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Influence of Robot-Assisted Tumor Surgery Nursing on Patient Rehabilitation in Operating Room and Discussion on Nursing Strategies

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Abstract

Objective: To evaluate the effect of operating room nursing on the outcome of patients undergoing robot-assisted tumor surgery. **Methods:** This research starts from October 2021 to October 2022. The number of patients with robot-assisted tumor surgery included in our hospital is 769. The patients are treated in the operating room, and the prognosis of the patients is summarized. **Results:** The intraoperative blood loss in patients undergoing robot-assisted tumor surgery was (57.51 ± 12.01) ml; the operation time was (3.57 ± 0.66) h; and the hospital stay was (6.04 ± 0.53) d. There were 21 cases of complications after robot-assisted tumor surgery, accounting for 2.73%. After surgery, all robot-assisted tumor surgery patients recovered and were discharged smoothly after being checked by doctors. **Conclusion:** Robot- assisted tumor surgery nursing has a definite effect on patients' rehabilitation in the operating room.

Keywords

Robotics, Tumor Surgery, Operating Room Care, Rehabilitation

1. Introduction

Cancer is a serious disease that poses a great threat to human health, causing significant physical and psychological burdens to patients. Traditional tumor surgeries can partially treat tumors, but they also have some problems, such as large surgical trauma, severe postoperative pain, and slow functional recovery. With the continuous advancement of technology, the use of robotic-assisted surgery in tumor treatment is increasing, providing patients with a safer and more effective surgical option [1]. The application of robotic-assisted surgery in tumor treatment has achieved certain results, but there is relatively limited research on

related nursing practices. Through detailed discussions and research on nursing strategies for robotic-assisted surgery, clinical nurses can gain references to enhance their nursing skills and improve patient recovery outcomes. By conducting the in-depth analysis of the application of robotic-assisted surgery in tumor treatment and patient recovery outcomes, nurses can be guided to improve the quality of care and promote patient recovery.

1.1. Clinical Data and Methods

1.1.1. Clinical Data

This study included 769 patients who underwent robotic-assisted tumor surgery in our hospital from October 2021 to October 2022. Among them, there were 398 male patients and 371 female patients. The age range for robotic-assisted tumor surgery was from 32 to 84 years, with a mean age of (68.24 ± 11.06) years.

1.1.2. Methods

1) Preoperative Preparation for Robotic-Assisted Tumor Surgery

Before robotic-assisted surgery, nurses need to carry out a series of preoperative preparations to ensure the smooth progress of the surgery and the safety of the patients. Specific nursing strategies include the followings:

Firstly, preoperative education for robotic-assisted tumor surgery should be conducted. Nurses should provide detailed surgical information to patients and their families, including the surgical process, principles and advantages of robotic-assisted surgery, postoperative recovery, etc. Preoperative education can improve patients' and their families' understanding and confidence in the surgery, alleviate their anxiety and nervousness, and lay a foundation for the smooth progress of the surgery [2].

Secondly, preoperative assessment for robotic-assisted tumor surgery should be conducted. Nurses should conduct a comprehensive preoperative assessment of patients, including their physical condition, medical history, medication allergies, etc. Through the assessment, nurses can understand the patients' health status and potential risks, provide reference for the surgery, and take appropriate nursing measures.

Thirdly, preoperative preparation for robotic-assisted tumor surgery should be conducted. Nurses need to assist doctors in preparing for the surgery, including preparing surgical instruments, ensuring the normal operation of examination equipment, and preparing preoperative medications. Nurses also need to check the patients' physical condition, such as body temperature, blood pressure, heart rate, etc., to ensure that patients are suitable for robotic-assisted surgery.

2) Nursing in Robotic-Assisted Tumor Surgery

Robotic-assisted surgery is a complex technology, and nurses play an important role in the surgical process. Specific nursing strategies include the following:

Firstly, monitoring during robotic-assisted tumor surgery should be conducted. Nurses need to closely monitor patients' vital signs, including blood pressure, heart rate, respiration, etc., to promptly detect any abnormal conditions and take corres-

ponding nursing measures. Nurses also need to monitor the operation of surgical instruments to ensure their proper functioning [3].

Secondly, assistance during robotic-assisted tumor surgery should be conducted. Nurses need to assist doctors in surgical operations, such as providing instruments, suctioning blood, adjusting robotic arms, etc. They should be familiar with the operating process and technical aspects of the robotic-assisted surgical system, and work closely with the doctors to ensure the smooth progress of the surgery.

Thirdly, safety during robotic-assisted tumor surgery should be conducted. Nurses need to ensure a clean and safe surgical environment, follow aseptic operation standards, and prevent infections and cross-contamination. Nurses should also pay attention to possible complications and unexpected situations during the surgery, and be prepared to handle emergencies.

3) Nursing in Postoperative Rehabilitation of Robotic-Assisted Tumor Surgery

Postoperative rehabilitation nursing is an important aspect of patient recovery after robotic-assisted surgery. Specific nursing strategies include the following:

Firstly, monitoring after robotic-assisted tumor surgery should be conducted. Nurses need to closely monitor patients' vital signs and postoperative symptoms, such as postoperative pain, nausea, vomiting, etc., to promptly detect and treat postoperative complications, ensuring the safety and comfort of patients [4].

Secondly, respiratory care after robotic-assisted tumor surgery should be conducted. close monitoring of respiratory rate, depth, and rhythm, as well as monitoring oxygen saturation and carbon dioxide levels, ensuring the patient's airway remains unobstructed. This can be achieved through methods such as controlling tongue position, using suction devices to remove secretions, and assisting with artificial ventilation. For patients requiring assisted ventilation, the placement of an endotracheal tube or the performance of a tracheostomy may be necessary. Regular repositioning and changes in position help prevent pulmonary fluid accumulation and infection. Proper positioning can also assist in improving ventilation and oxygenation. Encouraging patients to cough and perform breathing exercises helps clear secretions, expand the lungs, and enhance lung function. The use of cough assist devices and respiratory training aids can provide assistance in training [5].

Thirdly, pain management after robotic-assisted tumor surgery should be conducted. Robotic-assisted surgery may result in certain levels of pain. Nurses need to select and use appropriate analgesics based on the patient's pain level and individual differences, relieving the patient's pain sensation.

Fourthly, functional recovery after robotic-assisted tumor surgery should be conducted. Nurses need to assist patients in postoperative functional recovery training, such as respiratory exercises, limb activities, etc. Nurses should develop personalized rehabilitation plans based on the patient's specific condition, and provide appropriate guidance and supervision.

Psychological support after robotic-assisted tumor surgery should be conducted.

Robotic-assisted surgery is a major operation for patients, which may cause psychological pressure and anxiety. Nurses need to provide patients with positive psychological support and encouragement, help them adjust their mindset, and enhance their confidence in recovery [6].

2. Results

In patients undergoing robotic-assisted tumor surgery, the intraoperative blood loss ranged from 50 - 100 ml, the duration of surgery ranged from 2 - 5 hours, and the length of hospital stay ranged from 4 - 8 days, as shown in **Table 1**.

Postoperatively, 8 patients experienced pancreatic fistula, accounting for 1.04%; 1 patient experienced intestinal fistula, accounting for 0.13%; 2 patients experienced rectal anastomotic fistula, accounting for 0.26%; 7 patients experienced urinary fistula, accounting for 0.91%; 3 patients experienced renal failure, accounting for 0.39%. The total number of complications after robotic-assisted tumor surgery was 21 cases, accounting for 2.73%. All patients undergoing robotic-assisted tumor surgery recovered and were discharged smoothly after examination by physicians.

3. Discussion

Robotic-assisted surgery is a technique in which a robotic system assists surgeons in performing surgical operations. The basic principle is to manipulate the robotic arms through a control console, allowing surgeons to have real-time visualization of the surgical area and perform precise operations. The first surgical robotic system, ACROBOT, was developed in 1985 for knee joint surgery and later applied to various surgical procedures. In the year 2000, the da Vinci robotic system developed by Intuitive Surgical received FDA approval and has since been used in surgical procedures such as prostate cancer surgery. In recent years, robotic-assisted tumor surgery has gradually been applied in multiple fields, including urology, gastroenterology, and gynecology, for common tumor surgeries [7].

With continuous technological advancements, robotic surgical systems have become more precise, flexible, and stable. The latest generation of robotic systems is equipped with advanced imaging technology, multi-joint robotic arms, and improved human-machine interaction. Robotic-assisted tumor surgery is now widely used in various tumor surgeries, including prostate cancer, cervical cancer, esophageal cancer, and colorectal cancer. Compared to traditional surgery,

Table 1. Clinical indicators of patients undergoing robot-assisted tumor surgery.

Indicators	Bleeding (ml)	Operation time (h)	Length of hospital stay (d)
Robot-assisted tumor surgery patients	57.51 ± 12.01	3.57 ± 0.66	6.04 ± 0.53

robotic-assisted tumor surgery offers many advantages such as high precision, minimal invasiveness, and faster recovery time, making it an important choice in routine surgical operations. Robotic systems also provide advantages in three- dimensional visualization, stability of surgical instruments, and accuracy, which can enhance the precision and safety of surgeries. The application of robotic-assisted surgery in tumor treatment is growing widely [8].

In the operating room, nursing personnel can assist the surgical team in optimizing the surgical environment under robotic assistance. They ensure the proper functioning of equipment, prepare the necessary instruments, medications, and materials, and maintain cleanliness and safety in the operating room, creating a conducive operating environment. Nursing personnel in the operating room play an important role in coordination and communication, working closely with other team members to ensure the smooth progress of the surgery. They closely collaborate with surgeons, anesthesiologists, and technologists, coordinating the efforts of all parties to ensure efficient operation in the surgical process. Nursing personnel in the operating room not only focus on surgical techniques and equipment but also care about the physical and mental well-being of patients. They provide psychological support to patients before surgery to alleviate anxiety and tension. During the surgery, they support and encourage team members through words and actions. After the surgery, they provide comfort and care to ensure comprehensive patient care.

4. Conclusion

Based on the above results, nursing care in robotic-assisted tumor surgery can effectively reduce surgical trauma and tissue damage, as well as decrease the intensity and duration of postoperative pain. Postoperative pain occurrence can be reduced through nursing interventions, leading to quicker patient recovery. Nursing care in robotic-assisted tumor surgery has a positive impact on patient recovery by reducing postoperative pain, promoting functional restoration, improving psychological well-being, and enhancing the quality of life for patients. Adequate nursing techniques play an important role in further promoting the application of robotic surgical technology and providing better care services for patients.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Xu, W., Zhao, J. and Li, Y.F. (2022) Surgical Cooperation and Postoperative Nursing Experience in the Treatment of Upper Urinary Tract Tumors with Da Vinci Robotic Surgery System. *Nursing of Integrated Traditional Chinese and Western Medicine* (*Chinese and English*), **8**, 172-174.

[2] Cai, G.F., Chen, X.L. and Sui, Y.L. (2022) Experience of Improved Posture Nursing in Robot-Assisted Laparoscopic Total Cystectomy and Ileal Bladder Surgery. *Jour-*

nal of Laparoscopic Surgery, **27**, 797-798.

[3] Liu, C.X., Qin, Y.C., He, Y., *et al*. (2022) Application of Pre-Rehabilitation Concept Based on Pre-Hospital Hospitalization Management Platform in Robot-Assisted Laparoscopic Renal Tumor Surgery. *Chinese Journal of Minimally Invasive Surgery*, **22**, 63-68.

[4] Zhang, L.F., Liu, G.J., Ma, X., *et al*. (2022) Research on Perioperative Patient Management of Robot-Assisted Laparoscopic Partial Nephrectomy. *Modern Journal of Urogenital Oncology*, **14**, 139-143.

[5] Zhou, C., Qian, X.C., Ge, C., *et al*. (2021) The Clinical Value of Rapid Recovery Surgical Nursing in Robot-Assisted Laparoscopic Radical Prostatectomy. *China Research Hospital*, **8**, 54-57.

[6] Wang, J.H., Bai, P., Wei, Y.T., *et al*. (2022) Research Progress on Body Position and Artificial Pneumoperitoneum Pressure in Robot-Assisted Laparoscopic Radical Prostatectomy. *Journal of Robotic Surgery* (*Chinese and English*), **3**, 511-517.

[7] Ding, H.R., Qian, C., Yu, Z., *et al*. (2022) Nursing Cooperation between Robot and Thoracoscopic Lung Segmentectomy under Indocyanine Green Fluorescence Imaging. *Journal of Robotic Surgery* (*Chinese and English*), **3**, 319-324.

[8] Wu, Y.N., Chen, X.M., Lin, X., *et al*. (2022) Nursing Cooperation of Complete Laparoscopic Radical Anterior Resection of the Anterior Rectum Assisted by the Fourth-Generation Da Vinci Robotic Surgical System. *General Nursing*, **20**, 3109-3112.