

ORIGINAL RESEARCH ARTICLE

Impact of comprehensive nursing on operation time of myomectomy and intraoperative blood loss of pregnant women with co-existing uterine myoma

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Abstract

We aimed to assess the impact of comprehensive nursing care on the operation time and intraoperative blood loss of pregnant women with uterine myoma. Sixty pregnant patients treated between January 2018 and September 2020 were randomly assigned to a routine nursing group or a comprehensive nursing group (n=30). The comprehensive nursing group experienced significantly reduced operation time, intraoperative blood loss, postoperative ambulation time, and overall duration of hospitalization when compared to those of the control group (P<0.001). Pain levels were also significantly lower in the comprehensive nursing group 12-48 h after operation (P<0.001). Comprehensive nursing led to significant improvements in anxiety and depression scores, with higher nursing satisfaction rates. These findings suggest that comprehensive nursing provides substantial benefits for managing the surgical and mental health outcomes of pregnant women with uterine myoma. (*Afr J Reprod Health* 2025; 29 [1]: 70-76).

Keywords: comprehensive nursing; pregnancy; surgery; uterine myomectomy

Résumé

Notre objectif était d'évaluer l'impact de soins infirmiers complets sur la durée de l'opération et la perte de sang peropératoire des femmes enceintes atteintes de myome utérin. Soixante patientes enceintes traitées entre janvier 2018 et septembre 2020 ont été assignées au hasard à un groupe de soins infirmiers de routine ou à un groupe de soins infirmiers complets (n = 30). Le groupe de soins infirmiers complets a connu une réduction significative de la durée de l'opération, de la perte de sang peropératoire, du temps de déambulation postopératoire et de la durée globale de l'hospitalisation par rapport à ceux du groupe témoin (P <0,001). Les niveaux de douleur étaient également significativement plus faibles dans le groupe de soins infirmiers complets 12 à 48 heures après l'opération (P < 0,001). Les soins infirmiers complets ont conduit à des améliorations significatives des scores d'anxiété et de dépression, avec des taux de satisfaction infirmière plus élevés. Ces résultats suggèrent que les soins infirmiers complets offrent des avantages substantiels dans la gestion des résultats chirurgicaux et de santé mentale des femmes enceintes atteintes de myome utérin. (*Afr J Reprod Health* 2025; 29 [1]: 70-76).

Mots-clés: soins infirmiers complets ; grossesse; chirurgie; myomectomie utérine

Introduction

As a clinically common benign gynaecological tumor, uterine myoma greatly endangers the physical and mental health of women¹⁻³. Patients with uterine myoma often suffer from lower abdominal pain and irregular vaginal bleeding, so the menstrual cycle is affected, and menstrual disorder occurs⁴⁻⁶. The incidence rate of uterine myoma in women of childbearing age is about 20-25%⁷. The secretion of estrogen and progesterone is

altered during pregnancy, so pregnant women are more prone to uterine myoma, which is not conducive to their pregnancy outcome⁸.

The number and mean diameter of myomas, and the location in the uterus all affect the surgical procedure and prognosis⁹. Moreover, uterine myoma expands continuously over time, which may lead to miscarriage or elevate the delivery risk^{10,11}. During operation, patients are overly nervous and have poor compliance, which thus affects the prognosis by prolonging the operation

time and sometimes increasing intraoperative blood loss¹².

Pregnant women with uterine myoma are sometimes treated by myomectomy when conservative management fails and there are severe, intractable symptoms¹³. The timing of the procedure is crucial. A study suggested that second-trimester myomectomies can be performed with favorable outcomes, though the evidence was limited¹⁴. The decision to proceed with myomectomy during pregnancy should be individualized, taking into account the size, location, and number of fibroids, as well as the severity of symptoms and gestational age. Multidisciplinary consultation and thorough counseling are essential to weigh the potential benefits and risks¹⁵. Therefore, nursing measures are needed for intervention. Different from routine nursing, comprehensive nursing is a people-oriented nursing mode based on the patient's condition, and its nursing plan is more detailed¹⁶. Comprehensive nursing provides comprehensive, standardized, and systematic intervention through the mutual cooperation of multidisciplinary staff. It is a more comprehensive and humanized nursing concept which evolves from the differentiation and integration of various medical methods¹⁷. Comprehensive nursing has been widely used for the intervention of pregnant women^{18,19}. Nevertheless, it has seldom been applied to pregnant women with uterine myoma.

Thereby motivated, we herein evaluated the effectiveness of comprehensive nursing on pregnant women undergoing myomectomy for uterine myoma, aiming to provide novel insights into relevant treatment.

Methods

Subjects

This is a single-center stratified randomized controlled study. Sixty pregnant patients with uterine myoma treated in The Second Hospital of Nanjing from January 2018 to September 2020 were enrolled and divided into two groups (n=30) using the random number table method. The calculation equation of two-independent samples t-test is $N=4\left[\frac{Z_{\alpha/2} + Z_{\beta}}{\delta}\right]^2$, where N is the required

number of samples, $Z_{\alpha/2}$ is the Z value corresponding to $\alpha=0.05$ (which is 1.96), Z_{β} is the Z value corresponding to type II error probability β (β is 0.20, so $Z_{\beta}=0.84$), and δ is the allowable error (which is generally 1.2). N was calculated as 22, so 30 cases were included for each group. All the included cases completed this study without quitting. This study was reviewed and approved by the medical ethics committee, and the patients signed informed consents.

Surgical operation

Myomectomy during pregnancy was performed for both groups under sterile surgical conditions by a team of experienced obstetric surgeons with a specialization in high-risk pregnancies. The surgical team comprised senior obstetricians with at least 10 years of experience in managing myomectomies during pregnancy, assisted by anesthesiologists specializing in obstetric anesthesia. Spinal anesthesia was predominantly used for both groups, as it minimized fetal exposure to systemic anesthetics and facilitated better perioperative hemodynamic stability. However, in select cases where spinal anesthesia was contraindicated or deemed insufficient, general anesthesia was employed. The myomectomy procedures were carefully standardized to reduce intraoperative blood loss and minimize uterine trauma.

Nursing procedure

control group received routine nursing as follows. Before operation, the nurses guided the patients to finish operation-related examinations and checked their information. During operation, the nurses actively cooperated with the surgeons and delivered surgical instruments and drugs in time. After operation, the nurses sent the patients back to their wards and handed them over to the ward nurses.

The observation group received comprehensive nursing, which provided comprehensive, standardized, and systematic intervention through the mutual cooperation of multidisciplinary staff. The components included the following (1) Psychological nursing: One day before operation, the nurses visited the patients in their wards and collected their baseline information

such as education level, and social backgrounds. Then the nurses communicated with the patients and listened carefully to them to understand their psychological feelings. Besides, the nurses analyzed the reasons for poor psychological status, based on which they appeased and enlightened the patients to adjust their mental state.

(2) Cognitive nursing: Before operation, the nurses explained the importance of operation for treating uterine myoma with the help of pictures and health manuals. They informed the patients of relevant matters needing attention in the perioperative period and explained the possible adverse conditions, so the patients were psychologically prepared. In addition, they informed the patients of prevention and countermeasures, eliminated their distrust of medical staff, and helped them establish a good psychological defense mechanism. After operation, the nurses told the patients that the operation was successful and communicated with them to answer their queries. Besides, the nurses explained postoperative points for attention to the patients and then sent them back to their wards.

(3) Emotional support from family: The nurses communicated with the family members, highlighted the advantages of family companionship for controlling the patients' condition and instructed the family members to accompany them as much as possible in the perioperative period and to give more attention and care.

(4) Strengthened intraoperative nursing: The operation was conducted strictly in accordance with aseptic operation standards. The vital signs of the patients, such as pupils and heart rate, were closely monitored. The fetal heart rate was monitored. The nurses monitored the patients' body temperature closely. Once the body temperature declined, the nurses provided heating blankets or heaters. Besides, the nurses were responsible for heating the infusion fluid during operation to avoid the body temperature being affected.

(5) Postoperative pain nursing: According to the age, education level, and understanding ability of patients, the nurses explained the causes of pain after myomectomy in detail and introduced some operable analgesia methods. Moreover, they instructed the patients to take deep breaths and relax

their muscles as much as possible. In addition, they selected and played soothing and pleasant music for the patients based on their preferences and adjusted the volume according to the environment. With the music, the nurses guided the patients to gently close their eyes and relax their bodies.

(6) Postoperative dietary guidance: The nurses guided the patients on postoperative dietary to mainly have liquid food in the early stage. Afterwards, semi-liquid food and ordinary food were gradually taken according to specific conditions. Vitamin- and protein-rich food was selected to ensure adequate daily intake of nutrients. Spicy and frozen food was avoided.

Observation of operation time, intraoperative blood loss, and postoperative recovery time

The operation time, intraoperative blood loss, and postoperative recovery time (including postoperative ambulation time and hospitalization time) were recorded.

Assessment of postoperative pain score

The visual analogue scale was employed to evaluate the pain of patients 12, 24, 36, and 48 h after operation. The score ranged from 0 to 10 points (0 point = no pain, 10 points = severe and even intolerable pain). A higher score meant more severe pain.

Assessment of mental state scores

The mental state scores included anxiety and depression scores²⁰. The self-rating anxiety scale (SAS) was employed to evaluate anxiety (total score = 100 points, critical value = 50 points). A higher score indicated a higher degree of anxiety. The self-rating depression scale (SDS) was utilized to assess depression (total score = 100 points, critical value = 53 points). A higher score suggested a higher degree of depression.

Assessment of nursing satisfaction rate

A self-made questionnaire (validity = 0.90, reliability = 0.88) was used to evaluate the nursing satisfaction rate of patients. The highest score was 100 points, and the critical values included 60 and

80 points (<60 points = unsatisfied, 60-80 points = generally satisfied, >80 points = very satisfied). Total satisfaction rate = very satisfied rate + generally satisfied rate.

Statistical analysis

SPSS 22.0 software was utilized for statistical analysis. The measurement data were expressed as mean \pm standard deviation ($\bar{x} \pm s$), and the *t*-test was conducted for intergroup comparison. The count data (n) were compared by the χ^2 test. $P < 0.05$ suggested that a difference was statistically significant.

Results

Baseline clinical data

The age of patients in the control group ranged from 21-35 years old, with a mean (sd) of (28.05 \pm 3.49) years old, while the range of the size of the uterine myoma was 1.5-4.7 cm. In terms of the American Society of Anesthesiologists (ASA) grade²¹, there were 8 cases in grade I, 12 cases in grade II, and 10 cases in grade III. By contrast, the age of patients in the observation group ranged from 20-35 years, with a mean (sd) of (27.96 \pm 3.52) years old, while the range of the size of the uterine myoma was 1.3-4.8 cm. In terms of the ASA grade, there were 7 cases in grade I, 14 cases in grade II, and 9 cases in grade III. There were no significant differences in the age, uterine myoma diameter, or ASA grade between the two groups ($P > 0.05$).

Operation time, intraoperative blood loss, and postoperative recovery time

Compared with the control group, the observation group had significantly shorter operation time, postoperative ambulation time, and hospitalization time ($P < 0.001$) and a smaller amount of intraoperative blood loss ($P < 0.001$) (Table 1). Therefore, comprehensive nursing shortened the operation time, postoperative ambulation time, and hospitalization time and decreased intraoperative blood loss.

Postoperative pain scores

The pain score of the observation group was lower than that of the control group 12-48 h after operation ($P < 0.001$) (Table 2). Thus, comprehensive nursing better relieved postoperative pain.

Mental state scores

After nursing, the SAS and SDS scores dropped significantly in both groups compared with those before nursing ($P < 0.001$), and they were lower in the observation group than those in the control group ($P < 0.001$) (Table 3). In short, comprehensive nursing improved the mental state more effectively.

Nursing satisfaction rates

The total nursing satisfaction rate of the observation group was higher than that of the control group (96.67% vs. 80.00%, $P = 0.044$) (Table 4). Hence, comprehensive nursing better augmented the satisfaction degree.

Discussion

As the main treatment method for uterine myoma in clinical practice, myomectomy can effectively remove uterine myoma and control its progression^{22,23}. Due to the special conditions of pregnant patients with uterine myoma, the risk of myomectomy is higher than that of non-pregnant women. In addition, the patients are prone to negative emotions in the perioperative period, so their postoperative recovery is affected.

Comprehensive nursing emphasizes that attention should be paid to the comprehensiveness of formulating a nursing plan and that various nursing measures should be integrated into a systematic plan²⁴. Moreover, this nursing method makes up for the lack of pertinence and incomprehensiveness of routine nursing measures in the operating room^{25,26}. Comprehensive nursing works through the efficient cooperation of multidisciplinary staff¹⁷.

Table 1: Operation time, intraoperative blood loss and postoperative recovery time of two groups ($\bar{x} \pm s$)

Group	Operation time (min)	Intraoperative blood loss (mL)	Postoperative ambulation time (d)	Hospitalization time (d)
Control (n=30)	72.59±10.42	34.61±9.56	4.53±0.76	13.65±3.26
Observation (n=30)	60.98±11.29	22.37±7.14	3.67±0.69	10.21±2.87
<i>T</i>	4.139	5.619	4.589	4.338
<i>P</i>	<0.001	<0.001	<0.001	<0.001

Table 2: Postoperative pain scores of two groups ($\bar{x} \pm s$, point)

Group	Pain score 12 h after operation	24 h after operation	36 h after operation	48 h after operation
Control (n=30)	4.61±1.23	4.12±1.25	3.70±1.16	3.19±1.05
Observation (n=30)	3.52±1.04	2.99±0.97	2.64±0.87	2.20±0.73
<i>T</i>	3.706	3.912	4.004	4.240
<i>P</i>	<0.001	<0.001	<0.001	<0.001

Table 3: Mental state scores of two groups ($\bar{x} \pm s$, point)

Group	SAS score		SDS score	
	Before nursing	After nursing	Before nursing	After nursing
Control (n=30)	54.57±6.91	47.23±5.47	55.28±6.74	48.37±5.86
Observation (n=30)	54.38±6.95	41.68±4.83	55.09±6.80	42.50±5.19
<i>T</i>	0.106	4.166	0.109	4.107
<i>P</i>	0.916	<0.001	0.914	<0.001

Table 4: Nursing satisfaction rates of two groups [n(%)]

Group	n	Very satisfied	Generally satisfied	Dissatisfied	Total satisfaction rate
Control	30	12 (40.00%)	12 (40.00%)	6 (20.00%)	24 (80.00%)
Observation	30	15 (50.00%)	14 (46.67%)	1 (3.33%)	29 (96.67%)
χ^2					4.043
<i>P</i>					0.044

Individualized management is performed by establishing a professional team including obstetricians, gynecologists, psychologists, sports instructors, nutritionists, and nursing staff²⁷. On the one hand, this method strengthens the interaction and cooperation among various departments through the participation of multidisciplinary personnel in evaluating patients and determining the nursing plan. On the other hand, psychological, cognitive, diet, and rehabilitation nursing is conducted for patients to strengthen their awareness of diseases, maintain a good attitude and comply with treatment²⁸.

In this study, comprehensive nursing was carried out for the observation group. The operation time, postoperative ambulation time, and hospitalization time of the observation group were

significantly shorter than those of the control group. Besides, the amount of intraoperative blood loss was smaller in the observation group than that in the control group. Probably, the enhanced intraoperative nursing in a comprehensive nursing plan better ensured the operation procedure and facilitated the physical function recovery of patients²⁹. Based on multidisciplinary collaboration, comprehensive nursing deepens the understanding of surgery and improves compliance with surgery, finally shortening the operation time and reducing intraoperative blood loss.

The pain score of the observation group was significantly lower than that of the control group 12-48 h after operation, mainly because the pain nursing in a comprehensive nursing plan relaxed the patients physically and mentally and relieved their

physical discomfort³⁰. Additionally, the SAS and SDS scores of the observation group were significantly lower than those of the control group after nursing. Possibly, the comprehensive nursing plan focused on the intervention of psychological problems, and targeted comfort and counseling were carried out according to the psychological changes of patients, which helped adjust their mental state³¹. Moreover, family emotional support made the patients feel more at ease and stay away from excessive anxiety³². Lastly, the total nursing satisfaction rate was higher in the observation group than that in the control group, mostly because the comprehensive nursing plan improved the patients' perioperative mental state, relieved their physical discomfort, and rendered them more satisfied with the nursing service³³.

The strengths of this study include its focus on an understudied high-risk population, as well as the use of standardized protocols for surgery and nursing care. However, the limitations include a single-center design, a relatively small sample size limiting generalizability, and a short follow-up period, restricting insights into long-term maternal and neonatal outcomes. In the future, hospitals may consider using this approach as part of standard practice, supported by policies promoting multidisciplinary care and specialized nursing training. The findings should be verified by conducting more multicenter prospective studies with large sample sizes.

Conclusion

Comprehensive nursing not only shortens the operation time of patients with pregnancy complicated with uterine myoma, reduces intraoperative blood loss and accelerates postoperative recovery, but also relieves postoperative pain and improves the mental state and satisfaction of patients.

Author contributions

Yan Pan and Ge Han contributed significantly to the study's conception and design. Yan Pan performed the data collection and analysis and drafted the initial manuscript. Ge Han provided supervision, revised the manuscript critically for

important intellectual content, and ensured the accuracy of the data analysis. Both authors collaborated on interpreting the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

Conflict of interest

The authors declare no competing interests.

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