

Research on Fine Nursing Care of a Child with Bilateral Cochlear Implant Surgery

Feng Zhao, Dan Zhao, Yanqiu Zhang, Jing Zhao *

China-Japan Union Hospital of Jilin University, Changchun, Jilin, China

* Corresponding author

Keywords: Cochlear Implant; Surgical Cooperation; Nursing

Abstract: Cochlear implantation is one of the most important treatments for patients with severe deafness. The success of surgery is not only related to the choice of indications and the skill of doctors, but also closely related to the refined nursing in surgery. We selected our hospital to implement a double cochlear implant (Austria) with a minimum of 8 months of age in Jilin Province on September 15, 2017. The preoperative preparation and intraoperative nursing were summarized. The operation was smooth, no serious bleeding, infection, facial paralysis, electrode loss, lymphatic fistula and other complications. The speech processor was installed in about 1 month, and the debugging was started. In children with cochlear implant surgery, the operating room nurses perform surgical cooperation and refined nursing to understand the surgical procedures of cochlear implants, to understand the characteristics of the cochlear implant surgery and the characteristics of the instruments used, and to treat the surgeon carefully and closely, achieved safety, speed, high quality, and avoided complications. Fine-care in the cochlear implant surgery of infants and young children can improve the treatment compliance of children, and can ensure the smooth operation of surgery and improve the success rate and effect of surgery is one of the keys to successful surgery.

1. Introduction

Cochlear implant, also known as electronic cochlear implant, is an electronic device that replaces human ear function. It can help patients with severe and very severe deafness to regain hearing. It is the only effective treatment for hearing loss in patients with full sputum [1, 2].

The cochlear implant consists of an electrode placed in the cochlea, a speech processor, a directional microphone, and a delivery device. The sound is received by the directional microphone and converted into an electrical signal and then transmitted to the speech processor to amplify, filter, and transmit the signal to the receiver, and the generated electrical pulse is sent to the corresponding electrode, thereby stimulating the nerve fibers to excite and Send sound information to the brain to produce hearing. A large number of literatures have proven that bilateral cochlear implants are superior to unilateral implants - bilateral hearing reconstruction provides more benefits for improved quality of life [3], and in recent years with cochlear implant surgery. The sooner the effect is implemented, the better the concept. The sooner the child receives surgery, the sooner he can develop the language and communication ability based on the early hearing ability, and get better postoperative rehabilitation effect. Change, the operation of young children gradually increased, so the operating room should have corresponding professional nursing measures [4]. In 2017, an 8-month-old child was admitted to our hospital. Due to the special development of children's own development, such as the unsound development of the body temperature center, the blood vessels are rich, the skin is tender and easy to break, the throat is small and easy to cause intraoperative hypothermia, airway obstruction, etc. Adverse reactions, we have integrated the fine care to greatly improve the success rate of surgery, and achieved satisfactory results, as reported below.

2. Materials and Methods

2.1 Clinical Data.

In our hospital on September 13, 2017, the outpatients were treated with Ding XX males for 8 months, and they came to the hospital for hearing loss due to hearing loss. In the past medical history, the family told the children that they had hearing loss in the hearing screening 3 days after birth. There was no ear swelling, no pus and no ear pain. After 42 days of birth, the hearing was still not recovered. There was no significant recovery in the hearing of 110 days and 7 months after birth, and the hospital was hospitalized for “deafness”. Bilateral cochlear implants are planned.

2.2 Surgical Method.

Patients were placed in supine position, routine general anesthesia was intubated, sterile towel was placed, and the oblique incision was made to the left ear about 2.5 cm. The skin was exposed to the periosteum after the ear was cut, and the periosteum was cut through the T-shaped incision to reveal the mastoid. Bone, the posterior wall of the external auditory canal was found intact, and the left posterior incision was cut to remove part of the bone to establish a bone groove. Partial mastoid cortical bone was removed, the horizontal semicircular canal and facial nerve crypt were fully exposed, and the facial nerve crypt was opened to reveal the round window. The original window sill is removed, the round window membrane is opened, the electrode is implanted, the receiver is placed into the bone groove, the gelatin sponge is filled in the mastoid, and the periosteum and skin are sutured. The ear is pressure bandaged. The opposite side is the same as above.

3. Nursing Cooperation

3.1 Preoperative Preparation.

Preoperative visit: 1 day before the operation, the nurse went to the ward to visit the ward, and read the medical records to understand the results of the examination. Visiting the child and communicating with the family members of the child before the operation. Because the child was operated for 8 months, we used the hug, gently touched the head, and shook hands with the child to relieve the strangeness and reduce the anxiety and anxiety of the child. Provide preoperative communication guidance to the family members of the child about surgery, anesthesia and care, to minimize the anxiety of parents, and to establish a mutual trust relationship. Let the family members understand that the key to successful surgery is the cooperation between doctors and patients, and the formation of hearing and language is the result of long-term training [5, 6]. At the same time, parents should pay attention to matters such as children not to catch a cold and cough.

Preoperative preparation: preparation of surgical instruments and instruments, in addition to conventional equipment preparation, including preparation of special equipment, specifically for ear surgery, microsurgery for cochlea, cochlear implant, Austrian cochlear implant, Face nerve monitors, microscopes, electric drills, electrosurgical knives, and aspirator. At the same time, it is necessary to check the functional status of various instruments so that each device is in good working condition. Prepare a silicone ring for position, silicone shoulder pad, etc.

Surgical environment preparation: The operating room temperature should be controlled at 22-24 degrees. The room temperature can be slightly increased due to the younger age, and the humidity is controlled at 40%-60%. Cochlear implant surgery requires high sterility in the operation room. The operation should be placed in a thousand-level laminar flow operation room, and the cleanliness level is up to grade I. The micro-wet rag wipes the surface of the article and controls the personnel in the operation room.

3.2 Intraoperative Cooperation.

In the past, when the child entered the operating room, the environment was unfamiliar and the stranger was in a state of crying. Therefore, the nurse should cooperate with the anesthesiologist to establish a venous access for the child after basic anesthesia. However, considering the young age

of the child, it is prone to laryngeal edema after crying, and the secretion of respiratory tract is increased, which affects the anesthesia intubation. Now, the pediatrics are used to perform venipuncture before surgery and then enter the operation room. The choice of venous puncture site is performed on the head due to surgery. Therefore, it is not advisable to choose scalp venipuncture. The end of the saphenous vein should be selected on the back of the hand or the foot. The fixation is firm to prevent the child from crying or licking the needle. The drip rate is strictly controlled to prevent excessive liquid input. 5% of the glucose should be administered to the liquid input via the infusion warmer. 2 assist the anesthesiologist to perform endotracheal intubation and properly fix it. Due to the need of surgery, the operating bed should be adjusted to the left and right slopes during the operation. When adjusting, the left and right pulling force will be generated for the tracheal tube. The tracheal intubation may be pulled out. It is very important to fix the tracheal intubation before. We use multiple tapes to reinforce the tracheal intubation on both sides of the cheek, and the towel clamp fixes the spiral tube to the bedside to prevent the occurrence of preoperative decoupling. The endotracheal tube is re-reinforced before the surgery on the other side is completed. 3 After the child was anesthetized, the position was placed to help the doctor position the body. The supine position was parallel to the operating bed, and the head was 75 degrees to the opposite side. The same is true for the other side of the operation, and the sterile list should be re-sterilized. Because the age of the child is small, the negative electrode plate of the child is attached to the hip and hip. After the position is placed, the child is younger. When the child is fixed, the leg and the hip are fixed with the leggings. The upper body and the arm are wrapped on the sides of the body with the SLR, and the head is biased to one side. The skin of the child is delicate and easy to break. Therefore, the head cushion should be placed under the head, and the silicone pad should be placed under the shoulder of the child. Because the body temperature regulation center of the child is still not perfect, the body temperature regulation function is poor, so the body temperature changes greatly with the external environment. Before the operation, the heating blanket is placed on the operating bed for heat preservation during the operation, and the body covers the blanket insulation. 4 In the operation, the facial nerve should be detected. The facial nerve monitor should be placed on one side of the operating table. The lines should be correctly connected before the operation. The orbicularis oculi muscle, the orbicularis oculi and the lower edge of the upper sternum are placed on the surgical side of the child before surgery. Insert the monitoring electrode and debug it for later use. Remind the anesthesiologist not to add muscle relaxants during surgery to avoid affecting facial nerve monitoring. The patient was implanted with bilateral cochlear implants, so the monitoring electrode should be reinserted when the other side of the operation is performed. 5 Pay attention to the protection of special parts of the child. For example, the eye should be applied with eye patch to prevent the disinfectant and long-term exposure to damage the cornea. 6 During the operation, observe the vital signs, infusion channels, tracheal intubation, etc., and control the temperature of the electric blanket to avoid burns. 7 The cochlear implant should be opened after the implanted hole is selected. After opening, it should be carefully transmitted to the device nurse or doctor to avoid contamination and damage, and the cochlear barcode should be attached to the nursing sheet. 8 After the operation, the head blood and disinfectant of the child will be wiped clean to assist the surgeon to dress the wound.

1) The nurse should be familiar with the steps of the operation and the use of various instruments, lay out the sterile equipment table, and pre-position the instruments in advance, especially the micro-devices and cochlear instruments, which should be placed separately and cannot collide with other instruments. 2) Assist the doctor to disinfect the towel, paste the eardrum, connect the electric knife, electric drill, suction device, facial nerve probe, microscope cover with surgical aid gloves, etc. 3) Transfer the prepared hemostatic water (10ml NaCl + 6 drops of epinephrine hydrochloride) to the doctor for local injection, cut the skin, subcutaneous, electric knife to stop bleeding, and give the electric knife cleaning sheet to remove the eschar on the electric knife at any time. Free muscle periosteal separation exposes mastoid bone. 4) Before using the electric drill, be sure to check whether the flushing device of the electric drill system is normal. Continue to flush the water to reduce the temperature and avoid facial nerve damage. The principle of using the drill bit is to be

coarse and then fine, and the diamond is cut first. 5) Gelatin sponge is cut into squares of rice size and placed in antibiotics for soaking. 6) Rinse the cavity repeatedly with a syringe to ensure that the procedure is sterile and removes bone debris. The operator replaces the gloves and the instrument nurse cleans the bones around the surgical field and the instrument and re-strips the knife around the incision. 7) Cochlear implant: Carefully deliver the infusion to the surgeon, use the special equipment for the cochlear implant to slowly implant the cochlear electrode into the drum, use the fascia and gelatin sponge to fill the electrode, and place the cochlear receiver in the bone groove. Fill the gelatin sponge to fix it. 8) Use 4-0 absorbable Weiqiao line to suture the incision layer by layer, and use the 5-0 Weiqiao line for intradermal suture to assist the doctor to bandage the head.

4. Nursing Experience

The age of the child is eight months. The nursing staff in the operating room needs to be more caring and compassionate. They should be more active and enthusiastic to serve the children. At the same time, they should pay enough attention to the psychological care of the family members of the children, so as to communicate in detail before surgery. It fully understands the surgical procedure, the operating room environment, etc., and eliminates the anxiety of family members. Cochlear implant surgery is related to the child's life. It requires the medical staff to cooperate carefully and master the whole process of the operation so that the operation can be carried out smoothly. For the operation of young children, detailed operating room care coordination procedures and emergency plans should be developed. Coordinating all aspects of surgery, so that doctors, operating room nurses, anesthesiologists coordinated coordination, the operation was successfully completed. The focus of the intraoperative tour nurses in conjunction with surgery is the regulation of surgical instruments and the safety of children. It is necessary to adhere to the post, adjust the parameters according to the needs of the operation, and provide the items needed for surgery in a timely and rapid manner. The focus of the equipment nurses is to understand the specificity of the surgical procedures and equipment requirements, and to closely cooperate with the doctor's operation. The surgical microscopy equipment should be handled with care and should be carefully cleaned and stored properly. The monopolar coagulation is immediately turned off before the electrode is implanted to prevent the implant from being damaged by misoperation.

References

- [1] XIE Rui ling, WANG Dong fang, YAO Xue fen. Electronic cochlear implantation peri-operation period nursing for children [J]. Today Nurse, 2015(08):79-80.
- [2] SONG Yueshuai, WANG Zhenxiao, XIE Jing, et al. Cochlear implant for elder patients over 75years old[J]. Journal of Clinical Otorhinolaryngology Head and Neck Surgery, 2018, 32(19):1477-1479.
- [3] Lopez TM, et al. Clinical and Logopaedic Results of Simultaneous and Sequential Bilateral Implants in Children with Severe and/orProfound Bilateral Sensorineural Hearing Loss: A Literature Review [J]. Int J Pediatr Otorhinolaryngol, 2015,79(6): 786-792.
- [4] FU Xiao-rong. Nursing of pre lingual deafness children with artificial cochlear implantation [J]. Clinical Research, 2018,26(11):168-169.
- [5] YU Wenyong, LI li, YANG Jie, et al. Perioperative nursing care of 58 patients with cochlear implantation [J]. Nursing Research of China, 2017,31(36):4727-4728.
- [6] WANG Qirong,YU Shudong,GU Lintao. Preoperative assessment of cochlear implantation[J]. Journal of Otolaryngology and Ophthalmology of Shandong University, 2017,31(05):16-18.