

Review Article

High-quality nursing promotes postoperative recovery and complication reduction in patients undergoing anorectal surgery for hemorrhoids

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Abstract: Objective: This study aimed to explore the application value of high-quality nursing (HQN) in patients with hemorrhoids after operation. Methods: Altogether 174 patients with hemorrhoids admitted to our hospital from August 2016 to August 2018 were enrolled as research subjects for prospective analysis. Eighty-four cases (observation group) were treated with HQN after admission, while the other 90 cases (control group) were treated with conventional nursing. They were compared with respect to the incidence of postoperative complications, pain score, and the time of first spontaneous gas and defecation after operation. Their nursing satisfaction was surveyed upon discharge, and their hospitalization time was recorded. They were followed up for prognosis for over one year through hospital reexamination. The 1-year recurrence of hemorrhoids was recorded and the recurrence rate was calculated. Results: Compared with those in the control group, patients in the observation group had lower incidence of complications and pain score ($P < 0.050$), shorter time of spontaneous gas and defecation after operation ($P < 0.050$), higher nursing satisfaction ($P < 0.050$), and shorter hospitalization time and lower recurrence rate ($P < 0.050$). Conclusion: HQN can reduce the postoperative complications, pain, and recurrence rate of patients with hemorrhoids, and improve their nursing satisfaction, so it is worthy of promotion and application in clinical practice.

Keywords: Hemorrhoid, surgery, HQN, pain, complications

Introduction

Hemorrhoids, also known as hemorrhoids nuclear and hemorrhoidal disease, is a chronic disease of one or more soft vein masses formed by varicose veins at the bottom of the rectum and at the anal mucosa [1]. It includes internal hemorrhoids, external hemorrhoids, and mixed hemorrhoids containing both [2]. At present, the disease is a very common chronic disease worldwide, and its incidence is as high as 44% according to statistics [3]. The disease can be seen in people of any age, and there are more young people experiencing it based on recent investigations [4, 5]. Hemorrhoids can harm human health and easily cause anemia and hemorrhagic shock of different degrees [6]. More serious conditions even lead to hem-

orrhoid necrosis, resulting in systemic blood infections which endanger patient's lives [7]. Therefore, attention must be paid to the treatment of hemorrhoids. Currently, the most common method for treatment in clinical practice is surgery, which aims at removing hemorrhoid nucleus or embolizing or collapsing it with mechanical methods (such as suture and ligation) [8]. However, more and more studies have shown that the postoperative recurrence and complications of hemorrhoids are serious increasingly [9, 10], and postoperative complications (including difficult defecation, congestion, edema, and fecal incontinence) are becoming more frequent [11]. Thus, an effective intervention method is urgently needed in clinical practice to solve this problem.

Application value of high-quality nursing in hemorrhoid surgery

Based on previous studies, nursing intervention can improve the postoperative situation of tumor patients [12, 13], but there is no research to confirm whether nursing methods have any effect on the surgical treatment of patients with hemorrhoids. High-quality nursing (HQN) is a widely used nursing intervention in clinical practice. Compared with traditional nursing, HQN better higher humanized nursing and more detailed attention, and is especially suitable for postoperative nursing. According to a previous study, the application of HQN has more significant clinical efficacy after the surgical treatment of melanoma and other diseases [14]; so we speculate that its application to anorectal surgery for hemorrhoids will also achieve significant results. However, there are currently very few studies on the application of HQN interventions for this type of surgery. In order to reduce the recurrence and complications of the patients, the application value of HQN in hemorrhoid surgery was explored in this study, so as to provide reliable references for future clinical operations on patients.

Materials and methods

General information

A total of 174 patients with hemorrhoids admitted to our hospital from August 2016 to August 2018 were selected as the research subjects for prospective analysis. Inclusion criteria: those diagnosed with hemorrhoids after anorectal examination in our hospital; those receiving hemorrhoid surgery after admission; those aged 30-60 years; those with complete medical records; those willing to cooperate with the investigation at our hospital. Exclusion criteria: those complicated with tumors; those complicated with other cardiovascular and cerebrovascular diseases; those complicated with other infectious diseases; those complicated with other autoimmune dysfunction; those with failure of important organs; those complicated with mental disorders; those who had received antibiotic therapy, chemotherapy, radiotherapy, and surgery within half a year before admission; pregnant and lactating women; those who had transferred to other hospitals. Eighty-four patients (observation group) were treated with HQN after admission, while the other 90 patients (control group) were treated with conventional nursing.

Methods

Nursing for patients in the control group: Their vital signs were monitored. Whether there was hemorrhaging at the anastomotic stoma was checked every day, and wound swelling was treated. Patients with abnormal urination and defecation were reported to the attending physician in a timely manner and treated accordingly.

Nursing for patients in the observation group: A treatment and nursing manual was made and distributed to the patients after admission. The nursing staff introduced the hospital situation and disease-related knowledge to patients, and taught them the treatment plan of some common problems during the treatment. Windows were opened every day for ventilation to keep the wards comfortable. Preoperative local hot compress and warm salt baths were given to the patients for 20-30 min, with the temperature of 40-50°C. After the operation, the patients were placed in a comfortable position, where the pain was evaluated after anesthetics wore off. Different intervention measures were carried out according to pain severity (the attention of patients with slight pain could be diverted through communication and watching TV and playing music; patients with severe pain could take appropriate analgesic drugs). Hot compress, acupuncture, and other modalities were performed to relieve the pain, and the wound was cleaned regularly every day. The patients were instructed urinate and to complete simple limb exercises every 5 hours. If they still had no sense of spontaneous urination after 24 hours, they were given hot compress and massage. They were also instructed to eat more vegetables, light food, and semi-liquid food, and introduced to any postoperative actions that should be avoided as well as successful treatment cases.

Outcome measures

Major outcome measures

Incidence of postoperative complications: The complications after operation to discharge were recorded to calculate their incidence. Pain: Visual Analogue Scale (VAS) was used to assess patient pain before, 2 hours after, 1 day after, and 3 days after operation. Scoring standards (0-10 points scale) were as follows: 0

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Table 1. Comparison of general information [n (%)]

	Observation group (n=84)	Control group (n=90)	t or χ^2	P
Age (Years)	47.6±8.4	45.8±9.5	1.320	0.189
BMI (kg/m ²)	22.36±3.42	21.87±3.16	0.982	0.327
Time of onset (Years)	0.72±0.48	0.69±0.52	0.395	0.694
Smoking			0.636	0.425
Yes	48 (57.14)	46 (51.11)		
No	36 (42.86)	44 (48.89)		
Drinking			0.368	0.544
Yes	40 (47.62)	47 (52.22)		
No	44 (52.38)	43 (47.78)		
Gender			0.430	0.512
Male	52 (61.90)	60 (66.67)		
Female	32 (38.10)	30 (33.33)		
Place of residence			0.941	0.332
City	62 (73.81)	72 (80.00)		
Countryside	22 (26.19)	18 (20.00)		
Exercise habits			0.927	0.336
Yes	24 (28.57)	20 (22.22)		
No	60 (71.43)	70 (77.78)		
Hemorrhoid types			0.958	0.619
Internal hemorrhoid	29 (34.52)	26 (28.89)		
External hemorrhoid	36 (42.86)	45 (50.00)		
Mixed hemorrhoid	19 (22.62)	19 (21.11)		

Table 2. Comparison of incidence of complications [n (%)]

	Observation group (n=84)	Control group (n=90)	χ^2	P
Urinary retention	1 (1.19)	4 (4.44)		
Incision infection	1 (1.19)	3 (3.33)		
Incision swelling	2 (2.38)	5 (5.56)		
Hemorrhage	2 (2.38)	6 (6.67)		
Total incidence (%)	7.14	20.00	6.040	0.014

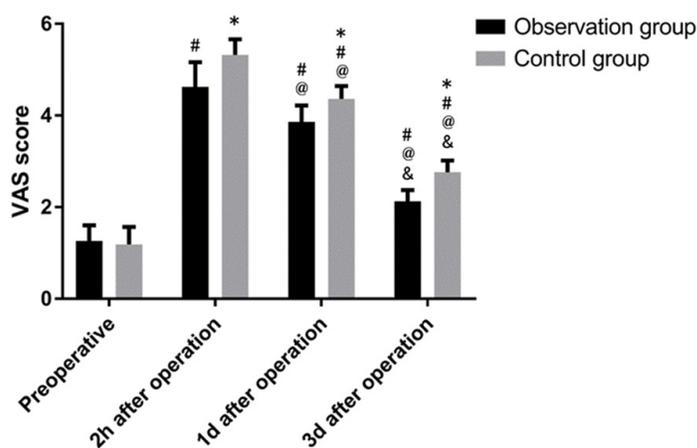


Figure 1. Comparison of VAS score. * indicates $P < 0.050$ compared with VAS score in the observation group at the same time point. # indicates $P < 0.050$ compared with VAS score in the same group before operation. @ indicates $P < 0.050$ compared with VAS score in the same group 2 hours after operation. & indicates $P < 0.050$ compared with VAS score in the same group 1 day after operation.

points was no pain; 1-3 points were slight and tolerable pain; 4-6 points were tolerable pain that affected sleep; 7-10 points were gradually sharp and intolerable pain that affected appetite and sleep. A high score indicated clear pain. Excretion: The time from after operation to first spontaneous gas and defecation was recorded.

Secondary outcome measures

Nursing satisfaction: The self-made nursing satisfaction questionnaire from our hospital was used to investigate the patients' nursing satisfaction on discharge, with a full score of 100 points. A high score indicated that they were satisfied with the nursing service. According to the score, the satisfaction was divided into satisfied (≥ 80 points), generally satisfied (61-79 points), and dissatisfied (≤ 60 points). **Hospitalization time:** Total hospitalization time was the time from admission to hospitalization. **Prognostic recurrence:** The patients in the two groups were followed up for prognosis for over one year through hospital reexamination. The 1-year recurrence of hemorrhoids was recorded and the recurrence rate was calculated.

Statistical methods

SPSS 22.0 was used to analyze and process the data. Count data were expressed in the form of (%) and chi-square test was used for their comparison between groups. Measurement data were expressed

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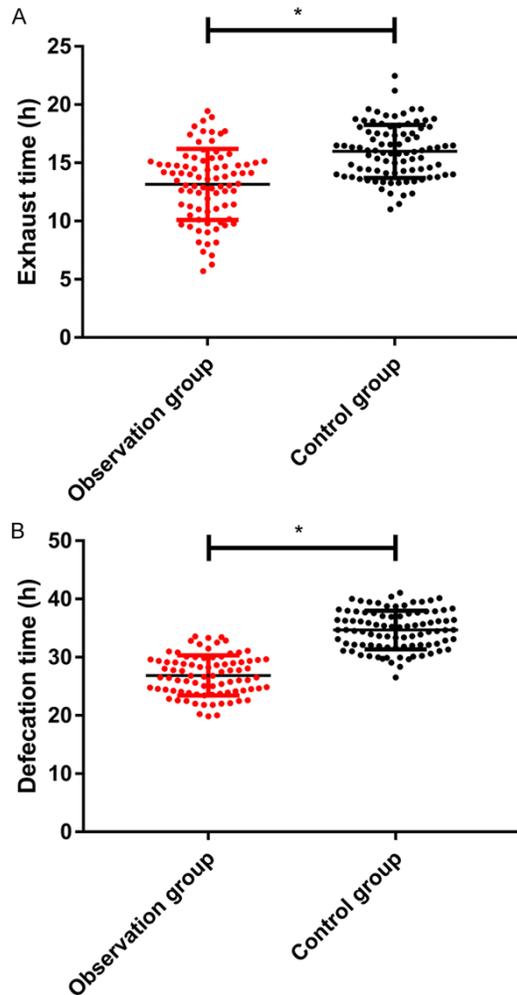


Figure 2. Comparison of excretion. A. The time of postoperative gas in the observation group was shorter than that in the control group. * indicates $P < 0.050$. B. The time of postoperative defecation in the observation group was shorter than that in the control group. * indicates $P < 0.050$.

in the form of (mean \pm standard deviation), and independent samples t test was used for their comparison between groups. One-way analysis of variance (ANOVA) and LSD post hoc test were used for the comparison between multiple groups, while repeated measures ANOVA and Bonferroni post hoc test were used for the comparison between multiple time points. When $P < 0.050$, the difference was statistically significant.

Results

Comparison of general information

There were no significant differences between the observation and control groups in terms of

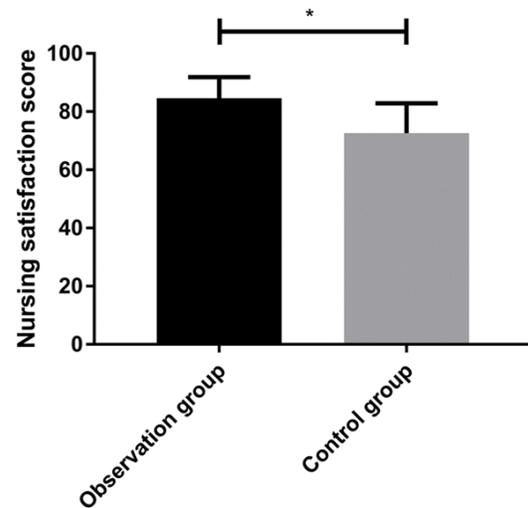


Figure 3. Comparison of nursing satisfaction score. The nursing satisfaction score in the observation group was higher than that in the control group. * indicates $P < 0.050$.

age, body mass index (BMI), time of onset, smoking, drinking, gender, place of residence, exercise habits, and hemorrhoid types ($P > 0.050$). See **Table 1**.

Comparison of incidence of complications

The incidence of complications in the observation group (7.14%) was lower than that in the control group (20.00%) ($P = 0.014$). See **Table 2**.

Comparison of pain score

There was no significant difference in VAS score between the observation and control groups before and 3 days after operation ($P > 0.050$). The score in the observation group was lower than that in the control group 2 hours and 1 day after operation ($P < 0.050$). The score in the two groups was the lowest before operation and increased 2 hours after operation; 1 day and 3 days after operation, it was lower than that 2 hours after operation ($P < 0.050$). See **Figure 1**.

Comparison of excretion

The time of postoperative gas and defecation in the observation group was shorter than that in the control group ($P < 0.050$). See **Figure 2**.

Comparison of nursing satisfaction

The nursing satisfaction score in the observation group was significantly higher than that in

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Table 3. Comparison of nursing satisfaction [n (%)]

	Observation group (n=84)	Control group (n=90)	χ^2	P
Satisfied	69 (82.14)	59 (65.56)	6.147	0.013
Generally satisfied	11 (13.10)	18 (20.00)	1.491	0.222
Dissatisfied	4 (4.76)	13 (14.44)	4.621	0.032

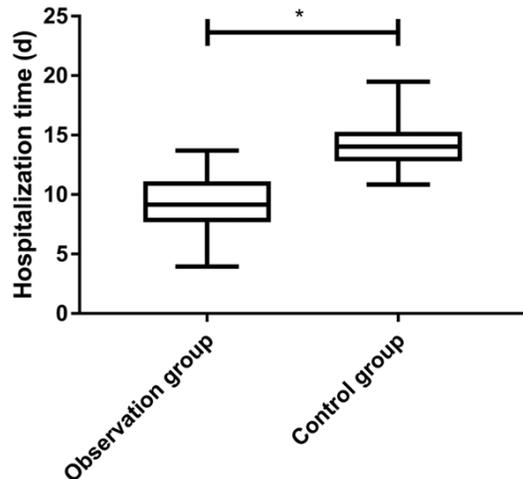


Figure 4. Comparison of hospitalization time. The hospitalization time in the observation group was shorter than that in the control group. * indicates $P < 0.050$.

the control group ($P < 0.001$). There was no difference between the two groups in generally satisfied cases ($P > 0.050$). The satisfied cases in the observation group were more than those in the control group ($P = 0.013$), while the dissatisfied cases were less than those in the control group ($P = 0.032$). See **Figure 3** and **Table 3**.

Comparison of hospitalization time

The hospitalization time in the observation group was shorter than that in the control group ($P < 0.050$). See **Figure 4**.

Comparison of recurrence rate

Patients in the two groups were followed up for prognosis for over one year. Altogether 163 patients were successfully followed up, with a success rate of 93.68%. Four cases were lost to follow-up in the observation group, 7 cases in the control group. The 1-year recurrence rate of hemorrhoids in the observation group was lower than that in the control group ($P = 0.022$). See **Table 4**.

Discussion

At present, hemorrhoids have an increasing incidence and cause increasingly serious harm to patients [15]. The disease may be caused by long-term alcoholism, unhealthy diet, bad living habits, sedentariness, and many other reasons [16]. In clinical practice, the most effective therapeutic method for it is surgical treatment, which is not difficult but easily gives rise to a series of postoperative complications due to misoperation [17]. Moreover, postoperative stress reactions are clear, leading to extreme pain [18]. Previous studies have found that nursing modes significantly relieve pain caused by chronic diseases and cardiac surgery [19, 20]. Therefore, the influence of HQN on hemorrhoid surgery was explored in this study, which is of great clinical significance.

In this study, the incidence of postoperative complications in the observation group was lower than that in the control group. This suggests that HQN can reduce postoperative complications of hemorrhoids, consistent with findings of Murphy and others. They explored the influence of HQN on heart failure and found that it reduced patients' adverse reactions [21], which support the results of our experiment. Hemorrhoid nuclear is located in the anus. A series of pathological changes accumulate local metabolites and further aggravate local edema of the anus. The necrotic hemorrhoid tissue further spreads causing necrosis of surrounding tissues, giving rise to malignant circulation [22]. Hemorrhoidectomy may not completely remove the diffused necrotic tissues, which easily results in complications such as postoperative infection and necrosis [23]. Therefore, it is pivotal to pay more attention to patients' postoperative wounds for preventing complications. HQN not only relieves patient pain through hot compress, acupuncture, and other modalities, but also significantly promotes the healing of their wounds. Moreover, postoperative guidance on urination and limb activities promotes the patients' blood circulation and gastrointestinal motility, and improves the recovery of local tissue metabolism and immune ability; thereby reducing complications. In our study, we compared the VAS score between the two groups, and found that the postoperative pain in the observation group

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Table 4. Comparison of recurrence rate

	Observation group (n=80)	Control group (n=83)	χ^2	P
Recurrence	5 (6.25)	15 (18.07)	5.289	0.022
Non-recurrence	75 (93.75)	68 (93.75)		

was significantly less than that in the control group. This shows that HQN can relieve the postoperative pain of hemorrhoid surgery, which may have two possible reasons. One is physiological intervention. Preoperative (hot compress and warm salt bath) and postoperative (acupuncture) methods fundamentally relieves patients pain. The other is psychological intervention. Preoperative communication and postoperative attention transfer reduce the degree of pain felt by patients. These two reasons resulted in a significant difference in VAS score between the two groups. The score in the two groups was the highest at 2 hours after operation, which was due to the gradual disappearance of anesthetic effect after operation and the most significant trauma and stress caused by the operation. This reveals that pain intervention in patients with hemorrhoids should be strengthened at 2 hours after operation to improve their postoperative sensations. The time of first postoperative gas and defecation in the observation group was shorter than that in the control group, which indicates that HQN has a more significant improvement effect on the patients' body function recovery. In addition, the nursing satisfaction in the observation group was significantly better than that in the control group, which also confirms the extremely important effect of HQN. Some investigations have pointed out that hospitalized patients undergoing surgery generally have a great degree of negative emotions due to their fear of diseases and operations, their uneasiness of doctors, and their pain caused by diseases [24]. This kind of negative emotion may not only affect the nursing of the patients by the medical staff, but also affect patient recovery. Therefore, eliminating the negative emotion is essential for improving nursing services. HQN requires nursing staff to actively communicate with patients and introduce the hospital situation and disease-related knowledge, so as to improve their understanding and learn to trust the medical staff imperceptibly. In addition to helping patients reduce negative emotions, it can improve their feelings about nursing; which is possibly the cause of higher nursing satisfac-

tion in the observation group. Hospitalization time in the observation group was significantly shorter than that in the control group, further confirming that HQN can shorten the rehabilitation time of the patients. According to the prognostic follow-up, the 1-year recurrence rate of hemorrhoids in the observation group was significantly lower than that in the control group, which presumably was closely related to the intervention of HQN. This nursing mode has greatly improved the therapeutic efficiency of patients with hemorrhoids through comprehensive and targeted intervention, which has proved its great clinical application prospects.

However, this experiment still has some deficiencies due to limited conditions. For instance, only conventional nursing was compared with HQN in this study, so the differences between HQN and other nursing methods may not be revealed. This will be analyzed as a key research direction in the future. Moreover, we cannot judge the impact of HQN on the long-term prognosis of patients because of the short examination period, so we will conduct a longer follow-up investigation on the research subjects in this study, so as to improve our conclusions.

Conclusion

HQN can reduce the postoperative complications, pain, and recurrence rate of patients with hemorrhoids, and improve their nursing satisfaction, so it is worthy of promotion and application in clinical practice.

Disclosure of conflict of interest

None.

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References

- [1] Sandler RS and Peery AF. Rethinking what we know about hemorrhoids. *Clin Gastroenterol Hepatol* 2019; 17: 8-15.
- [2] Mott T, Latimer K and Edwards C. Hemorrhoids: diagnosis and treatment options. *Am Fam Physician* 2018; 97: 172-179.

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- [3] Lin G, Ge Q, He X, Qi H and Xu L. A novel technique for the treatment of stages III to IV hemorrhoids: homemade anal cushion suspension clamp combined with harmonic scalpel. *Medicine (Baltimore)* 2017; 96: e7309.
- [4] Ram E, Bachar GN, Goldes Y, Joubran S and Rath-Wolfson L. Modified Doppler-guided laser procedure for the treatment of second- and third-degree hemorrhoids. *Laser Ther* 2018; 27: 137-142.
- [5] Lin LH, Siu JJ, Liao PC, Chiang JH, Chou PC, Chen HY, Ho TJ, Tsai MY, Chen YH and Chen WC. Association of chronic obstructive pulmonary disease and hemorrhoids: a nationwide cohort study. *Medicine (Baltimore)* 2017; 96: e6281.
- [6] Jacobs DO. Hemorrhoids: what are the options in 2018? *Curr Opin Gastroenterol* 2018; 34: 46-49.
- [7] Davis BR, Lee-Kong SA, Migaly J, Feingold DL and Steele SR. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the management of hemorrhoids. *Dis Colon Rectum* 2018; 61: 284-292.
- [8] Zhang G, Liang R, Wang J, Ke M, Chen Z, Huang J and Shi R. Network meta-analysis of randomized controlled trials comparing the procedure for prolapse and hemorrhoids, Milligan-Morgan hemorrhoidectomy and tissue-selecting therapy stapler in the treatment of grade III and IV internal hemorrhoids (Meta-analysis). *Int J Surg* 2020; 74: 53-60.
- [9] Trenti L, Biondo S, Galvez A, Bravo A, Cabrera J and Kreisler E. Distal Doppler-guided transanal hemorrhoidal dearterialization with mucopexy versus conventional hemorrhoidectomy for grade III and IV hemorrhoids: postoperative morbidity and long-term outcomes. *Tech Coloproctol* 2017; 21: 337-344.
- [10] Lin HC, He QL, Shao WJ, Chen XL, Peng H, Xie SK, Wang XX and Ren DL. Partial stapled hemorrhoidopexy versus circumferential stapled hemorrhoidopexy for grade III to IV prolapsing hemorrhoids: a randomized, noninferiority trial. *Dis Colon Rectum* 2019; 62: 223-233.
- [11] Iida Y, Saito H, Takashima Y, Saitou K and Munemoto Y. Procedure for prolapse and hemorrhoids (PPH) with low rectal anastomosis using a PPH 03 stapler: low rate of recurrence and postoperative complications. *Int J Colorectal Dis* 2017; 32: 1687-1692.
- [12] Shi X, Yu S, Wang F, Zhao Q, Xu H and Li B. A gastrointestinal stromal tumor with acute bleeding: management and nursing. *Medicine (Baltimore)* 2018; 97: e9874.
- [13] Cheung AT, Li WHC, Ho LLK, Ho KY, Chiu SY, Chan CG and Chung OK. Impact of brain tumor and its treatment on the physical and psychological well-being, and quality of life amongst pediatric brain tumor survivors. *Eur J Oncol Nurs* 2019; 41: 104-109.
- [14] Wouters MW, Michielin O, Bastiaannet E, Beishon M, Catalano O, Del Marmol V, Delgado-Bolton R, Dendale R, Trill MD, Ferrari A, Forsea AM, Kreckel H, Lovey J, Luyten G, Massi D, Mohr P, Oberst S, Pereira P, Prata JPP, Rutkowski P, Saarto T, Sheth S, Spurrier-Bernard G, Vuoristo MS, Costa A and Naredi P. ECCO essential requirements for quality cancer care: melanoma. *Crit Rev Oncol Hematol* 2018; 122: 164-178.
- [15] Garg P. Conservative treatment of hemorrhoids deserves more attention in guidelines and clinical practice. *Dis Colon Rectum* 2018; 61: e348.
- [16] Idrees JJ, Clapp M, Brady JT, Stein SL, Reynolds HL and Steinhagen E. Evaluating the accuracy of hemorrhoids: comparison among specialties and symptoms. *Dis Colon Rectum* 2019; 62: 867-871.
- [17] Cengiz TB and Gorgun E. Hemorrhoids: a range of treatments. *Cleve Clin J Med* 2019; 86: 612-620.
- [18] Chou A, Krukowski K, Jopson T, Zhu PJ, Costa-Mattioli M, Walter P and Rosi S. Inhibition of the integrated stress response reverses cognitive deficits after traumatic brain injury. *Proc Natl Acad Sci U S A* 2017; 114: E6420-E6426.
- [19] Berube M, Gelinac C, Choiniere M, Feeley N, Martorella G, Parent S and Streiner DL. The effect of psychological interventions on the prevention of chronic pain in adults: a systematic review protocol. *Syst Rev* 2017; 6: 190.
- [20] Moghimian M, Akbari M, Moghaddasi J and Niknajad R. Effect of digital storytelling on anxiety in patients who are candidates for open-heart surgery. *J Cardiovasc Nurs* 2019; 34: 231-235.
- [21] Murphy PB, Paskar D, Hilsden R, Koichopolos J, Mele TS; Western Ontario Research Collaborative on Acute Care S. Acute care surgery: a means for providing cost-effective, quality care for gallstone pancreatitis. *World J Emerg Surg* 2017; 12: 20.
- [22] Margetis N. Pathophysiology of internal hemorrhoids. *Ann Gastroenterol* 2019; 32: 264-272.
- [23] Yoshikawa K, Kawashima R, Hirose Y, Shibata K, Akasu T, Hagiwara N, Yokota T, Imai N, Iwaku A, Kobayashi G, Kobayashi H, Kinoshita A, Fushiya N, Kijima H, Koike K and Saruta M. Liver injury after aluminum potassium sulfate and tannic acid treatment of hemorrhoids. *World J Gastroenterol* 2017; 23: 5034-5040.
- [24] Jenkins LM, Andrewes DG, Nicholas CL, Drummond KJ, Moffat BA, Phal PM and Desmond P. Emotional reactivity following surgery to the prefrontal cortex. *J Neuropsychol* 2018; 12: 120-141.