

Management and Nursing Optimization for Patients with Abdominal Aortic Aneurysm during the Perioperative Period

Guan Wang*

*Correspondence to: Harbin Medical University First Affiliated Hospital, Harbin, 150001, Heilongjiang, China, E-mail: 49644311@qq.com

Abstract: Objective: To analyze the management and nursing measures and effects during the perioperative period of patients with abdominal aortic aneurysm. **Methods:** A total of 48 patients with abdominal aortic aneurysm admitted to our hospital from February 2023 to February 2024 were selected for the study. They were evenly divided into a control group of 24 cases, receiving routine nursing management, and an observation group of 24 cases, receiving high-quality nursing management. The nursing effects of the two groups were compared. **Results:** The patient satisfaction and knowledge scores in the observation group were significantly higher than those in the control group. The incidence of complications, SAS (Self-Rating Anxiety Scale), and SDS (Self-Rating Depression Scale) scores were significantly lower in the observation group than in the control group ($P < 0.05$). **Conclusion:** Providing high-quality nursing management to patients with abdominal aortic aneurysm can improve their psychological status and condition, enhance patient cognition and satisfaction, prevent complications, and has promotional value.

Keywords: Abdominal aortic aneurysm; High-quality nursing management; Psychological status; Complications

The main cause of abdominal aortic aneurysm is atherosclerosis, which affects the structure of the abdominal aortic wall, leading to its loss of integrity^[1]. At the same time, the narrowing of the blood vessel wall, arterial dilation, and further bulging occur. Patients generally seek medical attention for two reasons: one is the occurrence of hypovolemic shock after rupture of the tumor, and the other is the palpable pulsatile mass in the abdominal wall. This disease mostly occurs in the elderly, and with the aging population and improved quality of life in recent years, the likelihood of this disease occurring is increasing.

Surgery is necessary for the treatment of this disease, which is the only effective technique. Clinical nursing directly affects the efficacy, and adopting high-quality and refined nursing can improve the prognosis^[2]. This study focuses on patients with abdominal aortic aneurysm and analyzes the application effect of high-quality nursing management.

1. Data and Methods

1.1 General Information

A total of 48 patients with abdominal aortic aneurysm admitted to our hospital from February 2023 to



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, sharing, adaptation, distribution and reproduction in any medium or format, for any purpose, even commercially, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

February 2024 were selected for the study. They were randomly divided into two groups: the control group with 24 cases, including 13 males and 11 females, with an average age of (62.56±4.17) years, and the observation group with 24 cases, including 12 males and 12 females, with an average age of (62.65±4.08) years. There was no significant difference in general data between the two groups ($P > 0.05$), indicating comparability. All 48 patients met the diagnostic criteria for abdominal aortic aneurysm, confirmed by vascular imaging, color Doppler ultrasound, and underwent surgical treatment. Informed consent was obtained from all patients for this study.

1.2 Methods

The control group received routine nursing care, including verbal introduction of disease knowledge, explanation of the significance and general process of surgery, and timely cleaning of the environment. The observation group received high-quality nursing management based on the control group:

1.2.1 Preoperative Intervention

① Psychological intervention: Introducing the treatment of abdominal aortic aneurysm, explaining the condition, alleviating their nervousness, anxiety, etc., informing them that emotional excitement or excessive physical activity may increase intra-abdominal pressure and the risk of rupture of the tumor, helping patients establish self-protection awareness, and enhancing self-care abilities. ② Dietary care: Daily diet rich in vitamins, protein-rich, easily digestible, and low in fat to enhance surgical endurance and prevent constipation. Since general anesthesia is required for surgery, patients are advised to quit smoking to promote lung function improvement. Three days before surgery, nebulization inhalation is provided, correct coughing methods are taught, and respiratory training is conducted. ③ Preoperative preparation: Prepare the surgical area for skin preparation, blood preparation, and skin testing. In the early morning of surgery, a gastric tube is provided for gastric decompression to avoid abdominal distention, and a urinary catheter is provided to facilitate urine volume recording. Thirty minutes before the operation, antibiotics are selected for intravenous drip. ④ Pain intervention: Analyze the nature of pain, understand the location of pain, assess the degree, and determine whether its changes will

affect vital signs. Non-pharmacological interventions are adopted, including distraction, playing music, and massage. For non-shock patients, semi-recumbent position is adopted to reduce abdominal wall tension and relieve pain. Fasting is implemented to clean residual gastric contents, reduce gastric fluid and gas accumulation, and relieve abdominal distention. For patients with confirmed diagnosis and severe pain, analgesics may be provided, and the effectiveness of pain relief is evaluated while observing adverse reactions.

1.2.2 Intraoperative Intervention

Create a favorable ward environment, ensuring appropriate temperature, humidity, and adequate lighting. Cover non-surgical areas to protect patient privacy, implement thermal insulation interventions to prevent excessive heat loss, and provide psychological intervention, such as hand-holding and soothing touches, to help patients relax.

1.2.3 Postoperative Intervention

① Protection of the circulatory system: Due to vascular damage and hemodynamic abnormalities during surgery, bleeding may occur, leading to blood pressure fluctuations. High blood pressure may cause anastomotic bleeding or rupture, while low blood pressure reduces blood supply to vital organs such as the kidneys and lungs. Therefore, postoperative blood pressure fluctuations should be prevented. Monitor patient vital signs, provide electrocardiographic monitoring to ensure patient stability. Within 2 days after surgery, administer sodium nitroprusside or nitroglycerin via microinfusion pump to strictly control blood pressure within the range of 60-80mmHg (systolic) and 110-130mmHg (diastolic). Monitor the blood circulation of the lower extremities, evaluate blood perfusion, and intensively monitor for thrombus formation due to abdominal wall thrombosis and atherosclerosis, which may lead to ischemia post-surgery. Monitor both lower limbs, assess limb perfusion every 60 minutes, observe dorsalis pedis artery pulsation, measure temperature regularly, observe color changes, and provide passive care. If the lower limb temperature is too low or dorsalis pedis artery pulsation is absent or weak, perform arterial angiography or ultrasound examination, administer thrombolytic drugs, or perform surgical

thrombectomy after diagnosis. ② Respiratory intervention: For patients under general anesthesia, maintain a supine position without a pillow and tilt the head to the side. Monitor blood pressure and, if stable, transition to a semi-supine position. Ensure airway cleanliness, provide oxygen therapy with a focus on moderate-flow oxygen. Prepare nebulization devices in advance, check their functionality, and provide medications such as streptomycin for nebulization to expedite mucus clearance and teach deep breathing techniques and coughing skills to prevent lung infections. ③ Gastrointestinal care: During surgery, expose the abdominal cavity, and provide gastric decompression for patients with intestinal paralysis or acute gastric dilatation. Perform arterial ligation for the superior mesenteric artery and monitor for lesions such as the descending colon or sigmoid colon, assess for gastrointestinal bleeding or peritonitis, and evaluate drainage. For patients with abdominal distention and no gastric fluid in the gastric tube, immediately assess the tube placement. If gastrointestinal function does not recover after 3 days, administer laxatives for rectal stimulation. ④ Urinary catheter intervention: Monitor urine output within 2 days postoperatively, check blood pressure, and central venous pressure to prevent acute kidney injury. ⑤ Positional intervention: Start with a supine position, transition to a semi-supine position after stable vital signs, and encourage bed mobility after 7-10 days to prevent pseudoaneurysms and hematomas. ⑥ Complications monitoring: Prevent major bleeding by advising patients against sudden bending, shifting, or sitting up abruptly. Provide psychological counseling to prevent excessive sadness

or tension, as emotional fluctuations can trigger sympathetic nervous system activation, leading to aneurysm rupture and increased vascular anastomosis pressure. Create a good rest environment, provide hypnotics and sedatives as prescribed, and monitor their effects. Remind patients of the importance of preventing colds, avoiding increased abdominal pressure from sneezing or vigorous coughing. Provide warm honey water for constipation, offer fiber-rich foods, and prevent excessive abdominal pressure during defecation. Prepare relevant rescue medications and equipment for immediate intervention in case of aneurysm rupture.

1.3 Observation Items and Indicators

Evaluate psychological status: Using the SAS (Self-Rating Anxiety Scale) and SDS (Self-Rating Depression Scale) [3], corresponding to the level of anxiety and depression. Evaluate intervention effects [4]: Through questionnaire surveys, including patient satisfaction and relevant knowledge, scored on a scale of 0-100 points.

Evaluate complications [5]: Including infection, stress ulcers, and incisional bleeding.

1.4 Statistical Methods

Data will be processed using SPSS 27.0 statistical software.

2. Results

2.1 Comparison of Psychological Status between Two Groups Comparing SAS and SDS scores, the observation group showed significantly lower scores ($P < 0.05$). See Table 1 below [6].

Table 1 Comparison of Psychological Status between Two Groups [$n(\bar{x} \pm s)$]

Group	Number	SAS (points)		SDS (points)	
		Before Intervention	After Intervention	Before Intervention	After Intervention
Observation Group	24	57.46±4.16	32.27±3.26 ^a	55.28±4.17	30.36±3.47 ^a
Control Group	24	57.53±4.08	41.36±3.72 ^a	55.31±4.09	39.80±2.80 ^a
<i>t</i>	/	0.078	11.910	0.033	13.721
<i>P</i>	/	0.938	0.000	0.974	0.000

Note: Compared with before intervention in the same group, ^a $P < 0.05$.

2.2 Comparison of Intervention Effects and Complications between Two Groups

Comparing satisfaction and relevant knowledge scores, the observation group showed higher scores,

and comparing the incidence of complications, the observation group had a lower rate ($P < 0.05$). See Table 2 below [7].

Table 2: Comparison of Intervention Effects and Complications between Two Groups [$n(\bar{x} \pm s)/(\%)$]

Group	Number	Intervention Effect		Complication			
		Patient Satisfaction (points)	Knowledge Score (points)	Infection	Stress Ulcer	Incisional Bleeding	Incidence Rate (%)
Observation Group	24	95.51±4.47	94.43±3.22	0	0	1	4.17
Control Group	24	82.36±3.94	81.35±3.49	2	2	3	29.17
t/χ^2	/	14.302	17.851	/	/	/	5.400
P	/	0.000	0.000	/	/	/	0.020

Discussion

Abdominal aortic aneurysm (AAA) has the highest incidence among all aneurysms, characterized by thinning of the arterial wall and decreased tension, leading to permanent bulging or abnormal expansion^[8]. The main cause of AAA is degenerative changes in the arterial wall, with contributing factors including congenital diseases, arterial inflammation, and notably, smoking. Scheduled surgery for AAA carries a mortality rate of 5%-10%, and approximately half of symptomatic cases experience spontaneous rupture within 24 months.

The disease progresses rapidly with significant changes, often presenting with acute onset and accompanying negative psychological effects such as anxiety and tension in patients, leading to increased physiological stress and complicating medical care^[9]. Providing high-quality nursing management with precise and comprehensive monitoring of the patient's condition, along with proactive nursing interventions and mobilization of all available resources, can prevent nursing disputes and errors. Proactive and well-defined nursing plans, understanding the essence and objectives of nursing, and actively providing services can enhance patients' self-care abilities and preventive awareness^[10]. The results of this study demonstrate that compared to the control group, the observation group had higher patient satisfaction and knowledge scores, along with a lower incidence of complications ($P < 0.05$). This indicates that high-quality nursing management can provide patients with comprehensive, personalized care, correcting patient cognition and preventing complications. The lower SAS and SDS scores in the observation group ($P < 0.05$) suggest that this model can alleviate negative emotions, reduce mental stress, and promote stable and optimistic psychological states, providing psychological support and enhancing patient compliance. This highlights the role of high-quality

nursing management in improving the prognosis of AAA^[11].

Conclusion

In conclusion, providing high-quality nursing management to patients with abdominal aortic aneurysm can improve psychological status and disease condition, enhance patient cognition and satisfaction, and prevent complications. This approach holds significant potential for wider application and implementation.

References

- [1] Huang J, Lin XT, Duan LL, Luo XF. Nursing care of a child with multiple aneurysms caused by Ehlers-Danlos syndrome. *Contemporary Nurses*, 2024, 31(1): 82-85.
- [2] Chen SL, Zhong MH. Nursing care of three cases of Salmonella-infected abdominal aortic aneurysm during the perioperative period. *Contemporary Nurses*, 2024, 31(1): 98-102.
- [3] Jiang HY, Bai XD, Shi J, Shen J, Xie J, Zou JJ, Zhang XW. Influence of defense system intervention on psychological status and prognosis of patients with abdominal aortic aneurysm during the perioperative period. *Journal of Vascular Surgery*, 2023, 9(10): 1213-1217.
- [4] Jiang CX, Liu M, Ma W. Application of virtual reality technology in preoperative health education for abdominal aortic aneurysm intervention therapy. *Medical Theory and Practice*, 2023, 36(17): 3035-3037.
- [5] Hou D. Nursing care of a patient undergoing laparoscopic repair for type II endoleak after abdominal aortic aneurysm repair. *Contemporary Nurses*, 2023, 30(9): 148-151.
- [6] Zhai SM, Li HY, Lu QS. Nursing care of a patient with abdominal aortic aneurysm complicated with aortoenteric fistula during the perioperative period.

- Journal of Interventional Radiology*, 2023, 32(8): 807-808.
- [7] Zhou JL, Jin J, Chen ZZ, He B, Qiu HB. Postoperative psychological status and influencing factors in patients undergoing endovascular repair of thoracoabdominal aortic aneurysm. *Journal of Jilin Medicine*, 2023, 44(6): 1718-1721.
- [8] Liu JJ, Wang M. Application effect of comprehensive perioperative nursing care on patients with abdominal aortic aneurysm and its influence on anxiety and depression. *Marriage, Childbirth & Health*, 2023, 29(11): 163-165.
- [9] Li YL, He XX, Chen YJ, Kong YY. Mediating effect of coping strategies on psychological stress and negative psychology in patients with abdominal aortic aneurysm. *Chinese Medicine Science*, 2023, 13(10): 150-153.
- [10] Zhou Y, Hu QY, Cai Y, Qiao T. Nursing care of two patients with infected abdominal aortic aneurysm complicated with aortoenteric fistula undergoing "bovine pericardium" in situ reconstruction. *Journal of Nursing Science*, 2023, 30(1): 64-66.
- [11] Hong XT, Li YY. Nursing experience of 38 patients with ruptured abdominal aortic aneurysm undergoing endovascular treatment. *Smart Health*, 2022, 8(29): 166-170.