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Methods of Nursing Patients within Perioperative Period after Receiving Joint Operation of Total Pancreaticoduodenectomy and Splenectomy

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Abstract

Perioperative nursing methods were explored for patients who received joint operation of total pancreaticoduodenectomy and splenectomy. The clinical treatment and nursing experience of 6 cases of patients who received such joint operation in our department from June 2009 to October 2015 were analyzed and summarized, in which 5 cases of patients were recovered smoothly and 1 case of patient died. For patients who will receive joint operation of total pancreaticoduodenectomy and splenectomy in the future, it is necessary to conduct mental nursing, control blood glucose, improve nutrition, nurse pains and exercise respiration function for them. After surgical operation, effective and reasonable infusion management should be conducted, including carefully observe color and nature of drainage liquid and keep tube smooth, observe and nurse their complications, carefully monitor changes of blood glucose and offer nutrition support. The above healthcare guidelines would ensure success of operation and improve their living quality and prognosis post-surgery.

Keywords Pancreaticoduodenectomy; Splenectomy; Nursing

1. Introduction

Currently, total pancreatectomy and its indications mainly include: (a) serious chronic pancreatitis, (b) mamillary mucinous tumor inside pancreatic ductal affecting all pancreatic tissue, (c) pancreatic neuroendocrine tumors affecting all pancreatic tissue, (d) pancreatic metastases, and (e) a few pancreatic cancers^[1-3]. The operation will excise all pancreatic tissue, distal stomach, duodenum, medium and lower sections of common bile duct and origin of jejunum. For every cases in the group we treated, the spleen was excised simultaneously due to invasion of lesion into superior mesenteric vein or splenic artery. The joint operation of total pancreaticoduodenectomy and splenectomy is usually complicated, which could cause more trauma and complications. At present, the operation was not frequently performed and associate literature was rare. This article summarized the clinical information, complications and treatment, and nursing experience of 6 patients who received joint operation of total pancreaticoduodenectomy and splenectomy in our hospital from June 2009 to October 2015.

2. Clinical information

6 patients in the group was consisted of 4 males and 2 females, whose ages were between 25 and 67 with average of 55.8 ± 10.2 years old. There were 4 cases of pancreatic cancer, 1 case of carcinoma of ampulla of duodenum and 1 case of solid pseudopapillary tumor of the pancreas. Their lesions affected total pancreatectomy and spleen. Moreover, 3 cases of patients were also suffered from diabetes.

2.1 Surgical operation

6 cases of patients received joint operation of total pancreaticoduodenectomy plus splenectomy. After the operation, one patient was suffered from complication of strangulated intestinal obstruction, one patient was suffered from complication of abdominal infection. One patient died of cardiogenic shock at the 8th day after the operation, and the rest 5 patients were recovered and discharged (Table 1).



Table 1 Materials of Patients

| | Patient 1 | Patient 2 | Patient 3 | Patient 4 | Patient 5 | Patient 6 |
|---|----------------------|--|------------------------------|--------------------------|---|------------------------------------|
| Diagnosis | Pancreatic cancer | Pancreatic cancer | Ampullary carcinoma duodenum | Pancreatic cancer | Pancreatic cancer | Solid pseudo-papilloma of pancreas |
| Site of tumor | The head of pancreas | Several at the head of pancreas and body of pancreas | Ampulla of duodenum | pancreatic body and tail | The head of pancreas and pancreatic body and tail | At total pancreas |
| Size of the biggest tumor (cm) | 7*6 | 4*3 | 5*4 | 8*7 | 2.9*2.5 | 13.2*11.3 |
| Operation time (min) | 560 | 325 | 265 | 750 | 360 | 840 |
| Intraoperative bleeding volume (ml) | 1500 | 300 | 200 | 500 | 150 | 500 |
| Postoperative eating time (d) | 6 | 6 | 3 | 7 | 5 | 7 |
| Time of pulling out stomach tube/ abdominal drainage tube after operation | 6/7 | 4/8 | 3/8 | 7/10 | 5/8 | 7/10 |
| Total days of admission/days of admission after operation (d) | 22/13 | 22/8 death | 43/28 | 25/14 | 30/14 | 48/38 |

3. Nursing

3.1 Preoperative nursing

3.1.1 Mental nursing

Total pancreaticoduodenectomy is a complicated surgical operation. After the operation, patients need to receive insulin injection and take digestive enzyme lifelong. Before the operation, mental state of the patients and understanding of the disease and surgical operation from the patients and their family members need to be assessed. The patients' perturbation needs to be comforted immediately. Medical staff should inform patients on the importance of the operation and specific coordination within perioperative period to patients and their family members, as well as the methods of controlling postoperative blood glucose. The staff should console the patients and encourage them to maintain positive mentality before surgery.

3.1.2 Adjust and control blood glucose

Patients with pancreas diseases often have complication of diabetes. Before operation, it is necessary to monitor blood glucose and control it within nearly normal scope (4.4~8mmol/ under empty stomach and 4.4~10mmol/L after having meal). 3 cases of the group had complication of diabetes. After controlling their diet and injecting insulin to control blood glucose, their preoperative blood glucose was controlled within the scope of 4.6~13.5mmol/L.

3.1.3 Improve nutrition

Operation of pancreatic cancer is complicated and multiple tissues and organs are involved. Patients with anemia and hypoproteinemia need special care prior to surgery^[4]. Most patients have different degrees of malnutrition due to tumor consumption and insufficient intake. 3 cases in the group lost 5-7 kg of weight within 1-2 months before their admission to the

hospital. Medical staff should inform the importance of nutrition to patients before operation, conduct active mental counseling, encourage and guide patients to follow a high protein, high calorie, high vitamin, low grease and easily digestive diet. Patients with poor appetite can change their menus and eat more frequently with less quantity. 3 days before operation, 2 cases of patients received infusion of 10-20g albumin and 1 case of patient received infusion of plasma. Serum albumin of all patients of the group was adjusted to 30g or more and hemoglobin was adjusted to 100g/L or more. Patients did not report dizziness and/or weakness.

3.1.4 Pain nursing

Patients with pancreatic cancer generally have different levels of upper abdominal pain, which is related with tumor compression and invasion into the retroperitoneal nerve plexus. Before operation, medical staffs should evaluate the degree of pain q1h-q2h according to disease progression and prescribe effective analgesic for patients. Within a half hour after taking medication, patients the effectiveness of analgesic should be evaluated and non-drug analgesic methods should be presented to patients, including deep breathing, body positioning, and music listening, etc. With analgesic treatment conducted actively for the entire group, scoring scale was applied to assess pain levels. Patients can get full rest when the pain level is below 5.

3.1.5 Exercise of respiration function

The joint operation of total pancreaticoduodenectomy and splenectomy leads to large trauma and patients need to recover for a long time after receiving the operation. Excellent cardiopulmonary function before operation is an important factor for successful operation. 4 cases of patients of the group are 60 years old or more and they were guided to take various exercises to improve their respiration function, such as half-closed lip respiration training (3-4 times a day and 10-20 minutes for each interval), respiration function

instrument training (4-6 times a day from 500ml and 10-15 minutes for each), and walking (1 hour or more each day) before operation. Training should be recorded to ensure that the procedures were followed, which will strengthen the preoperative cardiopulmonary function for the patients to reach normal level.

3.2 Postoperative nursing

3.2.1 Effective and reasonable infusion management

After operation, details should be fully understood, including anesthesia, operation process, intraoperation bleeding, liquid supplement, and intraoperation urine volume. Keep alert against various complications caused by insufficient body fluid after operation. During fasting period, patients should be carefully monitored with dehydration conditions such as dry mouth, increasing heart rate, decreasing urine volume, dry skin, and reduction of central venous pressure. 1 case of patient bled 1500 ml during the operation, which led to dizziness, dry mouth, less urine and low blood pressure at the same day of operation. The patient's CVP was measured to be 4 cmH₂O, peritoneal cavity drainage tube was smooth without any bleeding, and the patient did not have abdominal pain or abdominal distention. In case of body fluid dehydration, symptoms of the patient were immediately relieved after fast infusion of Voluven and Liquide de Ringer. For infusion of all patients in the group, the principles of fast-to-slow and crystal-colloid alternation were followed. At the first 8 hours, patients should be giving infusion at the rate of 1/2. Within 3 days postoperation, VCP should be measured at q2h-q6h, blood pressure and urine volume should be checked each hour. Infusion rate should be adjusted based on observation data to keep total water in/out balanced. 1 case of patient of the group had palpitation with heart rate reaching 138 times per minute at the second day, and the patient's ECG showed Paroxysmal AF. In considering of patient's poor functions of the heart, he was relieved after given Lanatoside and cordarone. The rest of the patients in the group did not have the problem of insufficient body fluid or acute pulmonary edema caused by improper infusion.

3.2.2 Drainage nursing

Bleeding within 1-2 days postoperation is possibly due to disturbances of blood coagulation or loss of ligature. Fast and robust bleeding could easily leads to hemorrhagic shock. Bleeding within 1-2 weeks after operation could be caused by bile corrosion and infection. Under constant bleeding of blood in the drainage tube, it is needed to immediately build IV line and stop bleeding according to the directions from the doctors. Prepare for the operation again if necessary. If the morphology of drainage liquid is like bile or liquid dung, it could be complications of biliary fistula or intestinal fistula. if it is cloudy or purulent, it needs to consider the possibility of secondary infection. In the group, 2 or more abdominal drainage tubes were reserved beside splenic recess, omental foramen, and biliary intestinal. At q1h-q2h, tubes were squeezed towards the far end to ensure flow. Except one passed away patient, the rest of the patients had their tubes pulled out within 7-10 days after operation.

3.2.3 Observe and nurse complications

3.2.3.1 Intra-abdominal hemorrhage

Bleeding within 24 hours after operation is mostly resulted from improper operation, including incomplete intraoperative hemostasis, loss of intraoperative electric coagulation hemostasis eschar, and loss of ligature. Postoperative tardive bleeding (postoperative period \geq 5 days) is mostly due to inflammatory response of local or whole abdominal cavity caused by pancreatic fistula, biliary fistula or abdominal infection^[5]. During postoperative nursing, patients' blood pressure and abdominal signs, and changes of color of drainage liquid need to be closely monitored. For example, intra-abdominal hemorrhage could happen when blood pressure is constantly reduced and abdominal pain and distention occur simultaneously. Patients of the group received active liver-protecting therapy and somatostatin to actively correct their coagulation function, thus eliminating the occurrence of intra-abdominal hemorrhage.

3.2.3.2 Thrombus

After excising spleen, most patients will face thrombocytosis and even formation of thrombus under severer situation. Patients should be encouraged to do early mobilization after receiving operation. In the group, patients were guided to start training of limb function, deep breath training in bed, limb stretching activity, turning over, and sitting in bed. According to diseases and strength of patients, progressive activity guidance was offered. One patient's blood platelet was increased to $535 \times 10^9/L$ within one week after operation, and it was increased to $624 \times 10^9/L$ within 2 weeks after operation. After taking Bayaspirin with Nexium Bid and receiving hypodermic injection of Clexane qd, blood routine examination was conducted again q3d later and patient was recovered to normal platelet level from the 3rd week upon operation. Venous thrombus did not occur on any patient.

3.2.3.3 Intestinal obstruction

Due to more reactive seepage in abdominal operation, it is easy to cause adhesive intestinal obstruction. According to the postoperative conditions, patients should be encouraged to do off-bed activities earlier and recovery of intestine peristalsis should be observed carefully. Patients of the group had their intestine peristalsis recovered within 3-7 days upon operation with anus exhaust so that their stomach tube was pulled out. One patient had continuous abdominal pain at the fifth day of operation with the complications of strangulated intestinal obstruction and intestinal necrosis. Necrotic small intestine excision and intestinal anastomosis was conducted immediately. Such situation may be related to abdominal infection, and diminished activity due to the age of the patient. After receiving active treatment and nursing upon operation, the patient was recovered.

3.2.3.4 Abdominal infection

One patient had symptoms at the third day upon

operation including aversion to cold, high fever, and increasing white blood cell count. After conducting B ultrasonic inspection, hydrups abdominis was found. After conducting pracentesis and using sensitive antibiotics for the patient, such situation was improved.

3.2.4 Carefully monitor blood glucose and avoid occurrence of hypoglycemia

Disturbance of carbohydrate metabolism is a great obstacle for postoperative recovery and survival quality of patients, and it is the main cause of recent death of patients after receiving operation of total pancreatectomy^[6]. It is necessary to monitor blood glucose accurately and provide reliable basis for adjusting dose of insulin. Due to loss of endocrine of pancreas caused by total pancreaticoduodenectomy, it is essential to control blood glucose with insulin lifelong. Moreover, due to no existence of antagonism of glucagon after operation, patients will be sensitive to insulin and small amount of insulin intake may cause hypoglycemia, which is the main cause to operative death of patients^[7]. Basic secretion of insulin of normal people per day reaches 17U~22U and use of insulin each day for each postoperative patient within 22U-28 U can control blood glucose well^[8]. During fasting period of patients of the group, changes of blood glucose were measured at the rate of q1h-q6h. When they were given meals, the frequency was changed into qid (measure it at empty stomach and 2 hours after each meal). Insulin dosage was adjusted according to the level of blood glucose. Before each meal, 2U-8U regular insulin should be hypodermically injected. At night, 4U-14U long-acting insulin should be hypodermic injected to maintain basic blood glucose level. Starting dose of insulin: 4U for long-acting insulin and 2U for insulin before meals of each day, dosage varies based on the blood glucose level. Range of adjustment each time: 2U-4U. Dosage of insulin for cases of the group: 16U-18U per day, to control blood glucose within 2.6~23.8mmol/L. 2 patients of the group had the problem of high blood glucose at the day after operation within the scope of 18.1~23.8 mmol/L. With intravenous drip of 500ml normal saline with Gansulin

50U, blood glucose was adjusted and controlled. Blood glucose was recovered to normal after two days. One patient had problems of dizziness and skin clamminess when fluid infusion was stopped at the night of the second day upon operation and the patient's blood glucose was measured to be 2.6mmol/L. After injecting 50% glucose immediately, such symptom was improved. One patient had syncope at the eighth day of operation and blood glucose was measured to be 3.7mmol/L. After injecting 50% glucose, the patient's consciousness was recovered. One hour later, the patient had problems of declining blood pressure and slow heart rate. The patient passed away after attempts of rescue, perhaps due to acute cardiogenic shock. During fasting period of patients of the group, parenteral nutrition was provided for them and insulin was prepared at the rate of 1:4 (or 1U insulin for 4 g glucose). Due to insulin absorption behavior of the PCA infusion bag [9], it is necessary to pay special attention to infusion at a constant speed and shake infusion bag q1h-q2h, to avoid causing hypoglycaemia reaction due to sudden increase of insulin input in late stage of infusion. Blood glucose of total pancreatectomy patients is usually unstable and the blood glucose level should not stay too low. Moreover, it needs to observe whether patients have hypoglycaemia reaction and guide patients to report their symptoms like dizziness, hunger, weakness, palpitation, and sweating to medical staff, who will conduct immediate treatment.

3.2.5 Nutrition support

After total pancreaticoduodenectomy, secretion function of pancreas is terminated. Removal of upper gastrointestinal tract causes disorder of digestion and absorption, thus resulting in malnutrition or diarrhea, and easily leads to induction of hypoglycemia. It is necessary to pay close attention to dietary conditions of post-operative patients, who should take digestive enzyme preparation or anti-diarrhoica. Postoperative patients of this group should receive treatment like parenteral nutrition supplementation of protein and plasma. All cases of patients started to receive parenteral nutrition from the first post-operative day.

3 cases of patients started to receive mixed parenteral nutrition from the fifth post-operative day, with input of 500-1,000 ml peptison via mouth or nasointestinal tube. From the post-operative 3-7 days, they started to eat liquid diet and gradually to diabetic diet. After the operation of total pancreaticoduodenectomy, gastric volume of patients is narrowed, by which medical staff should guide patients to have more meals a day but less food at each, usually 6-7 times a day. After operation of pancreatic resection, most digestive enzyme will be lost, thus resulting in serious diarrhea for the patients. when patients of the group recover their diet, they should take golden bifid, creon and other digestive enzyme. Patients of the group did not face the situation of diarrhea and their bowel movement became normal 1-2 times per day

4. Summary

Joint operation of total pancreaticoduodenectomy and splenectomy is complicated and it is necessary to provide excellent perioperative nursing. Before the operation, it is necessary to offer mental nursing for patients, adjust and control their blood glucose, improve nutrition, relieve pains, and actively exercise respiration function. After the operation, it is necessary to conduct effective and reasonable infusion management, monitor and care their complications, to improve the success rate of the operation.

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Competing Financial Interests

The authors declare no competing financial interests.

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Postoperative Application of Interventional Nursing in the Thoracoscopic Radical Resection of Lung Cancer

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Abstract

In this paper, the effects of interventional nursing after the thoracoscopic radical resection of lung cancer were discussed and 86 patients undergoing the thoracoscopic radical resection of lung cancer in our hospital were selected. According to the method of random number table, patients were divided into the observation group and the control group (43 cases in each group). All the patients were given routine nursing after thoracic surgery, and postoperative interventional nursing was added in the observation group. The results showed that the off-bed time, the chest tube removal time, and the length of stay of the observation group were all shorter than the control group ($P < 0.05$). The postoperative complication rate of the observation group was 4.65% and the patient satisfaction rate was 95.3%, while the postoperative complication rate of the control group was 18.6% and the patient satisfaction rate was 88.4% ($P < 0.05$). Therefore, the application of interventional nursing for patients undergoing thoracoscopic radical resection of lung cancer can promote patients' recovery, reduce complications, and improve patients' satisfaction to nursing service.

Keywords Interventional nursing; Radical resection of lung cancer; Effect observation

1. Introduction

Lung cancer is the most common human malignant tumors. According to the latest statistics in 2015, the incidence rate of lung cancer in China has leapt to the top of various malignant tumors^[1]. In recent years, benefited from the development of video-assisted thoracoscopic surgery (VATS), thoracoscopic radical resection of lung cancer has become the main treatment for early stage lung cancer^[2]. With the improvement of medical services and the development of society, the expectations of these patients for high-quality postoperative nursing also increase significantly, which lead to the requirement of improving the postoperative nursing. Postoperative interventional nursing is a new method of nursing. It can provide scientific, coherent and targeted services for patients post-surgery. It not only improves the quality of nursing service, but also enhances the communication between nurses and patients, and addresses the needs of patients^[3]. This paper discussed the effects of interventional nursing in the thoracoscopic radical resection of lung cancer.

2. Materials and methods

2.1 Clinical data

86 patients who underwent thoracoscopic radical resection of lung cancer in our hospital from January to November 2015 were selected. The patients were screened for no diseases of heart, kidney, liver and other vital organs as well as other major diseases. These patients include 64 males and 22 females, aged 31-68 with an average age of 51.7 ± 10.6 . Based on the random number table method, these patients were divided into the observation group and the control group (43 patients for each group). After comparing the gender, age, stage and other basic data of the two groups, the resulted difference was not statistically significant ($P > 0.05$) prior to the treatment.

2.2 Methods

Both groups were given routine nursing after thoracic surgery. In addition to the routine nursing, interventional nursing was introduced in the observation group and the details were listed as follows: (1) Communicating were conducted with patients and their families every day after the surgery. An effective personalized nursing plan was constructed based on the recovery of patients after surgery and adjusted according to the feedback from the patients. (2) Mental health assessment was provided to the patients. Targeted counseling was given based on patients' psychological conditions. The negative emotions and confusions of the patients were eased and the confidence in the postoperative recovery was built^[4]. (3) The wards were kept quiet and clean. The comfort level of wards was improved and the temperature and lighting were kept in a comfortable range. (4) The patients were guided to gradually change their diet from semi-liquid to normal diet. The patients were advised to eat low-fat, appropriate-protein, high-vitamin, fiber-rich, light, and digestible diet. (5) Body position nursing were enhanced after surgery. When a patient after anesthesia was not fully conscious, horizontal position without pillow was suggested and the head was rested on one side. The position was changed to the semireclining position 6 hours after surgery^[5]. The patients were able to start with minimal physical exercise on the bed shortly after surgery. The nurses should assist and encourage patients to come out of bed early, in order to facilitate the recovery of lung function and promote wound healing. (6) The nursing of drainage tube was enhanced. The amount and characteristics of the drainage liquid were closely monitored. The complexion and mental state of patients, and the bleeding or oozing occurs in the wounds were observed to detect the potential internal hemorrhage early. Remind patients do not make the drainage tube twist, fold or prolapse during doing exercise. The patency of the drainage tube was observed as well. (7) The prevention of postoperative complications was strengthened. The body temperature, bleeding, or oozing occurs in the wounds were closely monitored. Wound dressings were replaced in time to prevent wound infection. Routine disinfection and

antibiotic treatment was given to the incision to prevent infection^[6-7]. (8) The patients were told to pay attention to personal hygiene after discharge, including keeping the skins clean and conduct adequate exercise. The diet should be kept regular, low-fat, rich-vitamin, and digestible. Hot and spicy food and deep-fried food was prohibited.

3. Statistical methods

The data was analyzed with SPSS 20.0 statistical software and the measurement data was tested with t-test; the computed data was tested with 2 test and the difference was considered statistically significant ($P<0.05$).

4. Results

4.1 Postoperative indicators of both groups

The off-bed time, the chest tube removal time and the length of stay of the observation group were shorter than the control group ($P<0.05$). The postoperative

complication rate of the observation group was 4.65% and that of the control group was 18.6% ($P<0.05$) (Table 1).

4.2 Patient satisfaction of both groups

The results of the patient satisfaction survey showed that: 19 cases in the observation group chose 'very satisfied'; 2 cases chose 'satisfied' and 2 cases chose 'dissatisfied'; the patient satisfaction rate was calculated to be 95.3%. In contrast, 23 cases in the control group chose 'very satisfied'; 18 cases chose 'satisfied' and 2 cases chose 'dissatisfied'; the patient satisfaction rate was 88.4%. The patient satisfaction of the observation group was significantly higher than the control group and the difference was statistically significant ($2=6.9$, $P<0.05$).

5. Discussion

Thoracoscopic radical resection of lung cancer has the advantages of less surgical trauma, less pain, less damage, and quick recovery, and has been widely carried out in clinical practice^[2]. Nurses can give

Table 1 Postoperative Rehabilitation Indicators of the Observation Group and the Control Group

| Group | n | Off-bed time (h) | Chest tube removal time (h) | Length of hospitalization (d) | Postoperative complications | | | |
|----------------------|----|---------------------|-----------------------------------|-------------------------------------|-----------------------------|-------------|--------------------|--------------------|
| | | | | | Nausea and vomiting | Atelectasis | Wound infection | Pleural hemorrhage |
| Control group | 43 | 23.50±0.93 | 30.50±10.25 | 12.56±0.95 | 4 | 1 | 2 | 1 |
| Observation Group | 43 | 18.20±1.19 | 24.50±10.41 | 9.35±1.20 | 1 | 0 | 1 | 0 |
| t/x | - | 1.24 | 1.17 | 1.28 | | | | |
| P | - | < 0.05 | < 0.05 | < 0.05 | | | | |

interventional nursing after this surgery to assess the recovery of patients daily, and make a targeted nursing plan for patients. Postoperative health education and rehabilitation guidance could be strengthened to enrich the nursing content and improve the quality of nursing. The results of this study showed that, the off-bed time, the chest tube removal time and the length of stay of the observation group were all shorter than the control group; and the postoperative complication rate of the observation group was significantly lower ($P < 0.05$). The improved results were mainly due to the extra attention paid for patients' recovery and the various targeted nursing measures made to promote patients' recovery under the interventional nursing. In the prevention and treatment of postoperative complications, nurses should strengthen monitoring and teach patients the specific precautions to help them prevent or detect complications early. Meanwhile, for patients with complications, nurses could give patients counseling to ease their anxieties in order to minimize the effect of adverse psychological reactions on postoperative recovery.

In addition, postoperative interventional nursing shortens the length of stay, which reduces the patients'

hospital costs, improves the availability of ward beds, and reduces the shortage of medical resources. Patient satisfaction for nursing service is a direct indicator for the evaluation of nursing quality. In this paper, the patient satisfaction of the observation group was significantly higher than the control group, indicating that postoperative interventional nursing not only improves the quality of nursing, but also reflects patients' recognition to this method. It also creates a harmonious nurse-patient relationship to improve patient compliance. In summary, the application of interventional nursing after the thoracoscopic radical resection of lung cancer can promote patients' recovery, reduce complications, and improve patient satisfaction to nursing service.

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Competing Financial Interests

The authors declare no competing financial interests.

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Postoperative Care for Children's Traumatic Cataract Extraction and Intraocular Lens Implantation

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Abstract

This paper aims to investigate the postoperative care for children's traumatic cataract extraction and intraocular lens implantation. The paper is based on 33 cases of postoperative care for children's traumatic cataract extraction and intraocular lens implantation. During their stay in the hospital, targeted care was carried out on child patients and their postoperative vision was observed. The results showed that the visual recovery rate of the child patients reaches 100% owing to the early correct and scientific caring methods and the therapeutic effect is satisfactory. A close attention to meeting the psychological needs of children and timely educating parents about children health have positive social significance for improving the postoperative vision, a protecting children's visual function, life quality and healthy growth.

Keywords Traumatic cataract; Intraocular lens implantation; Nursing

1. Introduction

Traumatic cataract refers to the phacoscotasmus caused by ocular-perforating injury and blunt trauma. It is one of the common eye diseases that causes blindness in children and is commonly found in children and young people ^[1]. It is referred to as one of the most common eye disease of blind children ^[1]. Intraocular lens implantation is a safe and reliable method for the treatment of traumatic cataract. As far as the treatment for these patients is concerned, postoperative care plays an important role in addition to timely surgery. In the following part of this paper experiences of postoperative care for children's traumatic cataract extraction and intraocular lens implantation during the past three years are summarized.

2. Materials and methods

2.1 General information

In this research the data of the child patients who accepted traumatic cataract extraction from March 2013 to March 2015 in the First Affiliated Hospital of Sun Yat-Sen University was considered. There were a total of 33 cases of one-stage intraocular lens implantation. Among them were 22 male and 11 female cases. The age of patients range from 2 years (the youngest) to 9 years old (the eldest) with an average age of 5.5 years of the sample of patients considered. The lowest preoperative vision was no light perception while the highest preoperative vision was found 0.2. The shortest time interval between injury time and operation time was recorded as four days while the longest was three years.

2.2 Operation method

The operation was operated under general anesthesia or basic anesthesia. Then, corneal wound and iris were conventionally treated. Finally, cataract extraction and

intraocular lens implantation was performed. After the operation, antibiotics and dexamethasone were conventionally used in local parts and the whole body.

3. Caring

3.1 Psychological caring

To understand the psychological activity of child patients and their parents is of great importance. Most of the time, the children parents suffering from ocular trauma and their patients are heavy-hearted and anxious. Particularly, it is difficult for the patients to accept the fact that their children lost sight in a flash. Aiming at the psychological state of the patients, the assessment on the psychological condition of the children and their parents need to be carried out. Then, targeted ideological education and emotional support is to be provided. During the caring, the nurses should get familiar with the children as quickly as possible through adopting the forms the children liked such as story telling, reading comic strips, and singing children's riddles and poems. Then, they also should often talk with them and encourage children to attract their attention. As for the questions raised by the patients, the nurses should patiently make explanations in detail. In the whole process of nursing, the nurses should move gently and need to be kind and amiable for the patients and must show consideration. In addition, they were supposed to be patient while introducing the treatment therapeutic regimen to the parents and should give successful examples to give them sense of security and credibility, so that they can actively assist doctors and nurses to do a good job of dealing with children and actively cooperate with treatment.

3.2 Postoperative care

3.2.1 Post-general anesthesia caring

(1) prepare the rescue instruments such as the

aspirator, oxygen, drugs, etc.; (2) if the children maintain unconsciousness after the operation, they should lie in horizontal position with heads leaning towards the healthy eye, so as to prevent from the local circulation disturbances caused by long-term oppression on the operated eye as well as the polluting influences of vomiting on the dressing of the operated eye ^[2]; (3) learn the general situation of operation and matters needing attention from the anesthesiologist; (4) strengthen the ward rounding to observe state-variation, pay close attention to monitoring of temperature, respiration, pulse and blood pressure, prevent children from sharply shaking eyes and head due to excitement, hallucinations, and agitation.

The child patients are sensitive to oxygen deficit, thus it is necessary to provide low flow oxygen uptake. The monitoring of imperative signs is conducive to the early detection of unsafe factors of the child patients and adopts corresponding measures in time ^[3].

3.2.2 Life care

1 to 2 hours after recovering consciousness from general anesthesia, the child patients can not take food until their swallowing function recovers. It is necessary to pay attention to dietary health of the patient in such conditions. In addition, the food which is easy to digest and nutritious should be provided to them and should be given more fruits and vegetables to keep a normal bowel movement, so as to prevent the wound dehiscence caused by forced labored breathing and overexertion often caused by constipation. In addition, the patients should be advised to prevent sharp movement of eyes and head. The child patients should not bend down or lower head so as to prevent from sneezing. Besides, they should not shake or slap so as to prevent from influences on lens position and hyphema caused excessive sway or shaking. The child patients should be warned repeatedly not to rub eyes and wink eyes vigorously. The parents were also guided to supervise their children, particularly those much young in age. Owing to appropriate caring, there is no case of wound dehiscence and lens displacement. When the

child patients were agitated, the nurses would tell some interesting stories and play music according to the characters, moods, and hobbies of the child patients so as to ease their loneliness and calm them down. Those who are seriously irritated can be given sedatives two or three days after operation.

3.2.3 Infection prevention

After operation, the patients should be given intravenous antibiotic for 5 to 7 days and be given intravenous drip of glucocorticoid for 3 to 5 days so as to alleviate the inflammation and prevent synechia. The nurses should pay attention to the drug reactions of children. 24 hours after the operation, the operation eye should be locally given Pred Forte and Tobradex eye drops once every 2 hours. These two types of eye drops should be in alternate use. The Tobradex oculentum should be used in the evening. The eye drops should be used by only one person so as to avoid cross infection. If the color of the eye drops found changed, the eye drops should be prohibited. Before and after using the drops, the hands should be washed properly. While using the drops, the patients should move gently and prevent from oppressing the eyeballs of the patients. The child patients should be informed of the healthy use of eyes.

3.2.4 Caring of the operated eye

After operation, non-specific immune responses are frequently induced due to stimulation of operation or intraocular implantation ^[4]. These responses are mainly reflected as mild or serious ciliary muscle hyperemia, corneal edema, corestenoma and other uveitis. As for the severe patients, there is even lemma forming in pupil. Particularly, the following posterior synechia will increase intraocular pressure, stimulate and aggravate the symptom, thus seriously affecting the postoperative vision. At this stage we perform timely systemic and local anti-inflammatory treatment after operation; grasp the dynamics and changes of the pupil, and prevent the occurrence of postoperative complications.

3.2.5 Caring of complications

Almost all child patients suffer from different degrees of uveitis after operation [5]. Among it, the patients taking operation within one month after being injured suffered serious reactive uveitis and the patients taking operation three months after being injured suffered mild reactive uveitis. The patients with good control of intraocular pressure during operation and smooth operation suffered mild reactive uveitis. All of the responses could be controlled or alleviated after timely pupil dilatation, and using Pred Forte or Tobradex eye drops. There are five cases of hyphema in this group. (1) semireclining position, horizontal position with head raising or alternating lateral position was given according to the patient's condition. This method is easy to be accepted by the child patients. It is advantageous to bleeding absorption, and ensures the curative effect [6]; (2) the movement is limited and the excessive head shaking is reduced; (3) Intravenous Panax Notoginsenosidum injection was used cooperatively according to the medical advice so as to promote bleeding absorption. After the above treatment, 5 cases of hyphema are in the full absorption within 12 weeks. At the early period after operation, wound dressing was not performed so as to ensure enough photostimulation on the macula lutea and prevent the occurrence of predatory amblyopia. The key is to explain the dangers of amblyopia to the children and their parents and give lessons on prevention and treatment. Besides, it is also necessary to guide the parents to supervise and urge their children to insist on unremitting training of the prevention and treatment of amblyopia.

3.2.6 Discharge Guidance

The child patients should avoid heavy manual labor and aggravating activities. They should also prevent the pressure on the eye [7]. The patients should not play with their friends and classmates within 3 months after operation. They should prevent coughs and colds in case of lens dislocation.

The child patients should pay attention to eye health,

ensure proper use of eye drops, and avoid oppressing the eye. Special care is to be taken so that eye drop bottle should not touch the cornea.

The nurses and doctors should correctly guide parents to supervise the children as they will spend more time with them and need to keep the child in continuous observation. They need to take precautions at home about the treatment advised by doctors. Ensuring this will prevent amblyopia in the patients. The child patients should periodically accept reexamination and optometry at the specialist clinic. The remained ametropia should be corrected with glasses. The treatment scheme should be adjusted timely. Training of preventing amblyopia and periodical reexamination should be carried out.

In case of eye vision decreases or pain in eye is reported by the patient, they should be taken to hospital for proper check up and receive necessary treatment by the specialist.

The nurses should record the contact information of the child patients, and carry out long-term follow-up visits after the children leave hospital.

4. Results

Postoperative visual acuity rehabilitation is the main aspect to be noted. One-month follow-up visits on 33 cases of child patients gave very successful results. According to the postoperative examination of visual acuity, a total of 10 eyes has a vision larger than 0.1, and 23 eyes has a corrected visual acuity larger than 0.5. The visual recovery rate among all the cases is 100%.

5. Discussion

Children's traumatic cataract is one of the most common disabling eye visions of children. Due to the weak self-protection awareness, the children are noted with low capability of recognizing the risk factors of the outside world. As the eyeballs are the only exposed body organs, so they are vulnerable to suffer accidental



damage. As a result, the medical and nursing staff uses a variety of forms to intensify awareness for prevention of ocular trauma to attract close attention of the whole society on the prevention of ocular trauma. This has a positive social significance for protecting children's visual function, life quality and healthy growth. As for children's monocular cataract, the intraocular implantation is the most important correction method. Based on these 33 cases of child patients, this paper suggests that the postoperative care plays particularly

important role in the whole treatment although the significance of success of operation can also not be neglected.

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Competing Financial Interests

The authors declare no competing financial References

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