

Role of psychological intervention in fetoscopic laser surgery of twin-to-twin transfusion syndrome

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Summary

Objective: This study aims to investigate the influence of application of psychological intervention in fetoscopic laser surgery of twin-to-twin transfusion syndrome (TTTS) on perinatal outcome. **Materials and Methods:** A total of ten cases of pregnant women diagnosed with TTTS from January 2007 to December 2009 in the present hospital were selected. Their gestational weeks ranged from 16 to 29 weeks. Under the location of B ultrasound, the method of intra-amniotic fetoscopic laser occlusion of chorioangiopagous vessels (FLOC) plus amnioreduction was conducted for treatment. Contemporarily, psychological intervention was also carried out. **Results:** Preoperative, intraoperative, and postoperative behavior controls of all pregnant women were good, and all operations were successfully completed to achieve the desired purpose of rehabilitation discharge. **Conclusion:** Fetoscopic laser surgery is an effective treatment for TTTS and competent psychological intervention is one of important measures for successful operation and pregnant woman rehabilitation discharge.

Key words: Twin-to-twin transfusion syndrome; Laser; Psychological Intervention.

Introduction

Twin-to-twin transfusion syndrome (TTTS) refers to obvious hemodynamics differences between twins and a series of pathological and physiological changes caused, due to placental vascular anastomoses during twin pregnancy [1]. Perinatal mortality rate is extremely high. If treatment is not conducted, its mortality rate can reach 80% to 90% [2]. At present, fetoscopic laser occlusion of chorioangiopagous vessels (FLOC) is the internationally-preferred method for TTTS treatment. According to domestic reports, TTTS incidence rate is low, and such operation is conducted in only a few hospitals. However, fetoscopic laser surgery also causes many psychological reactions to pregnant women. It is reported that the surgically treated pregnant women with TTTS have obvious psychological stress reactions or mental disorders [3], and surgery itself can induce some reactions such as agrypnia, anxiety, and depression that inevitably influence the life quality of patients [4]. As pregnant women cannot understand and accept its damages to fetuses, they are bound to not accept surgery as an option. The present summarizes the treatment results of ten cases of patients with TTTS receiving FLOC and the psychological intervention from 2007 to assist pregnant women to actively respond to the intervention, relieve anxiety extent of pregnant women intraoperatively, and enhance compliance in order to provide a reference for smooth implementation of treatment and postoperative rehabilitation of pregnant women with TTTS.

Materials and Methods

General data

Ten cases of pregnant women diagnosed TTTS from January 2007 to December 2009 receiving surgical treatment in the present hospital were selected. Their average age was 28.3 years, and gestational weeks ranged from 16 to 29 weeks. They had no history of disease of vital organs and no medication and radiation exposure history during pregnancy. Among them, one case was in stage I pregnancy, one case was in stage II pregnancy, four cases were in stage III pregnancy, and four cases were in stage IV pregnancy.

This study was conducted in accordance with the Declaration of Helsinki and with approval from the Ethics Committee of the Affiliated Hospital of Hangzhou Normal University. Written informed consent was also obtained from all participants

Surgical methods

FLOC: after various routine examinations of pregnant women were completed, local anesthesia was conducted at uterine fundus or anterior uterine wall rather than placental attachment skins under the location of B ultrasound. Trocar punctured the skin to enter the amniotic cavity. After amniotic fluid outflowed, a fetoscope was positioned to seek the transportation vascular branch near amnion at placenta bottom. In the handle hole, 365.0 μ m laser transmission optical fiber was inserted to aim at the vessels. Subsequently, energy and frequency were set (1.0 - 2.0 J/10Hz). Laser was used to cauterize and occlude vessels. Intraoperatively, several vessels were respectively cauterized. After surgery was completed, partial amniotic fluids were slowly released until the deepest amniotic fluid area was five to six cm. The surgical process was strictly monitored by B ultrasound and fetal heart and fetal movement of two fetuses were normal. Finally, amniotic fluid index and umbilical artery's pulsatility index (PI), resistance index (RI), and systolic/diastolic (S/D) values were measured.

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Psychological intervention method

Psychological problems and requirements of pregnant women were understood by the specialized intervention team, which was composed of a primary nurse, head nurse, and obstetrician that evaluated the psychological changes of the pregnant women, and appropriate measures were promptly taken preoperatively, intraoperatively, and postoperatively [5].

Preoperative psychological intervention: 1) provide information. As fetoscopic laser surgery used for TTTS was a newer treatment technique, information acquisition routes of pregnant women and families were fewer and there were more worries. Therefore, it was necessary for doctors to provide the actual information of FLOC used for TTTS to pregnant women and their families before surgery, including both subjective and objective information. The subjective information provided intraoperative impressions, intraoperative potential problems, and coordinating measures regarding FLOC to pregnant women. The objective information was to introduce details of FLOC, existent achievements of FLOC, possible complications and precautions to patients and their families before surgery. 2) General supportive psychotherapy. It was very important to understand whether emotions of pregnant women were stable to conduct psychological intervention. In the preoperative discussion with pregnant women, doctors avoided using medical nomenclature and allowed pregnant women and their families to set forth as many problems as possible and explain the fetoscopic laser surgery process by use of a graphic method to eliminate some wrong concepts and unrealistic ideas. Among the ten cases, one case overcame psychological concerns and finally signed the surgical cognitive consent at after six hours of repeated psychological counseling. 3) Strengthening the doctor-patient communication. The operating nurse strengthened ward communications of medical care staffs with pregnant women and their families, visited pregnant women and their families before surgery to introduce anesthesia method, surgical process, surgical room environment, etc. and provided timely feedback of the problems and needs of the patients and their families to medical care staff within the ward. The medical care staff timely resolved the problems of pregnant women and their families. Therefore, it greatly relieved the tension of both the patients and their families and reduced various interferences of families towards surgery. 4) Teaching the physical and mental relaxation methods to allow patients [6] to learn self-adjustment. The physical and mental relaxation method attempted to eliminate patient distractions and calm mind and body through self-training. Specific method: the nurse guided pregnant women to naturally sit up, with eye closure and two palms placed on both knees. Also, their attentions focused on their two foot arches. They uniformly and slowly breathed for three to four minutes to relax each group of muscles for extending to systemic relaxation. Subsequently, they slowly opened their eyes. In this fashion, relaxation was carried out once daily for less than 30 minutes.

Intraoperative psychological intervention: fetoscopic laser surgery of TTTS was conducted under B ultrasound location and local anesthesia, and surgery continued for about 60 minutes. The pregnant women were always in the waking state of consciousness. The authors observed that the patients often intraoperatively guessed and imagined the surgical process. In order to avoid undue psychological distress of the patients, unrelated conversations and communications were minimized as much as possible, and professional terms were used in the communications [7]. While doctors conducted surgery, they offered comfort and explained the surgical progress to the

patients, while nurses offered encouraging words at head side of the patients, such as "you are good!", "you are fantastic!". In the interim, they closely observed vital signs and psychic reactions and dispersed attentions of pregnant women. For some particularly-nervous patients, the nurses constantly communicated with them (talking about some families or friends, work, and other unrelated matters) to disperse their attentions and timely updated the surgical progress to offer psychological support to them. As a result, ten cases were completed without any complications.

Postoperative psychological intervention: if the patients presented anxiety, dysphoria, and other symptoms due to wound pain or discomfort and other reasons within 24 hours after FLOC, the medical care staffs strengthened tour inspections to carefully observe systemic symptoms, monitor vital signs, monitor fetus situations, abdominal incision to confirm whether there were threatened premature delivery symptoms, and timely treated uncomfortable situations of pregnant women, foreseeing resolved requirements of pregnant women and enhanced the trust of the patients towards medical staff. Twenty-four hours postoperatively, the conditions of pregnant women were relatively stable. At this time, a majority of pregnant women expressed concern regarding fetal state and its survival. Therefore, medical care staffs actively communicated with pregnant women to highlight rest importance. At the postoperative third day, the patients had absolute bed rest. The nurses timely explained fetal monitoring situations, illustrated the monitoring of the fetuses to the patients, and attempted to obtain comprehensive care for meeting the patients' requirements while winning their active cooperation. Individual patients became irritable, and the nurses guided these to use the attention dispersing method. According to habits, hobbies, and cultural literacy of pregnant women, the excessive concern of pregnant women to fetal prognosis was transferred. Relaxing and soothing music or video materials were selected to transfer pregnant women's mood and disperse their attention [8, 9], and better results were obtained.

Results

All patients with TTTS had different extents of psychological problems in the perioperative period. Among them, 70% had an operative contradictory psychology before surgery and worried about threatening fetal life and unsuccessful surgery. In the perioperative period, the number of pregnant women confident to successful surgery greatly increased after implementation of psychological intervention, and ten cases underwent surgery in a healthy mood. As a result, preoperative, intraoperative, and postoperative moods of the cases were well controlled.

Ten cases were compliant with medical care staffs to complete surgery. Postoperative vital signs of pregnant women were stable, and postoperative B ultrasound re-examination showed that except for biparietal diameter, femur length, scalp edema, and pyoperitoneum of two fetuses, umbilical artery blood flow indices PI value, RI value, S/D value of the remaining were normal [10]. No complications occurred and the desired treatment purpose was achieved. On average, the patients were discharged after seven days of hospitalization.

Discussion

In China, fetoscopic laser surgery used for TTTS is a novel technique. The Affiliated Hospital of Hangzhou Normal University is one of the first hospitals to conduct such treatment and better results have been obtained. The success of this treatment is not only related to doctors' experience, but also closely related to the psychological intervention of medical staff.

For patients with TTTS and gestational weeks less than 26 weeks, FLOC is the preferred treatment method. Rossi [11] summarized 611 cases of TTTS cases and drew a conclusion that fetuses receiving laser therapy more easily survived than fetus receiving amnioreduction. Especially in stages III and IV, advantages of laser therapy are more obvious [12]. Compared with continuous amnioreduction, FLOC can increase the survival rate of perinatal period and reduce the incidence rate of nervous system [13]. Abroad, FLOC treatment is more consolidated. It is reported at home that TTTS incidence rate is low, and such an operation is carried out only in a few hospitals. Fetoscopic laser surgery used for TTTS is a new technique. As there are a fewer reports on disease conditions and treatment information of TTTS, pregnant women and their families obtain with difficulty the relevant knowledge. Some studies [14] suggested that if patients did not know the disease condition in detail, they easily generated doubt, fear, and random guess psychologies. These are unfavourable for psychological health and disease treatment, while effective communications and common investigations on disease-related knowledge and treatment schemes are useful for the treatment and rehabilitation of patients. According to this phenomenon, the authors provide the information in the form of images and words for pregnant women and their families, allowing them to understand the disease conditions and surgical process, allowing them to better home internal supports during hospitalization. Therefore, confidence and courage of pregnant women to surgical treatment are enhanced and treatment compliance is increased [15, 16].

Due to the initial experience to this traumatic operation, a majority of pregnant women will exaggerate the fetal surgical risk, which causes them to generate larger psychological changes and generate anxiety and fear. Many studies confirm that in case of high anxiety level, muscle tension increases, while pain threshold decreases. Therefore, it increases the pain experience of patients during surgery and renders it more difficultly for them to cooperate, whereas cooperation extent influences diagnosis and treatment efficiency. Therefore further psychological support is provided [17] and guidance and encouragement of both patients and their families to express their feelings by use of one-to-one support expression method. According to the psychological requirements and existent problems of pregnant women, explanation, encouragement, and comfort are timely given. In addition, pregnant women generate fear reaction towards surgery and generate anxiety due to excessive concerns regarding fetal safety. Studies suggest that people only

focus on a matter at a time. If the attention or accompanied bad mood is transferred to the interest task or work attracting the attention, the link between the conditioned stimulus and response can be prevented. Therefore, dispersing attention through communication can act as a way of relieving psychological stress reaction towards surgery [18, 19]. The attention dispersing method used by medical staff is simple and convenient and it can independently provide auxiliary measures of relieving psychological stress reaction.

A number of practices [20] prove that relaxation training can offset negative influences of physiological and psychological stresses to restore the balance and coordination of human body, psychology, and spirit. It not only can apparently relieve general mental tension and nerve disorder, but also can treat stress-induced psychosomatic reactions. The physical and mental relaxation method adopted by the authors is a more utilized behavior method for the relaxation before obstetric operation [21]. As a result of operability, safety, and convenience of relaxation training, a majority of pregnant women are willing to accept such a method and obtain better effectiveness of relieving psychological perplexity from it.

The results of this study show that fetoscopic laser surgery used for treatment of women with TTTS has different extents of negative psychological problems and the psychological intervention used during the perioperative period can improve the psychological status resulting in the smooth operative implementation and satisfactory postoperative rehabilitation. As limited researched samples, it is necessary to carry out verifications and researches on a larger range. At the same time, after the post-discharge psychological intervention of pregnant women is combined, it will improve post-discharge quality of life of the patients.

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