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Original Article

Assessment of Clinical Effect of Perioperative Comprehensive Nursing Intervention Pattern in 23G Minimally Invasive Vitreous Surgery

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Abstract

Background: We observed the clinical effects of comprehensive nursing intervention pattern in 23G minimally invasive vitreous surgery according to the comprehensive nursing intervention table developed by our hospital, which would supply a basis for its clinical application.

Methods: In this prospective study, we followed 120 patients undergoing 23G minimally invasive vitreous surgery from Xuzhou First People's Hospital from February 2013 to February 2015 and divided them into control and observation groups by a random number table (60 patients in each group). A regular nursing pattern was adopted for the control group, and a comprehensive nursing intervention pattern was adopted for the observation group. After that, a comparative analysis was made to identify the differences between the clinical effects of the two groups.

Results: Scores of cognition ratio, patient compliance and comfort level of patients in the observation group were higher than those of the control group were, and there was significant difference between the groups ($P < 0.05$). Complication incidence of the observation group is significantly lower than that of the control group ($P < 0.05$).

Conclusion: The comprehensive nursing intervention pattern developed by our hospital can improve clinical effects notably, which is of application value .We recommend it to be applied in eye diseases.

Keywords: Comprehensive nursing intervention, 23G minimally invasive vitreous surgery, Perioperative period

Introduction

Currently, "minimally invasive" vitreous surgery is widely applied to treat eye diseases, such as malignant glaucoma, vitreous opacity, vitreous hemorrhage, cataract surgery, posterior capsule rupture, macular hole, retinal detachment, proliferative diabetic retinopathy as well as others (1). Clinical practice suggests that the clinical outcome and quality of life of patients can be further improved if nursing measures and health education with predictation, systematism, sequence, and standard was applied in 23G minimally invasive vitreous surgery, although the surgery has advantages including small incision size, little trauma and quick recovery (2). A comprehensive nursing intervention is a standardized and programmed nursing process designed for specific diseases with the

combination of clinical practices according to the practical situation of the hospital. Nurses are required to abide strictly by the operation regularities and procedures when taking care of patients, which can remarkably improve clinical outcomes and quality of life of patients (3). Different patterns of comprehensive nursing intervention are applied after orthopedic operations or during the treatment of diseases such as cardiovascular disease and diabetes. Such nursing interventions have achieved great effects (4).

Our hospital has developed comprehensive nursing interventions based on practical situations and previous research, and applied it to 23G minimally invasive vitreous surgery. Our detailed results are summarized in the present communication.

Methods

Overall, 168 patients (mean age 44.2 yr old ± 15.6 years; 92 males and 76 females) who had undergone 23G minimally invasive vitreous surgery at the Xuzhou First People's Hospital from February 2013 to February 2015 were chosen. Among them, 120 patients were included in this study and 48 were excluded due to serious cardiovascular or cerebrovascular diseases among other criteria. Inclusion criteria were patients with retinal detachment, vitreous hemorrhage, endophthalmitis, or proliferative diabetic retinopathy who required 23G minimally invasive vitreous surgeries were chosen as medical cases. Exclusion criteria were patients with serious cardiovascular or cerebrovascular diseases, mental disturbances, and patients unwilling to cooperate. Totally, 120 patients were randomly divided into the control group (35 males and 25 females, aged 23-66 yr old, average age of 44.2 ± 15.6 yr) and the observation group (38 males and 22 females, aged 19-68 yr, average age of 44.2 ± 15.6 yr). There were no significant differences in sex and age. Approval and fully informed counseled consent was obtained from the ethical committee of Xuzhou First People's Hospital (NO. 2015XL016). Moreover, the investigators of the study received the informed consent of patients and their families. Patient confidentiality was maintained.

In the control group, 42 underwent surgery on a single eye and 18 underwent surgery on both eyes. In the observation group, 39 underwent surgery on a single eye and 21 underwent surgery on both eyes. Operations on all the patients were performed strictly according to the procedures of the 23G minimally invasive vitreous surgery (Millennium, Bausch & Lomb, US). Regular nursing patterns were adopted for the control group, and comprehensive nursing intervention pattern were adopted for the observation group.

Regular nursing pattern

Preoperative preparation was made according to the surgical characteristics and the following demands were made: fasting for 12 h, forbidding drink for 6 h, getting sufficient sleep, administering appropriate oral sedation drugs given for sleep disorders, become informed of the operation process, possible complications and symptomatic treatment, and psychological counseling to ease tension anxiety. Intraoperative monitoring of changes in vital signs, postoperative anesthesia recovery and heat preservation was recorded. Wounds were regularly cleaned after surgery and disinfected. Furthermore, attention was paid to light and sound on the wards, nutrition was improved, the needs of the patients were addressed.

Comprehensive Nursing Intervention Pattern

Questionnaires to assess of the patient's (who had undergone the operation) knowledge of disease was formulated, medical cases were chosen, and interviews were conducted. A questionnaire survey method was adopted. The study protocol consisted of four times: admission date, day before operation, operation date, and day before discharge. The research was carried out from 6 items and 30 parameters including environment, inspection, treatment, medicine, diet, activities, etc. According to our results, improved patient care occurred when patients had a solid understanding of disease and their needs in the different phases were known. We designed a comprehensive nursing intervention for patients who had undergone 23G minimally invasive vitreous surgeries - according to the needs of the patients during the

different phases of treatment. The table includes correct knowledge of disease, contrast of treatment methods and their advantages and disadvantages, surgery indication, complications, nursing requirements before, during and after surgery, postural activity, and diet control, among other things. Evaluation was made by the nurse on duty after following the entire process. Patients need to know the details of nursing procedures and nursing operations related to surgery, taking the initiative in participating in the nursing process, thereby enhancing the awareness and ability of self-caring, and promoting optimal nursing effect. Nurses and patients communicate mutually for the benefit of each other, which can successfully integrate initiative nursing with initiative participation. Combined with health education, the process is carried out predictably in a planned way, which enables patients to have solid knowledge of disease and health of different phases and to cooperate better with treatment and nursing, thus facilitating the treatment during hospitalization and post-hospital rehabilitation (Table 1).

Observation Index

The comparative analysis of the differences were made between the two groups in terms of knowledge of disease, treatment compliance, comfort level, satisfaction, incidence of complications, days of hospitalization, and hospitalization expenses.

Statistical Analysis

Data were analyzed with SPSS19.0 statistic software (IBM Company, New York, US), data were represented by mean ± standard deviation, *t*-test was adopted to examine the comparison of the two groups, sample size or percentage were adopted to examine the numeration data, X^2 was adopted to examine the comparison of the two groups. $P < 0.05$ was considered statistically significant.

Results

We first compared the two groups in terms of disease knowledge, treatment compliance, and comfort level. The scores of the observation group are notably higher than the control group in terms of disease knowledge, treatment compliance and comfort level. The differences were statistically significant ($P < 0.05$) (Table 2).

Next, we compared the two groups in terms of satisfaction and the incidence of complication. The scores of the observation group are notably higher than the control group in satisfaction, whereas the total incidence of complications (including infection, hemorrhage, rise in intraocular pressure, and failure of operation) is lower than that of control group. The differences for each parameter attained statistical significance ($P < 0.05$) (Table 3).

Finally, we compared the two groups in terms of days of hospitalization and expenses related to hospitalization. The expenses of the observation group were significantly less than those of the control group were. The differences reached statistical significance ($P < 0.05$) (Table 4).

Discussion

Currently, many local hospitals and hospitals abroad are working towards applying comprehensive nursing interventions in the nursing regimen of clinical diseases, and beneficial results have been achieved (5). No research related to the comprehensive nursing intervention of the 23G minimally invasive vitreous surgery has been published. In recent years, our hospital has been gradually designing comprehensive nursing interventions, applying it to the 23G minimally invasive vitreous surgery, and steadily improving it.

In this study, we took the lead in formulating scientific and practical comprehensive nursing interventions specifically for patients who have undergone operations of this kind (i.e. vitrectomy).

Tables were sent to nurses, and following training sessions, they treated the patients. The scores of patients in the observation group were significantly higher than in the control group in terms of disease knowledge, treatment compliance, and comfort level.

Table 1: Comprehensive nursing intervention of 23G minimally invasive vitreous surgery

Time	The first day of hospitalization	The second day of hospitalization—the day before operation	The day of operation	The first day after operation—the day before discharge	The day of discharge
Health Publicity and Education	□introduction of environment □instruction of hospitalization □ doctor in charge □ duty nurse □ rules and regulations □ publicity and education of safety □ prevention of tumbling □ knowledge on disease □ instruction of medicine use □ instruction of health □ instruction of inspection □ instruction of diet □ instruction of body position	□ instruction of inspection □ instruction of medicine use □ operation time □ preparation and cooperation before operation □ cooperation of operation □ methods of inhibiting cough and sneeze □ purpose and method of using subsidiary beddings and "head position monitor"	□ general situation of operation □ instruction of safety □ instruction of medicine use □ instruction of decubitus □complications and methods of prevention □ instruction of diet	□ instruction of body position □ instruction of medicine use ： □adverse reaction should be reported if partes lacrimalis is pressed after using Atropine □ adverse reaction of methazolamide and prevention □ using emphasis of mannitol □others □ instruction of safety □ tumbling and falling from bed □ burn □ pressure sore □ deep venous thrombosis □ others □ prevention of constipation	□ procedure of discharge □ instruction of recovery □ continue to control general disease □ instruction of medicine use □ name of medicine □ eye-dropping method □ frequency of medicine use □ matters need attention □ instruction of diet □ prevention of constipation □ instruction of body position □ instruction of activity □ instruction of reexamination □ time, place, method □ re-exam in time when abnormalities happens：red-eyed, swelling, sore eyes, blur vision, visual acuity decrease, shadow expansion, corruscation, secretion increase etc. □ patients need eye sight examination and glasses making after reexamination 3 months later if necessary □ See doctors in time if abnormalities are not caused by operation
Nursing and Handling	□ assistance □make skin and hair Clean □ change patient's gown □ pare finger nails □ shave beard □ evaluate nursing of hospital □ T、P、R、BP □ weight □ vision □ circumstances of special section □ evaluate knowledge of health □ evaluate safety	□ inspect every 1–2 hours □ evaluate knowledge of health □ collect hematuria sample, complete inspection □ use eye-drop and medicine according to doctor's advice □use medicine for general disease and observe □ observe and control blood pressure and blood sugar □ be informed of examination results □ living nursing □ mental guidance The day before operation： □ preparation before operation □ cut lashes	Before operation： □ T、P、R、BP □ eliminate influential factors of operation □ Use eye-drop and mydriatic according to doctor's advice □ use antibiotic and stancher according to doctor's advice □ take off removable artificial teeth □ take off hair clips, place the hair behind ears □ take off metal accessories □ wear cotton underclothes, no clothes with polo-neck or hard collar □ change into operating gown □ complete preparation and sign □ prepare records and medicine used during operation	□ inspect every 2–3 hours □ T、P、R、BP □ continue to control general disease □ observation： □ neatness of eye dressings □ secretion □ vision □ horizon □ intraocular pressure □ situation of conjunctival congestion □ healing of puncturing site □ use medicine according to doctor's advice and observe □ observe and take care of the pressed parts □ alleviate unconformity caused by	□ evaluate knowledge of health □ assist in changing patient's gown □ assist in complete discharging formalities □ complete nursing records □ escort patient to leave the ward

	□ evaluate self-care ability □ evaluate mental conditions □ Exclude organic operation influence indication □ make nursing records □ assistant inspection： □ vision □ ocular pressure □ eyeground □ type-B ultrasonic of eyes □FFA、OCT □ electrocardiogram □ X-ray of chest □others □ Use antimicrobial and mydriatic eyedrop according to doctor's advice □inspect every 1-2 hours	□ rinse lacrimal passages □ rinse conjunctival sac □ others □ wear wrist strap □ adaptation training of prone-position □ instruct use methods of bedding and head position monitor □ assist in clearing □ medicine use at the night before operation □ make nursing records	□ remind patient of defecation before operation □ complete transition with staff of operating room □ escort patient into operating room After operation： □complete transition with operating room □ for general anesthesia operation, adopt nursing regulations of general anesthesia □ T、P、R、BP □ observe general situation □ continue to control blood sugar, blood pressure and general disease □ local inspection □ eye surgery dressing □ conjunctiva □secretion □ intraocular pressure □pain □ use medicine correctly and observe □ evaluate safety and instruct □self-care ability □tumbling, falling from bed □pressure sores □ living nursing □ mental guidance □ inspect every 1-2 hours □ make nursing records	forced body position with physiotherapy □ living nursing □ evaluate safety □ evaluate pain □ evaluate knowledge of health □ make nursing records	
Body position and Movement	□ reduce movement □ body position： □ put the hiatus at the highest place □ determine body position according to doctor's advice □ liberal position	□ reduce movement □ body position： □ put the hiatus at the highest place □ determine body position according to doctor's advice □ liberal position □ avoid coughing, sneezing and exertion defecation □ guarantee high-quality rest and sleep	□ Adopt horizontal position after general anesthesia, head positioned toward non-hiatus side; adopt correct position after waking up according to doctor's advice □ adopt prostrate position or adopt correct positions according to doctor's advice □ movement in bed □ avoid coughing, sneezing, overexerting and head-shocking □ use assistant beddings correctly □ use "head position monitor" correctly	□ maintain correct body position and time □ change body position in less than every 2 hours □ avoid coughing, sneezing, overexerting and head-shocking □ use "head position monitor" correctly	□ maintain correct body position and time till the changes of doctor's advice after re-examination □ avoid coughing, sneezing, overexerting and head-shocking □ avoid strenuous exercise □ avoid eye wound □ use assistant beddings correctly □ continue to use "head position monitor" □ high-altitude flying is forbidden in 40 days for patients injected with inert gas
Diet	□ soft diet □ laboratory examination needs to be done in the next morning with empty stomach, fast after 00:00	□ soft diet □ Fast for 6 hours and drink no water for 4 hours before general anesthesia operation	□ Fast for 6 hours and drink no water for 4 hours before general anesthesia operation □ avoid over-eating before local anesthesia, control intake amount of liquid. □ insipid and digestible soft diet □ avoid spicy food	□ avoid intake of too much water in short time period, which can cause intraocular pressure rise □ insipid and digestible soft diet □ food with coarse fiber and nutrition □ increase intake of fruit and vegetables, prevent constipation □ avoid spicy food	□ insipid and digestible soft diet

Table 2: Comparison between the two groups in terms of knowledge of disease, treatment compliance and comfort level

Group	Sample size	Cognition of disease [number (%)]	Treatment compliance [number (%)]	Comfort level (score)
Control group	60	36 (60.0)	43 (71.7)	82.4 ± 11.2
Observation group	60	49 (81.7)	52 (86.7)	92.7 ± 12.6
t (X^2)		3.264	3.625	4.252
P		0.028	0.019	< 0.001

Table 3: Comparison between the two groups in terms of satisfaction and incidence of complication

Group	Sample size	Satisfaction (score)	Infection	Hemorrhage	Intraocular pressure rise	Failure of operation	Total incidence of complication (%)
Control group	60	86.4 ± 12.5	5	4	2	2	13 (21.7)
Observation group	60	96.5 ± 13.2	2	2	1	0	5 (8.3)
t (X^2)		4.526					5.254
P		< 0.001					< 0.001

Table 4: Comparison between the two groups in terms of days of hospitalization and hospitalization expenses

Group	Days of hospitalization (Day)	Hospitalization expenses (in thousands)
Control group	7.6 ± 1.5	25.6 ± 4.7
Observation group	3.7 ± 0.8	10.3 ± 6.9
t	3.925	3.524
P	0.021	0.033

The satisfaction scores of patients in the observation group were also notably higher than the control group. The incidence of complications of the observation group was significantly lower than that of the control group. Days of hospitalization and expenses of those in the observation group were both fewer than those of the control group. The differences were statistically significant. Applying comprehensive nursing interventions, which boasts predictability, systematicness, sequencing, and standardization, to 23G minimally invasive vitreous surgery, can promote work efficiency and turn passive nursing into active nursing. In addition, it can enhance nursing effect during recovery periods, and ensure patients maintain correct body position with sufficient time by using a "head position monitoring system"; using assistant beddings and physical therapy to alleviate pressure and discomfort caused by forced body position.

Comprehensive nursing interventions have very strict intervention times, and nurses can serve patients in a programmed and personalized way according to suggestions, which can facilitate patient recovery following surgery. The design is sequenced according to time of hospitalization. Nursing contents before, during, and after operation include health guidance, nursing measures, body position movements, and diet. Inspection, treatment, nursing, disease evaluation, and other tasks are detailed in each specific period with time as vertical axis. The application of comprehensive nursing interventions enable patients to fully understand their own nursing plans and goals, to actively participate in the nursing process, to enhance self-care awareness and ability of patients,

which can achieve optimal nursing effects, facilitate mutual promotion of nurses and patients, and form the nursing mode which integrates active nursing and active participation. The project can also promote cooperation and communication among multiple groups, thus creating a secure and reliable professional environment (6-8).

Many researches proved that improving knowledge of disease and treatment compliance and cultivating self-care ability of patients would improve their satisfaction level and facilitate recovery (9-10). Its reliability and validity of clinical application has been verified. In our study, we also found that the patients' knowledge of their diseases, treatment compliance, and comfort level was significantly improved after implementation of our comprehensive nursing interventions. Our patients attained a satisfactory and fast recovery.

In our study, we first designed the nursing table with sequence and clarity and performed the nursing work according to the table. We found that comprehensive nursing interventions could increase the nursing work efficiency, reduce the nursing work omissions and facilitate monitoring, which enhanced the nursing satisfaction and work quality. However, our study had not analyzed the shortage during nursing and provided the solution.

Conclusion

Comprehensive nursing interventions applied to patients who undergo 23G minimally invasive vitreous surgery, designed in our hospital, could significantly improve clinical effects. It might be widely applied.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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The Authors declare that they have no conflict of interests.

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