



Perioperative Nursing in Strabismus Surgery: A Narrative Review

**Haiyan Cai, Liwen Pan, Pei Zhang*

Department of Nursing, the Second Affiliated Hospital of Zhejiang University School of Medicine, Hangzhou City, Zhejiang Province, 310009, China

***Corresponding Author:** Email: 2195016@zju.edu.cn

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Abstract

Background: Perioperative care plays an unparalleled role in the management of strabismus. However, there is still a lack of adequate understanding of the perioperative care and guidelines on nursing measures for strabismus surgery. This article provides a comprehensive review of perioperative care for strabismus, focusing on psychological intervention and rehabilitative nursing.

Methods: To comprehensively collect research related to perioperative nursing, we employed a systematic literature retrieval strategy. The databases searched included PubMed, EMBASE, Web of Science, CNKI (China National Knowledge Infrastructure), WanFang, and VIP (Weipu). We read, summarized and review the literatures obtained from databases.

Results: We summarized the conclusions in the retained literature and elaborated from two aspects: Psychological intervention and Rehabilitation Nursing. Psychological intervention can be carried out from the following aspects: cognitive behavior intervention, psychological and emotional intervention, social support intervention. Perioperative rehabilitation can be carried out from the following aspects: postoperative nausea and vomiting management, prevention of postoperative infection, visual care, preventing recurrent strabismus post-surgery, avoiding diplopia.

Conclusion: Comprehensive perioperative care for patients with strabismus can alleviate negative emotions, improve psychological status, reduce the incidence of postoperative complications, and enhance patients' quality of life. However, further research is still needed to establish detailed intervention strategies for comprehensive care.

Keywords: Nursing; Adult; Child; Strabismus; Perioperative

Introduction

Strabismus is a common ocular disorder characterized by the deviation of the eyeball from its normal position, leading to impaired visual function (1,2). The etiology of pediatric strabismus includes congenital neuromuscular dysplasia, inadequate central control of eye movements, genetic factors, chromosomal variations, birth trauma, abnormal

development of the refractive system, skeletal deformities caused by abnormal head positions, and other acquired diseases (3). Acquired strabismus in adults is relatively rare (4). Adult strabismus is often secondary to other diseases, including neurological disorders, cranioccephalic trauma, ocular trauma, multiple sclerosis, myasthenia gravis, intracranial or orbital inflammation, and tumors.



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Strabismus affects the appearance of patients and can lead to stereoscopic vision disparity, visual fatigue, amblyopia, abnormal head posture, and other adverse effects. In addition, long-term strabismus may result in negative emotions, leading to poor psychological states or diseases. Strabismus imposes a heavy burden on patients and their families. Restoring proper alignment of the eyes and eliminating the adverse effects of strabismus are crucial for the normal development of binocular vision and depth perception in both children and adults. Surgery is the main treatment strategy for strabismus (5). In most cases, early strabismus surgery can improve the visual function of children and adults. Children are the majority of patients undergoing strabismus surgery. The surgical treatment of strabismus is usually aimed at correcting eye position, achieving binocular vision, expanding the visual field, reducing compensatory head posture, eliminating diplopia, and improving visual function (5). Regarding the preoperative negative psychological state and postoperative complications in children and adults undergoing strabismus surgery, perioperative care is of unparalleled importance (6). Through good perioperative care, negative emotions can be alleviated, infections can be prevented, complications such as intraocular inflammation can be avoided, the success rate of surgery can be improved, hospitalization time can be shortened, patient costs can be reduced, accidents can be prevented, and a normal retinal opposition relationship can be established. This article will provide an overview of perioperative care for strabismus from the perspectives of psychological intervention and rehabilitation nursing.

Methods

This is a literature review. To comprehensively collect research related to perioperative nursing, we employed a systematic literature retrieval strategy. The databases searched included PubMed, EMBASE, Web of Science, CNKI (China National Knowledge Infrastructure), WanFang, and VIP (Weipu), encompassing major scientific literature resources both internationally and within

China. The time frame for the search was set from the establishment of the databases until Aug 2024, with language restrictions limited to Chinese and English. The combination of keywords utilized both Medical Subject Headings (MeSH) and free text terms to enhance the flexibility and breadth of the search. The specific retrieval strategy included: ("Strabismus") AND ("Surgery" OR "Perioperative") AND ("Nursing" OR "Care" OR "Management"). We eliminated irrelevant literature by reading abstracts. This review is based on previously published literature and does not require ethical review.

Results

Through database search, we obtained 4082 literatures, deleted 2089 duplicate literatures, deleted 1935 literatures unrelated to the topic by reading abstracts, and retained 58 literatures. We summarized the conclusions in the retained literature and elaborated from two aspects: Psychological intervention and Rehabilitation Nursing. Psychological intervention can be carried out from the following aspects: cognitive behavior intervention, psychological and emotional intervention, social support intervention. Perioperative rehabilitation can be carried out from the following aspects: postoperative nausea and vomiting management, prevention of postoperative infection, visual care, preventing recurrent strabismus post-surgery, avoiding diplopia.

Discussion

Psychological intervention

Preoperative Psychological State in Adults and Children

Strabismus can significantly affect the psychological well-being of both children and adult patients. Compared to children without strabismus, those with strabismus are more likely to develop mental disorders by the age of 30 (7). Wen et al. (8) conducted a study using the Pediatric Quality of Life Inventory (PedsQL) on 4,218 preschool children

aged 2 to 6 yr and found that children with strabismus had significantly lower scores in the physical, emotional, social, and school functioning domains compared to normal children. In terms of physical functioning, children with strabismus had a two to four times higher prevalence of difficulties in daily activities and sports compared to children without any issues. Strabismus can impair children's motor function, possibly due to impaired stereoscopic vision and abnormal visual input. In terms of emotional and social functioning, the proportion of children with strabismus aged 2 to 4 yr experiencing difficulty falling asleep was higher than that of normal children. Among children aged 4 to 6 yr with strabismus, there was a higher proportion of children with negative psychological states such as depression and irritability compared to normal children. They also tended to have more self-doubt regarding their own abilities compared to their peers. Wang et al. (9) measured the deviation angle, binocular visual function, Newcastle score, and IXTQ score in children with intermittent exotropia and found that an increase in deviation angle and a decrease in the ability to control intermittent strabismus were associated with lower IXTQ scores. Photophobia, diplopia, inability to focus both eyes, and concerns about other eye diseases in children with intermittent exotropia led to a decrease in quality of life, while teasing by classmates and difficulties in making friends were the least concerning issues for these children (10). In the pediatric population, the visual impairments and physiological symptoms caused by strabismus can affect children's daily activities and indirectly impact their self-perception and self-confidence.

In contrast, adult patients with strabismus are more concerned about their appearance, and experience the most significant decline in social functioning quality of life (QoL). Strabismus has a negative impact on self-image, interpersonal relationships, and employment (11). Approximately 70% of adult patients with strabismus report negative effects on their self-image (12). Compared to individuals without strabismus, strabismus patients are more likely to be perceived as having lower intelligence, poorer abilities, and weaker

communication skills. Olitsky et al. (13) used photographs of the same individual with and without strabismus to assess social and occupational competence in subjects. The appearance of the person with normal eye alignment was rated higher in terms of respect, intelligence, emotional stability, and communication skills compared to the appearance with strabismus. Social anxiety and social avoidance frequency were significantly higher in adult patients with strabismus compared to individuals without strabismus (14). McBain et al. (15) selected 217 adult patients with strabismus who were willing to undergo surgery and evaluated them using the AS-20 and Hospital Anxiety and Depression Scale prior to the surgery. The decreased quality of life (QoL) in adult patients with strabismus was mainly associated with inadequate knowledge about strabismus, high expectations of appearance, and concerns about negative evaluations. They perceived themselves as having lower social status, receiving less help from friends, and being more susceptible to discrimination. Females were more concerned about the impact of appearance and were more likely to leave a negative impression with strabismus compared to males. Due to the difficulty in restoring functions such as stereopsis after the maturation of the visual system and better self-control abilities in adult patients with strabismus, the decrease in QoL scores is mainly influenced by appearance and social evaluations rather than functional improvements. The appearance of strabismus not only reduces the subjective confidence of adult patients with strabismus but also affects the objective evaluation of the environment, thereby increasing the survival pressure on strabismus patients.

The necessity of preoperative psychological intervention

Patients with strabismus are often in a poor psychological state, and psychological intervention is necessary during the perioperative period of strabismus surgery. It plays an important role in the following aspects: 1. Relieving anxiety and tension: Strabismus surgery may be a daunting medical decision for many patients, and they may feel anxious, tense, or fearful. Psychological counseling

can help patients better understand the surgical process, recognize the risks involved, and thus reduce their psychological burden, keep them calm during the surgery, and reduce psychological pressure. 2. Enhancing confidence and trust: Psychological counseling can enhance patients' confidence in the surgery and make them trust the doctors more. Confidence and trust can help patients maintain a relaxed and stable state during the surgery, thereby reducing stress reactions and surgical risks. 3. Adjusting negative psychological states: Strabismus surgery may affect patients' appearance and vision, which in turn affects their psychological state. Psychological counseling can help patients adjust their emotions and cope with these changes with a positive attitude, thus improving their quality of life.

The stress and anxiety experienced by children during the perioperative period are mostly related to their own factors and environmental factors (16, 17). Related factors for children include age, developmental stage, past medical history, and the child's personality (18). Environmental factors refer to parents' anxiety, the number and methods of communication with medical staff, the brightness of the operating room lights, and the noise made by medical staff during preoperative preparation (19). Children aged 1 to 5 yr are most likely to experience severe preoperative anxiety, mainly because they are too young to be independent of their parents, but have the ability to recognize whether their parents are around, making them particularly vulnerable (20). In fact, children may not be aware of what is about to happen, and their main fear is being taken away by strangers and separated from their parents. Young children may not have the ability to predict potential dangers or painful scenes during anesthesia induction, while children over 6 yr old can predict pain and the fear of "going to sleep." Older children will use various means to cope with stress, including language and cognition, which will help alleviate their anxiety (21). Children had painful medical experiences or a history of illness have a higher risk of preoperative anxiety and poor cooperation during anesthesia induction(22). Appropriate psychological intervention can help alleviate the adverse emotions of

children, improve their cooperation with the surgery, and improve their prognosis (23).

For adults, the QoL score after surgery is higher than before surgery, both functionally and psychologically, but the overall QoL score is still lower than that of normal people(24). Hatt et al. (25) evaluated adult strabismus patients before and after surgery using the AS-20 scale and found that 95% of adult patients evaluated clinically successful surgery 6 wk after strabismus surgery, and 74% of patients had improved diplopia symptoms, but only 60% of patients had effectively improved QoL, mainly related to the long-term negative emotions of strabismus patients and their expectations of postoperative results. Appearance is the most expected improvement for adult patients after surgery, but patients with high expectations may experience psychological setbacks after surgery, leading to a decrease in QoL (26). Therefore, reasonable psychological counseling before surgery and relaxing psychological expectations may be more helpful for patients to recover their QoL after surgery. Adult strabismus patients face long-term pressure and accumulation of negative emotions, even if their appearance and function are restored to normal after surgery, it takes at least 18 months of QoL to recover to the level of normal people and maintain it (27), so regular follow-up after strabismus surgery is also important for understanding patients' long-term quality of life and psychological state.

Psychological intervention measures

The content of the intervention for amblyopia psychological care focuses on the following three themes: 1) Cognitive-behavioral intervention: Correct cognition and self-affirmation. Nurses need to help patients reexamine the erroneous cognition and behavior caused by amblyopia, provide information and emotional support, and encourage patients to have a correct attitude towards their own condition. This enables patients to replace outdated and negative thinking patterns with more positive ones. 2) Psychological and emotional intervention: Supportive intervention, emotional release, relaxation training. Nurses need to assist patients in expressing the unhappiness and

negative emotions caused by amblyopia in order to achieve relief and eliminate depression and other negative emotions. At the same time, nurses can explore the current thoughts or confusion of patients. Nurses also need to use caring, encouraging explanations, and persuasion to help patients understand their condition and alleviate their emotions, providing support to patients. Nurses also need to consciously train and control their own psychological and physiological activities to relieve tension and anxiety, improve physical reactions, and maintain a relaxed state of mind. This includes techniques such as imagery relaxation, breathing relaxation, and muscle relaxation, which are easy to implement, practical, and less restricted by time and location. 3) Social support intervention: Active social interaction and family support. Nurses need to assist patients in developing interests and hobbies and guide their family members to provide support. Some studies have shown that perioperative psychological intervention for amblyopia surgery can benefit adult and pediatric patients (28-31). Perioperative psychological intervention can improve compliance in children with amblyopia and alleviate anxiety (29). Amblyopia patients often experience anxiety and depression, and improving their psychological condition can increase patient satisfaction and compliance (30,31).

Rehabilitation Nursing

Adult and pediatric patients still need to face complications and the risk of recurrence after completing strabismus surgery (32-34). Perioperative rehabilitation nursing, through measures such as monitoring vital signs, controlling pain, and preventing complications, helps patients with physical recovery, improves patient prognosis, reduces the incidence of complications, and enhances patient quality of life.

Postoperative nausea and vomiting management

Preoperative and postoperative patient education, as well as the management of postoperative pain and nausea, are important components of perioperative care for patients with strabismus. Starting from preoperative education, adult patients, pedi-

atric patients, and their parents should be informed about the common complications of postoperative nausea and vomiting following strabismus surgery. Preoperative guidance should be provided, including fasting requirements and measures to cope with vomiting. The selection of anesthesia drugs should be individualized based on the patient's age and other medical factors. When making the selection, the effects of muscle relaxants on extraocular muscles, drug interactions, and prevention of postoperative complications should be considered. Opioid medications should be minimized during and after surgery to prevent exacerbation of nausea and vomiting. Guidance on postoperative pain control, diet, activity, wound care, and topical medications should begin before surgery and be reiterated after surgery. If a patient experience vomiting, the nurse should promptly clear secretions and vomitus to prevent aspiration. The patient should be instructed to refrain from eating shortly after vomiting to avoid further gastrointestinal burden. Once vomiting subsides, the diet can gradually be reintroduced, starting with liquids and transitioning to semi-solid and regular diet.

Prevention of postoperative infection

Although the incidence of infection after strabismus surgery is relatively low, it should still be taken seriously and preventive measures should be applied (35,36). Postoperative patients should use topical antibiotic eye drops or ointments until the wound heals, typically for at least 1 week. Swimming or exposure to other dirty environments that may contaminate the wound should be avoided for 10 to 14 d.

Visual Care

It is necessary to explain to the patients and their families, as well as the parents of the affected children, that strabismus surgery does not directly affect the patient's vision or treat amblyopia. The main purpose of strabismus surgery is to correct the extraocular muscles. The surgery does not require opening the patient's eyeball and does not directly affect the patient's vision. However, because the surgery adjusts the range of motion of

the extraocular muscles, it may alter their traction on the cornea, leading to changes in corneal refractive status. Nevertheless, these symptoms generally disappear on their own in the short term. Strabismus surgery cannot help improve the patient's vision, and the treatment process is relatively lengthy. It is not an immediate solution to the child's strabismus problem after the surgery is completed. Many strabismus patients usually have accompanying amblyopia, and strabismus surgery cannot improve the symptoms of amblyopia.

Preventing recurrent strabismus post-surgery

Patients with strabismus achieve good correction after surgery, but still face the risk of relapse (37-39). Prior to surgery, nurses should conduct a detailed examination of the patient and develop appropriate treatment plans based on factors such as the patient's age and the degree of strabismus, in order to minimize the risk of postoperative strabismus relapse. Postoperative fusion function training should be emphasized, using various modes to stimulate the visual pathway and enhance visual functions, thereby preventing the recurrence of strabismus (40). Postoperative follow-up is also important, not only to assess strabismus but also to monitor issues such as hyperopia and myopia. It is crucial to prioritize binocular vision training after surgery to enhance and maintain stable stereoscopic vision. However, strabismus surgery only corrects eye alignment and does not restore binocular vision.

Avoiding Diplopia

When patients feel capable, they can regain most of their activities, but they need to be aware of the possibility of diplopia and should avoid driving and operating machinery during the first week after surgery. Diplopia after strabismus surgery is a normal physiological phenomenon because the surgery corrects the alignment of the eyeball, but the corresponding relationship of the retina has not been adjusted in a timely manner. At this time, the patient's body will experience diplopia due to the lack of adaptation. Generally, diplopia symptoms will gradually disappear in about two

months. During the recovery process, it is important to ensure sufficient sleep, reduce the use of electronic devices, and avoid eye fatigue. In addition to these measures, patients can also choose appropriate glasses correction and undergo visual training for diplopia.

Conclusion

Comprehensive perioperative care for patients with strabismus can alleviate negative emotions, improve psychological status, reduce the incidence of postoperative complications, and enhance patients' quality of life. Psychological intervention, as an important component of comprehensive care, has received a great deal of attention in recent years and has been proven to be beneficial for patients. Psychological intervention can be carried out from the following aspects: cognitive behavior intervention, psychological and emotional intervention, social support intervention. Perioperative rehabilitation can be carried out from the following aspects: postoperative nausea and vomiting management, prevention of postoperative infection, visual care, preventing recurrent strabismus post-surgery, avoiding diplopia. However, further research is still needed to establish detailed intervention strategies for comprehensive care.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interests.

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