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Original Article

The effects of comfort care on the recovery quality of oral and maxillofacial surgery patients undergoing general anesthesia

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Abstract: Objective: To explore the effects of comfort care on the recovery quality of oral and maxillofacial surgery patients undergoing general anesthesia. Methods: Ninety-eight oral and maxillofacial surgery patients undergoing general anesthesia were recruited for this prospective study and were then randomly divided into two groups. The patients in the experimental group (49 cases) underwent comfort care, and the patients in the control group (49 cases) underwent routine care. Several indexes, including the hemodynamic indexes, the analgesic dosages, the recovery times, the extubation complications, the recovery room indwelling times, the related complications, and the final satisfaction scores were recorded and compared between the two groups. Results: Compared with the control group, the analgesic dosages and the recovery times in the experimental group were largely decreased ($P<0.05$), the occurrences of cough reactions during extubation were strongly reduced ($P<0.05$), and the recovery room indwelling times were also effectively shortened ($P<0.05$). In addition, the patients' hemodynamics in the experimental group were more stable during the recovery period ($P<0.05$), and the other complications, except for incision dehiscence, were significantly reduced ($P<0.05$), and the patient satisfaction scores were also much higher in the experimental group than they were in the control group ($P<0.05$). Conclusion: The recovery times of oral and maxillofacial surgery patients undergoing general anesthesia were largely shortened, and the complications during the recovery period were effectively reduced with the help of the comfort care, so it is worthy of further research and clinical promotion.

Keywords: Comfort care, oral and maxillofacial surgery, quality of recovery

Introduction

Oral and maxillofacial tumors and trauma are common diseases, and currently, the most common and effective treatment is surgery under general anesthesia [1-3]. For patients undergoing general anesthesia during oral surgery, the recovery period is an important part of the whole recovery. Affected by possible factors such as the incomplete metabolism of the anesthesia and the muscle relaxants in the body or the incomplete recovery of the protective reflex, patients often have an abnormal performance of their respiratory and circulatory systems during the recovery process, thus affecting their operations' outcomes and affecting the recovery. Therefore, the implementation of perioperative nursing intervention is particularly important [4, 5].

Comfort care places the patients in the nursing focus, enriches the meaning of nursing, and adapts to the needs of the patients, so that it satisfies the patients both physically and psychologically [6, 7]. In general, comfort care is a holistic, personalized, creative, and effective nursing mode. In the treatment process, it also seeks effective ways to promote the patients' physiological, psychological, and social satisfaction and reduces the degree of unhappiness as much as possible [8-10]. However, there is little published research on comfort care in the

recovery quality of patients undergoing oral and maxillofacial surgery under general anesthesia, so it still urgently needs to be carried out.

We aimed to compare the effects of comfort care and general nursing on the recovery quality of oral and maxillofacial surgery patients undergoing general anesthesia so as to provide a basis for the application of comfort care in the postoperative recovery of oral and maxillofacial surgery patients undergoing general anesthesia. Our research report follows.

Materials and methods

Inclusion and exclusion criteria

Patients who underwent general anesthesia during oral and maxillofacial surgery at The First Hospital of Jilin University from July 2019 to June 2020 were recruited as the study cohort and were randomly divided into the experimental group (the comfort care group, 49 cases) and the control group (the routine care group, 49 cases).

Inclusion criteria: (1) Patients who underwent general anesthesia during oral or maxillofacial surgery, (2) patients ranging in age from 18 to 85 years old, and (3) patients who volunteered to participate in this clinical trial.

Exclusion criteria: (1) Patients with serious vital organ injuries, (2) patients with mental illnesses, (3) patients who were unable to actively comply, (4) patients who withdrew from the study, and (5) Patients with oral or maxillofacial deformities.

The experiment was approved by the ethics committee of The First Hospital of Jilin University, and all the patients in the study cohort and their families had signed the informed consent forms.

Methods

The patients underwent oral and maxillofacial surgery under general anesthesia and underwent an active nursing strategy during the perioperative period. Routine care is the most commonly-used nursing method in daily work, and it includes popularizing oral health education to the patients, cooperating with the doctors in the diagnosis and treatment of the patients after admission, basic preoperative education, and routine nursing for the postoperative patients according to the doctor's instructions.

Comfort care: (1) Comfort care and the hospital environment: the nursing staff kept the operating room clean at all times as best they could, the instruments and materials unrelated to the diagnosis and treatment were stored away as much as possible, all the tools were placed according to the order of the diagnosis and treatment, the worktables were cleaned and disinfected after each patient was treated, and they shared information about common oral and maxillofacial diseases using animations and strengthened oral health education. (2) Comfort care about patients' psychology: psychological disorders are commonly found in patients with tumors, trauma, or tooth extraction in oral and maxillofacial surgery because of their tense psychology. Therefore, the nursing staff actively and enthusiastically communicated with the patients and cared for them. At the same time, necessary help was given to the elderly and weak patients and to patients with mobility problems to improve their comfort. The nurses established a good relationship with the patients, and they answered their questions promptly and relieved the patients' psychological pressure patiently. In the treatment process, nursing staff should also provide comfort care for patients professionally and enthusiastically. At the same time, the nursing staff fully understood the patients and encouraged them to overcome their pain. They conducted timely treatment to deal with the discomfort that occurred as a result of the treatment and made a targeted feasible nursing plan to reduce the patients' pain as much as possible. (3) Advising patients of the results of the operation: after the operation, the nursing staff promptly brought the patients to the anesthesia recovery room and observed the patients' clinical indicators closely. After the anesthetic effect disappeared and the patient became conscious, the nursing staff promptly informed the patient of the operation results and explained the possible normal symptoms after the operation such as pain, etc., so as to eliminate the patients' worries. They listened to the patients' needs carefully and patiently, and give them enough care; encourage Previous patients who successfully went through the operation closely observed the psychological changes in the

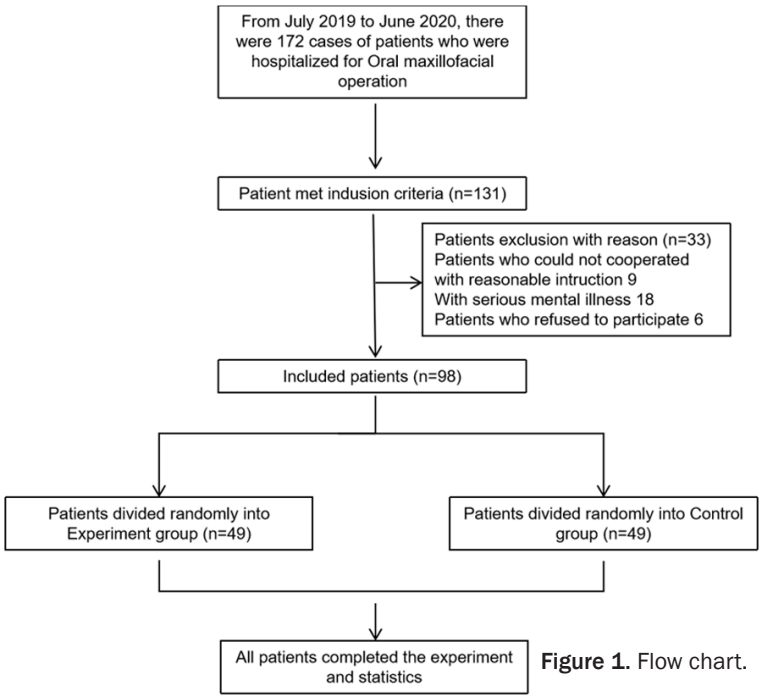

Figure 1. Flow chart.

Table 1. Comparison of the general patient data in the two groups

	Experimental group	Control group	t/χ^2	P
Cases	49	49		
Age (years)	50.4±9.3	51.6±8.8	0.656	0.513
BMI (kg/m^2)	27.13±5.57	26.98±5.72	0.132	0.896
Weight (kg)	68.43±11.45	69.11±12.24	0.284	0.777
Gender (n)				
Male	25	27	0.164	0.686
Female	24	22		
Operation time (min)	42.16±14.65	41.77±15.23	0.129	0.897
Underlying diseases (n)				
Yes	28	31	0.383	0.536
No	21	18		
Operation (n)				
Oral surgery	14	16	0.192	0.661
Maxillofacial surgery	35	33		

Note: BMI means body mass index.

patients, and promptly conducted psychological counseling for the patients, so as to help them understand and accept themselves correctly, and to change their bad thoughts and tendencies. (4) Establishing a good nurse-patient relationship: in the actual nursing process, the nursing staff always adhered to the patient-centered nursing concept and mastered their communication skills, so as to avoid the patient's resistance. The nurses observed and learned the personality characteristics of the patients, and they solved the problems raised by the patients quickly and correctly, so as to alleviate the patients' tension, anxiety, and other adverse emotions, and to ensure the construction of a harmonious nurse-patient relationship. In addition, the patients often have different degrees of pain after surgery, which is directly related to the nature of the operation, the use of sedatives, and the degree of individual pain. At the same time, the pain intervention is further aggravated to a certain extent if the patient's spirit is too tense or irritable. Therefore, the nursing staff should ascertain the psychological states of the patients quickly and guide the patients to self-regulate their emotions through correct deep breathing and the relaxation of their muscles and joints, which is also conducive to improving patient compliance. (5) Nursing care of restlessness in the recovery period: generally, restlessness occurs within 30 minutes after anesthesia. Restlessness always induces some injury to the patient, and it can cause pain and bleeding at the surgical site depending on the patient's age, wound pain, catheter stimulation, etc. Therefore, nursing staff should employ sufficient preventive measures in the actual nursing process and determine the corresponding causes right after the emergence of the restlessness, in order to avoid unnecessary risks and improve nursing safety.

Outcome measures

The analgesic dosages (dezocine (Enhua Pharmaceutical, China)), the recovery times, the extubation complications, the recovery room

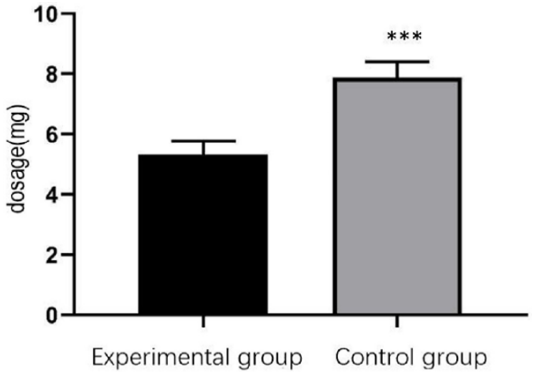

Figure 2. Comparison of the dezocine dosages in the two groups. Compared with the experimental group, ***P<0.001.

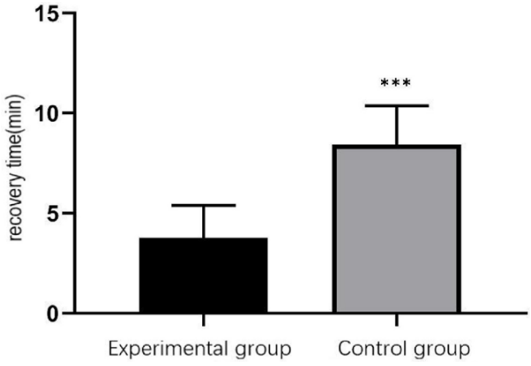

Figure 3. Comparison of the recovery times in the two groups. Compared with the experimental group, ***P<0.001.

indwelling times, the hemodynamic indexes, the complications, and the final satisfaction scores were recorded and compared between the two groups. The recovery times of the patient are usually about 10 minutes, and the patients need some time to recover from the hemodynamic fluctuation caused by moving after entering the resuscitation room. Therefore, the hemodynamics monitoring times (the mean arterial pressure, MAP) was selected as: the time upon entering into the recovery room immediately (T1), after being in the recovery room for 5 min (T2), after being in the recovery room for 10 min (T3), after being in the recovery room for 30 min (T4), and the time to exit the recovery room (T5) [11]. Satisfaction score: the patients' satisfaction levels were investigated 4 weeks after the treatment [12]. The survey covered the treatment effects, the quality of life, the related discomfort, and symptom recovery, etc. The total score of the questionnaire was set as 100 points: 81 points or above indicates very satisfied, 61 points to 80 points indicates general satisfaction, and less than 60 points indicates dissatisfaction. The patients' and family members' satisfaction levels were calculated according to the following formula: total satisfaction degree = (very satisfied cases + generally satisfied cases)/total cases × 100%.

Statistical analysis

The data was analyzed using SPSS 22.0. The enumeration data were expressed as (n (%)) and was compared using χ^2 tests. The measurement data in accordance with a normal distribution were represented as the mean ± standard deviation ($\bar{x}$ ± sd) and were compared using independent-sample t tests. P<0.05 indicates that a difference was statistically significant.

Results

General patient data

In this study, 98 patients were selected according to the inclusion and exclusion criteria. Then, they were randomly divided into the experimental group and the control group following the random number method, with 49 cases in each group. There were no uncontrollable accidents or evacuations during the treatment period, and all the recruited patients completed the trial successfully. See **Figure 1**. The basic data of the two groups were recorded and compared (P>0.05). See **Table 1**.

Analgesic dosages

Compared with the control group, the dosages of the intraoperative analgesic drugs used in the experimental group were significantly reduced, with (5.09±1.57) mg in the experimental group and (7.42±1.21) mg in the control group (t=20.500, P<0.001). See **Figure 2**.

Recovery times

The recovery times in the experimental group were much shorter than the recovery times in the control group, with (4.33±2.34) min in the experimental group and (8.53±2.78) min in the control group (t=3.516, P<0.001). See **Figure 3**.

Table 2. Comparison of the incidences of coughing, restlessness, and asphyxia during extubation between the two groups

	Experimental group (n=49)	Control group (n=49)	χ^2	P
Coughing	3 (6.12%)	10 (20.41%)	0.556	0.005
Restlessness	2 (4.08%)	8 (16.33%)	0.561	0.006
Asphyxia	3 (6.12%)	7 (14.29%)	0.243	0.042

Table 3. Comparison of the MAP in the recovery room between the two groups (mmHg)

Timing	Experimental group (n=49)	Control group (n=49)	t	P
T1	76.66±8.37	76.64±8.40	0.356	0.775
T2	80.64±9.39	83.66±10.33	-0.675	<0.001
T3	78.32±10.37	85.55±10.36	-0.764	<0.001
T4	79.10±10.45	86.48±10.42	-0.731	<0.001
T5	78.64±10.39	83.24±10.41	-0.611	<0.001

Note: MAP means mean arterial pressure; T1: the time to enter into the recovery room immediately; T2: after being in the recovery room for 5 min; T3: after being in the recovery room for 10 min; T4: after being in the recovery room for 30 min; T5: the time when exiting the recovery room.

Cough response after the extubation

Compared with the control group, the incidences of cough, restlessness, and asphyxia during the extubation in the experimental group were all largely decreased (P<0.05). See **Table 2**.

Hemodynamics in the recovery room

No significant differences existed in the hemodynamics between the two groups at T1 after operation (P>0.05). However, from T2 to T5 after entering the recovery room, the MAP of the experimental group was much more stable than it was in the control group (P<0.05). See **Table 3**.

The indwelling times in the recovery room and the complications in recovery period

Compared with the control group, the indwelling times in the recovery room of the experimental group were much shorter (P<0.05). In addition, the complications in the experimental group were significantly reduced, except for the incision dehiscence (P<0.05), and no significant differences existed in the incidences of incision dehiscence between the two groups (P>0.05). See **Table 4**.

Patient satisfaction scores

The satisfaction scores in the experimental group were much higher than the satisfaction scores in the control group (87.76% vs. 63.27%, P<0.05). See **Table 5**.

Discussion

Airway blockage is commonly induced during the oral and maxillofacial surgery. Without timely treatment, it may put the patient in an irreversible state of asphyxia, and it may even lead to irreversible hypoxia of the brain in serious cases, which may endanger life [13]. In addition, the pain will be more sensitive than other operations because more nerves exist in the injured area, so the intraoperative and postoperative analgesic strategies should be more accurate. Of course, complications such as restlessness induced by pain should not be ignored [14]. The patient is unconscious and has no muscle strength under general anesthesia, so a poor recovery after anesthesia makes the patient feel suffocating and feeble and induces unconscious agitation [15]. What is more important, there is a risk of aspiration in patients with bleeding after nasal extubation, so caring for patients undergoing oral and maxillofacial general anesthesia is very important [16].

Comfort care is a novel nursing mode, and it requires medical staff to adhere to the people-oriented nursing concept and carry out comfort intervention in addition to respecting patients' psychological and emotional changes. By alleviating patients' adverse emotions purposefully and reducing or avoiding the occurrence of adverse events, comfort care further improves the quality of anesthesia recovery and patient prognosis [10, 16, 17]. Our study confirmed that comfort care maintains hemodynamic stability and significantly enhances the quality of the recovery. In addition, our study found that comfort care reduces patients' recovery times. The reason, we believe, is that the comprehensive nursing strategy of psychological nursing, health education, and high-quality nursing are

Table 4. Comparison of indwelling times in the recovery room and complications between the two groups

	Experimental group (n=49)	Control group (n=49)	t/χ^2	P
Indwelling time in recovery room (min)	41.35±9.51	52.56±8.87	-0.545	0.045
Complications in convalescent period				
Airway obstruction	0	6	0.701	0.024
Postoperative bleeding	4	8	0.643	0.031
Restlessness	3	14	0.678	0.025
Pain	13	28	0.882	0.012
Incision dehiscence	1	2	0.342	0.132

Table 5. Comparison of treatment satisfaction between the two groups

	Experimental group (n=49)	Control group (n=49)	χ^2	P
Very satisfied	28	20		
Generally satisfied	15	11		
Dissatisfied	6	18		
Satisfaction	87.76%	63.27%	7.089	0.007

able to provide comprehensive and effective psychological and physical care for patients and improve their recovery effects [18, 19]. At the same time, it is confirmed that comfortable care reduces the related complications during extubation and recovery, so it may also be a favorable factor in shortening the recovery times of patients in the recovery room. There was no significant difference in the hemodynamic parameters between the two groups when they entered the resuscitation room. However, most patients began to wake up at 5-10 minutes after entering into the resuscitation room. Therefore, the time points of 5 and 10 minutes after entering into the resuscitation room were first selected for comparison. The results fully showed the advantages of comfortable care in the recovery period, and the blood pressure of the patients in the experimental group was much more stable. Thirty minutes after entering into the resuscitation room is considered as a stable period after recovery, which showed the advantages of comfortable care after recovery. The experimental results showed that the blood pressure of the experimental group was more stable, especially the blood pressure at the time of leaving the recovery room, which demonstrated the advantages of comfortable care in the whole recovery room.

In addition, comfortable care reduces the incidences of respiratory tract obstructions, postoperative bleeding, restlessness, and pain complications, so it plays an important role in the recovery progress of patients [20, 21]. The increased bleeding and secretions after oral and maxillofacial surgery may lead to respiratory tract obstructions, so we need better nursing work to strengthen the postoperative sputum suction and oral cleaning work of patients. Therefore, comfortable care can effectively reduce the incidence of respiratory tract obstructions [22]. Postoperative bleeding and pain may be related to airway obstructions, which may induce further discomfort and increase adverse body movement and affect patient recovery. A lower incidence of respiratory obstruction may also reduce the incidence of postoperative bleeding and pain by reducing adverse body movements [23, 24]. However, no significant differences existed in the complications of wound dehiscence between the two groups, because most of the wound dehiscence was related to the patient's condition and to the surgical technique. Nursing can keep the wound clean and reduce the probability of infections and wound dehiscence. However, there was no significant difference between the conventional nursing and comfort care in wound care.

Our present study found that the satisfaction of patients and their families with the nursing and treatment in the comfort care group was significantly improved. The reasons, we think, may be related to the significantly reduced complications in the patients during the peri-anesthesia period and the implementation of comfort care to psychologically and physically help to enhance the satisfaction level. However, the small sample size and short follow-up time in our present study may lead to a relative deviation of the results. Thus, we will conduct further

multi-center prospective trials with larger sample sizes to verify the above results.

In conclusion, comfort care can shorten the recovery times of oral and maxillofacial surgery patients undergoing general anesthesia, and reduce their complications during the recovery period, so it is worthy of further research and clinical promotion.

Disclosure of conflict of interest

None.

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