.49)	7.51 (1.07)	< .001
At 12 h post-OP	4.25 (2.63)	5.71 (3.86)	< .001
At 24 h post-OP	3.76 (1.88)	6.59 (2.74)	< .001

VAS = Visual Analog Score.

Table 4. Postoperative outcome (2)

	SP (%)	OP (%)	<i>p</i> value
Narcotic analgesics inj.*			
0	137 (85)	105 (66)	.02
1	19 (12)	37 (23)	.03
2	5 (3)	9 (6)	< .01
3		5 (3)	
≥ 4		3 (2)	
Frequency of ICP**			
0	138 (86)	108 (68)	.03
1	19 (12)	29 (18)	.06
2	4 (2)	16 (10)	.02
3 + Foley catheter		6 (4)	
Staple hemorrhage***			
At removal of tampon	24 (14.9)	20 (12.6)	.38 > .05
At 12 h post-OP	13 (8.1)	13 (8.2)	.33 > .05

* inj. = injection.

** ICP = Intermittent Urinary Catheterization.

*** Staple hemorrhage = newly onset of bleeding at suture line > 25 ml in amount.

themselves to home, but no cases in the SP group had Foley catheter inserted at discharge.

Postoperative staple line hemorrhage was not common and no cases to be re-operated after stapled hemorrhoidopexy in the hospital-stay period were proposed. Both these two groups presented non-significant difference in staple bleeding rate at extraction of packing, 24 (14.9 percent) in the SP group and 20 (12.6 percent) in the OP group, respectively. At 12 hours after surgery, there was no significantly different in postoperative hemorrhage incidence between these 2 groups, 13 (8.1 percent) in the SP group and 13 (8.2 percent) in the other group. All these patients rendered spontaneously hemostatic condition with limited activity, rectal irrigation and/or Proctosedyl[®] suppository applied.

Discussion

Stapled hemorrhoidopexy (stapled anopexy, stapled hemorrhoidectomy, circular rectal mucosectomy) described by Longo¹ in 1998 was applied as an acceptable approach to treat prolapsing hemorrhoids worldwide for it has provided: 1. shorter operating time; 2. less amount of procedure-related blood loss; 3. less postoperative pain; 4. shorter hospital stay; 5. early regaining activity and returning to work and 6. acceptable complication and relapse rate.²⁻⁶ We introduced this novel technique to treat hemorrhoidal disease in Taiwan since 2001 and earned progressive reputation in treating prolapsing hemorrhoids in Taiwan for the merits and tolerable pitfalls proposed in our study.⁹ At our institution, we routinely undertook intra-anal insertion of anal tampon with a small rod of Vaseline[®] gauze at the end of surgery to reduce postoperative staple line bleeding and extract it at various period, short-term placement or overnight placement, depending on surgeon's individual preference. The surgeon took attitude towards overnight placement of anal packing for decreasing the incidence of anastomotic line hemorrhage and extent of tissue swelling around the staple line. Tenesmus, anorectal discomfort and inadequate care quality of hospital-stay care along with prolonged placement of anal tampon may be detrimental than the surgical merits the procedure carrying on. Accordingly, we would explore the impact of placement of anal tampon on quality of in-patient care in patients with stapled hemorrhoidopexy from both short-term placement of anal packing and overnight placement.

We attempted to evaluate the quality of hospital-stay care by immediate outcome of procedure, such as frequency of urinary catheterization, frequency of narcotic analgesia injection, visual analog score of pain and satisfaction of patients. Essentially, both groups had no differences on their demographic data, gender and mean age. No intra-operative blood loss, operating duration or hospital stay was observed as significantly different from the SP group to OP group.

Pain and urinary retention were commonly encountered in the patients treated surgically for hemor-

rhoidal disease, even though stapled hemorrhoidopexy could reserve less incidence and magnitude of such complications,^{2-4,6-8} which were also commonly handled by nursing staff postoperatively.

We insisted that stapled hemorrhoidopexy could provide less post-operative painful suffering than other surgical procedures in treating hemorrhoidal disease, based on literature review.²⁻⁹ But no studies could contemplate the reason why less post-operative suffering from stapled hemorrhoidopexy or the impact of anal tampon on suffering from post-operative care. We postulated that anal tampon would enhance sympathetic tone, to which the suffering may be resulted for stimulating sympathetic impulse. If the hypothesis from mentioned above was supported, it perhaps would be explained that SP group could undertake much less discomfort than the OP group for the elevated sympathetic tone induced by the anal packing in a prolonged duration with resultant prolonged suffering.

Along with the suffering, the patient had the motive to reduce pain by narcotics analgesics injection in addition to routine oral pain-killer. Therefore, we could observe much less narcotics injection in the SP group than the other group for decreasing duration of anal tampon, based on this study. In contrast to the suffering in the SP group from the more decreased sympathetic tone than the other group, patients in the SP group conferred more improving satisfaction by the present research.

The reported incidence of urinary retention after stapled hemorrhoidopexy ranges widely from less than 1 percent to more than 20 percent.^{2,3,6-9} This variation may be the result of differences between reports in the definition of urinary retention, exclusion criteria and type of anesthesia. Our overall urinary retention rate of 8.7 percent and 17.6 percent between both groups respectively were within the reported range.

Previous researches have implied that retention is because either of inhibited bladder contraction or bladder outlet obstruction.¹⁰ Perianal pain, dilatation of the anal canal, and over-distention of the bladder would trigger inhibition of the bladder detrusor muscle, inferred by Pompeius.¹⁰ Barone and Lummings, however, inferred that retention following anorectal

surgery is due to bladder outlet obstruction, which is closely related to pain, discomfort caused by anal canal packing, anxiety, and an overfilled bladder.¹¹ No difference exists in both groups concerning post-operative care except the duration of placement of anal tampon. From our study, we could understand that pain and anal discomfort is dominant significantly in the overnight placement group (shown as in Table 3), which is perhaps the offending factor provoking much more post-operative urinary retention in the OP group than the other group.

Conclusion

From this study, we postulated that short-term placement of anal tampon would enhance the in-patient care quality but not compromise the surgical outcome of this novel surgical intervention in treating the hemorrhoidal disease.

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原 著

環狀痔瘡切除術後肛門填塞物對於病患術後照護之影響：肛門填塞物術後短期置放或置放至隔夜？

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目的 本研究之目的在於環狀痔瘡切除術後何時移除肛門填塞物，對於病患術後照護最為有利。

方法 從 2003 年至 2012 年期間共 320 位病患於嘉義長庚醫院接受環狀痔瘡切除手術。病患年齡、性別、手術時間、術中出血量、肛門填塞物的置放時間、手術引起之併發症與病患術後不同時間傷口疼痛程度予以分析比較。對於不連續變項採用 chi-square 檢定，連續變項則採用 Mann-Whitney U-test 檢定之。

結果 環狀痔瘡切除術後肛門填塞物短期置放相較於置放至隔夜於下列之分析變項有其優勢：較少之間歇性導尿 (14% vs. 32%, $p = 0.03$) 與麻醉性止痛劑之施打 (15% vs. 34%, $p = 0.02$)，較為接受之術後疼痛強度 4.25 ± 2.63 vs. 5.71 ± 3.86 (術後 12 小時 $p < .001$) 與 3.76 ± 1.88 vs. 6.59 ± 2.74 (術後 24 小時, $p < .001$)。

結論 環狀痔瘡切除術後肛門填塞物短期置放有較少之術後併發症及疼痛程度，且不影響手術結果。

關鍵詞 照護品質、肛門填塞物、環狀痔瘡切除術、痔瘡。