

# Nursing Care of Patients With Transcatheter Closure of Atrial Septal Defect via Femoral Vein

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**Abstract:** Objective: To explore the operative nursing coordination method for the treatment of congenital atrial septal defect (ASD) by transcatheter closure of atrial septal defect via femoral vein. It provides useful experience for the treatment of congenital heart disease. Methods a total of 12 patients undergoing minimally invasive atrial septal defect closure via femoral vein from January 2017 to November 2017 in our department of cardiac surgery were selected as the subjects. All patients received transesophageal ultrasound guided ASD occlusion by femoral vein. The operation and nursing contents include preoperative care, the cooperation of the itinerant nurses, the coordination of the instrument nurses and the postoperative nursing. Results the operation of 12 patients in this group was successful. The diameter of the occluder was  $17.1 + 4.5$  mm during the operation. The time of tracheal intubation was  $2.4 + 0.7$  h, from the femoral vein to the sheath tube time was  $38.7 + 9.4$  min, the occupancy of ICU was  $12.5 + 2.6$  h after the operation. The average time of hospitalization was  $4.5 + 1.8$  D. There were 2 cases of shunt 1mm immediately after operation. After 24h reexamination, the shunt disappeared, the heart murmur disappeared in the rest of the patients. No residual shunt and other complications occurred.

**Keywords:** Transcatheter closure of atrial septal defect via femoral vein; Congenital heart ward septal defect; Esophagus ultrasound; Extracorporeal defibrillation electrode; Operation nursing coordination

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## 1. Introduction

Atrial septal defect (ASD) is one of the most common congenital heart diseases. In the past, the conventional treatment is mainly through the repair of the direct visual field of surgical thoracotomy and the interventional occlusion under the radiological line. Cardiopulmonary bypass should be established during thoracotomy. The process is complex, the surgical incision is large, the recovery was slow after operation. However, radiation closure can avoid the shortcomings of the above thoracotomy. But there is radiation damage, it will affect the bone marrow, thyroid, the function of the reproductive system. It affects the physical and mental health of the patients. With the development of medical and health

services and the growing maturity of cardiac surgery treatment technology, the transcatheter ultrasound guided transcatheter closure of the atrial septal defect has a minimally invasive procedure. There is no need to establish an extracorporeal circulation, no radiation and rapid recovery after operation, it has become a new kind of clinical treatment for congenital atrial septal defect. In this paper, the nursing cooperation of 12 cases of transcatheter ultrasound guided transcatheter closure of atrial septal defect was reported as follows.<sup>[1-2]</sup>

## 2. Data and Methods

### 2.1 General Information

Twelve cases of atrial septal defect were selected from

January 2017 to November 2017 in the heart surgery department of our hospital. 7 of them were male. Five female cases age 2~6 years old. The average age was (3.7 + 0.8) years. Weight 8.4 to 36.7 kg. The average weight was (15.2 + 2.3) kg. All patients or their families in this study signed an informed consent form, and get the approval of the hospital ethics department.<sup>[3]</sup>

Inclusion criteria: (1) through clinical signs and chest radiography, echocardiography and other examinations were diagnosed as atrial deficiency. It is suitable for the closure of the defect around the defect, and there is no surgical taboo; (2) to remove other malformations that need to be operated on; (3) eliminate serious diseases of other organs.

## 2.2 Operation Nursing Coordination

### 2.2.1 Preoperative Preparation

Preoperative preparation: Preoperative 1 D visit children, observe the condition, tell the child or his family to fasting, the time of water prohibition. By talking to patients and their families to understand the mental activity of the patient, patiently answer the question of the patient's attention.<sup>[4]</sup> Brief introduction of surgical methods, anaesthesia, preoperative attention and other related information, explain the advantages of the surgical procedure to the patients in the previous successful operation cases. Relieving his thoughts, strengthen their confidence in beating the disease, to cooperate with surgery and nursing in a good mental state, regular preparation: esophagus ultrasound, in vitro defibrillation electrode, marking pen, 18 G puncture needle, 150 cm guide wire, various types of ASD occluder and more than 70 cm conveyor, heparin salt water, the 20 ml syringe is 2. Special preparation: conventional surgical instruments and special instruments for cardiac surgery. Extracorporeal circulation machine, blood recycling machine, the defibrillator and other rescue equipment are in a standby state. The surgical repair was performed at the immediate hypothermia cardiopulmonary bypass (ASD) after the failure of occlusion.

### 2.2.2 The Coordination of Tour Nurses

The coordination of tour nurses: (1) the operation was arranged in a hundred level to clean operation. The equipment and equipment needed in the preoperative examination are in good condition. The room temperature is controlled at 22-24. Humidity control at 50-60%, the temperature of the circulating heating blanket is set at about 38 C. The warm air heater is warm for the surgical sheet. After the patient entered the operation room, the surgeon, the three parties to the anesthesiologist and the itinerant nurse ask if they are fasting. Water prohibition, give the

patient encouragement, help the patient to relieve the bad mood; (2) the establishment of venous channel, help the anesthesiologist to induce general anesthesia, conventional tracheal intubation, ECG monitoring, arteriovenous pressure detection, blood oxygen saturation detection and so on. Take the supine position, turn your head back, make a horizontal line between the mouth and the esophagus, in order to facilitate the entrance of the esophagus ultrasound probe, connect the heart color doppler ultrasound machine. Then the appropriate body pad is placed on the back of the child for easy exposure. Anti pressure pad of bone process pad, avoid the formation of stress damage. Plaster the defibrillation electrode in vitro, electric knife negative plate. The routine urethral catheterization was performed and the temperature of the anus was measured. The surgeon marked the right femoral vein with a mark pen. According to the conventional thoracotomy with sterile single disinfection, the scope of disinfection is from shoulder to neck to knee joint. The notice of ultrasound doctors; the main instrument for operation; the disposable surgical ASD occluder, it belongs to high value consumptive medical supplies, expensive price, before opening the outer packing, the name, model and expiration date of the items are checked again with the operator. Check whether the package is damaged or not. It is unmistakable to open it. Stick the bar code label on the nursing record sheet. We need to start operation in patients with heparin, according to the kilogram weight, 1 mg, and check ACT.<sup>[5-6]</sup>

### 2.2.3 The Coordination of Instrument Nurses

The coordination of instrument nurses: In the operation, the articles are placed on the operating table strictly according to the principle of aseptic technique. The device nurses soaked the occluder in the heparin solution (the preparation of heparin solution: normal saline 250 ml + heparin 0.2 ml). All the sheath tubes in the occluder conveying system were injected with 20 ml syringe and injected with heparin liquid. Select the right part of the femoral vein as a puncturing point. The 16 G cannula was punctured by the right femoral vein. Exit needle core, introduction of metal wire, under the guidance of TEE, the right atrium is reached through the femoral vein. When the position is determined, the metal guide wire is extracted. A conveyor that quickly connects the device has been installed to the ASD occluder. Slow down the ASD occluder, the heparin brine was slowly pushed with the 20 ml syringe to serve as a lubricant, the effect of preventing thrombosis. Open the left room surface of the parachute under TEE real time observation. Continue to pull back and release the right side of the occluder. Gently push and pull delivery system "push and pull experiment"

to determine that the position of the occluder is normal and no shift. No residual shunt around the ASD occluder was observed under TEE. Until the surgeon and surgeon agree that the occluder is completely released after the full satisfaction of the surgeon, exit the delivery system. The surgeon pressed the femoral vein puncture point for 15-20 minutes until there is no bleeding. The last aseptic gauze, the sticky elastic bandage is pressurized to cover the puncture point.

#### 2.2.4 Nursing

Nursing: The patient was given the expansion after operation. Anticoagulant therapy, Electrocardiographic monitoring and oxygen absorption, the family members of the children were asked to prohibit severe exercise within 72 h. Hypodermic injection of low molecular weight heparin, oral aspirin. A regular review of cardiac ultrasound, find out the problems to take active and effective measures.<sup>[7]</sup>

### 3. Results

The 12 patients in this group were successfully operated on. The diameter of the occluder was  $17.1 \pm 4.5$  mm during the operation. The time of tracheal intubation was  $2.4 \pm 0.7$  h, from the femoral vein to the sheath tube time was  $38.7 \pm 9.4$  min, the occupancy of ICU was  $12.5 \pm 2.6$  h after the operation. The average time of hospitalization was  $4.5 \pm 1.8$  D. There were 2 cases of shunt with 1mm immediately after operation. After 24 h, reexamination echocardiography showed the disappearance of shunt. The remaining patients did not have peripheral vascular injury, occluder displacement, heart perforation, arrhythmia, and valve injury.

### 4. Conclusion

The transcatheter ultrasound guided transcatheter closure of the femoral venous atrial septal defect is compared with the traditional method of operation and the interventional catheter closure of the catheter. There are the following advantages: (1) small wound, no damage to the sternum and ribs; (2) without the need of extracorporeal circulation, effective avoidance of ischemia-reperfusion injury; (3) the operation is simple, short time; (4) avoid radiation; (5) less complications after operation, it is safer and better for patients to recover after operation. Shorten the time of hospitalization.<sup>[8]</sup>

At the same time, the nurses in the operation room have also raised higher requirements. The following points are specific: (1) Strengthening the sense of responsibility, a patient's visit is done before the operation. Un-

derstand the physical and psychological condition of the patient. Before the operation, the required instruments and instruments are prepared and the functions are ensured. Be familiar with the procedure of operation, in order to assist the surgeon quickly. (2) Choose the suitable type of occluder according to the patient's condition. The types and properties of the surgeon, nurse, nurse and supporting the mutual verification of occluder conveying device. (3) Strictly enforcing the aseptic operation, when the occluder is opened, it should be used as soon as possible. Don't be exposed for a long time. It is not suitable to paste the high frequency electric knife negative plate on the thigh. It will affect the scope of disinfection. Strengthening the management of surgical instruments, the transmission needs to be fast and orderly. Exposure or collision lasts for a long time. It is easy to cause infection. Prevent surgical complications, the occluder is easy to remain gas because of the particularity of the material. To make sure that the residual gas is emptied when wet, softened and soaked. Prevent the occurrence of a gas bolt. The intraoperative attention is to keep warm.

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