

Features of Postoperative Rehabilitation of Pediatric Patients

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ABSTRACT

The article investigates the features of postoperative rehabilitation of pediatric patients. Surgical interventions, regardless of their scale, are very stressful even for an adult, for a child, the operation, in addition to the fear that arises before it, can also become a problem associated with recovery in the postoperative period. At the same time, the traumatic factor can be not only physical (complications after surgery), but also psychological (fear of recurrence of painful sensations if the disease manifests itself again). In this regard, specialized professionals need to pay attention to the rehabilitation period of children after the operation and develop measures aimed at reducing the stress load in young patients, as well as reducing the time of their full recovery.

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INTRODUCTION

Within the framework of the diagnoses, patients in childhood, for various indications, in certain cases, surgical intervention is required. However, the operation itself does not always provide a positive result and guarantees a complete recovery of the patient: the postoperative recovery period is also very important, during which the child must restore his health under the supervision of specialists.^[1]

Doctors need to remember that it is not enough just to formulate certain recommendations for the child's parents, it is necessary to organize systematic rehabilitation work, which will be aimed at restoring not only the physical health of the child, but also at forming a positive emotional background for him, since the belief that the disease has receded and will not return, and he himself will be absolutely healthy, often serves as an active stimulating factor in the recovery of the child's body.^[2]

In this regard, it is necessary to consider different directions of rehabilitation work of physicians during the recovery of a child after surgical interventions, both with the participation of parents and without them.

RESEARCH METHODS

In the process of writing the work, a study of a certain volume of sources was conducted within the framework of the research topic, and the experience of doctors of modern clinical practice in the field of organization of rehabilitation work with children's patients who underwent various surgical interventions was also investigated. Comparative and analytical research methods were also applied.

RESULTS

Surgical interventions of any nature represent a certain stress for the body of any person. That is why it is necessary to make every effort during the rehabilitation period to ensure that the body regains its strength as quickly as possible, and the stressful situation, psychological or physical, has come to naught.

KEYWORDS:

Children's patients, Complications, Postoperative rehabilitation, Postoperative stress.

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After the surgical intervention of the child, doctors need not only to constantly monitor the state of his health and monitor the recovery trends of the body, but also to actively participate in the rehabilitation process itself, contacting both the parents of the minor and himself.^[3]

Let's consider the features of postoperative recovery and rehabilitation of children after surgery on the tonsils.

Tonsillar surgery is one of the most frequently performed surgical interventions in children under general anesthesia. The most common indications for tonsillectomy in children are obstructive breathing and chronic tonsillitis. The postoperative period can often be restless due to pain, nausea, dehydration and general malaise.^[4]

Studies by various authors have shown that parents are not sure how to cope with pain in children after surgery and ensure adequate fluid intake, even if they receive extensive information before surgery. This can lead to inadequate pain relief, causing unnecessary suffering to children, as well as to unplanned medical treatment, which could have been avoided with proper support after surgery. A significant number of children have acute relapses after tonsillectomy. According to the research results, more than 10% of all children operated under this diagnosis again sought medical help due to complications and were placed in a hospital.

Reported causes of urgent repeated medical treatment include illiterate use of analgesics, fever, dehydration and nausea. Since most of these tonsillectomy procedures are performed in a day hospital when the patient returns home on the day of surgery, it can be difficult to ensure that parents receive proper information and support. Communication with a nurse by phone and/or via the Internet can be an interesting and economical option for parents and their children who have undergone this operation.

Another important aspect that is not so well studied is the impact of information and support from parents, as well as the child on pain and recovery after surgery. This can be achieved by various methods, such as regular follow-up by a nurse on the phone or home visits, as well as text messages or online information in the pre- and postoperative period and enhanced preoperative training on how to cope with pain.^[5]

Some authors have determined that postoperative monitoring by a nurse by phone on days 1, 3, 7 and 14 significantly reduces the intensity of pain, promotes the use of analgesics and fluid intake, and also reduces the need for medical services compared to visits to a doctor.^[6]

Other researchers conducted a randomized controlled trial to examine the effect of teaching mothers about tonsillectomy using smartphone text messages on the knowledge of mothers using a 16-point questionnaire developed for the study on patient care and children (3-7 years old). Mothers who received information via smartphone text messages showed significantly higher knowledge scores than mothers in the control group who received information only by conventional text and verbal means. Childhood anxiety increased in both groups, but the children in the intervention group were less anxious than the children in the control group.

The behavior of children in the role of the patient also differed significantly between the two groups, since children in the intervention group who were provided with information in the

form of text messages received higher scores for "applying an ice pack" and "eating ice cream in response to pain" than children in the control group. It was found that the number of messages sent and received is three times higher than planned, which suggests that this may be an effective way for parents to communicate with medical staff about their children's recovery.

Another group of authors compared the effectiveness of the Internet method with the standard method of preparing adolescent patients (defined in the article as children aged 10 to 16 years) who are prescribed outpatient tonsillectomy procedures. The online training program was developed by researchers and consisted of a description of procedures during surgery, as well as recommendations for home care of adolescents by their parents.^[7]

It is also necessary to note the importance of reducing perioperative anxiety in young patients, as the right psychological attitude before surgery can significantly reduce the duration of the rehabilitation period. Perioperative anxiety in children is characterized by tension, irritability and increased activity of the autonomic nervous system. A high level of perioperative anxiety is usually associated with a variety of negative outcomes, including prolonged induction of anesthesia, increased frequency of postoperative delirium, first-time negative postoperative behavioral changes associated with anxiety, increased postoperative pain and increased use of analgesics. These results may also lead to increased health care costs for families in the form of long stays in rehabilitation centers and increased need for postoperative care.

Given the large number of operations performed in children, reducing perioperative anxiety is crucial for optimizing outcomes for both the child and the parents. To this end, it is useful to use a conceptual framework that puts anxiety in the context of risk factors and patient outcomes. Factors related to the patient, parents and health care providers, interventions and treatment can influence perioperative anxiety and related outcomes. Individual treatment of perioperative anxiety, aimed at predictors and outcomes that are most important to the patient, can use both pharmacological and non-pharmacological methods, often in tandem.^[8]

Non-drug methods include training, behavioral methods, parental presence during induction of anesthesia (PPIA), as well as complementary and alternative medicine (CAM) methods, and each category includes many effective strategies for reducing anxiety. These methods are cost-effective, minimally invasive and involve a low risk of side effects, which contributes to their further and widespread implementation. In addition, recent steps to integrate Internet-based interventions and mobile healthcare (mHealth) technologies (i.e. tablets, cell phones and other devices with Internet access) as tools for reducing anxiety provide preliminary evidence that these methods are well received by parents and are useful. for individual selection of therapeutic components.

DISCUSSION

In the case of tonsillectomy, we reviewed the experience of medical workers from one of the clinics in South Korea. In a hospital setting, a standard training program was offered.

Adolescents who were initially assigned to the intervention group but did not follow the protocol were assigned to the third group without treatment after the start date of their participation in the study.

The medical specialist presented the adolescents with sensory and procedural information appropriate for development about manipulations during surgery. An excursion with recommendations on home care was offered for the teenager and his parents. The measured results were the level of anxiety using the tools “State Anxiety Questionnaire for Children” (STAIC) and “State Anxiety Questionnaire” (STAI) for adults, obtaining knowledge using a Knowledge Questionnaire.

Adolescents in the intervention group showed a high level of knowledge acquisition ($p = 0.001$) and satisfaction ($p = 0.004$). There were no differences in preoperative anxiety between the groups in either adolescents or their parents.^[9]

Postoperative pain rates did not differ between the groups; however, the results did show a strong trend towards higher pain rates in the groups, with the intervention group having the lowest pain rate and the untreated group having the highest pain rate. Parents whose teenagers participated in the intervention group demonstrated a significant ($p = 0.004$) higher level of satisfaction with the method of preparation for surgery. Accordingly, it can be assumed that the presented online program of preoperative preparation and other forms of health education is especially relevant for adolescents because of the unique characteristics associated with the considered stage of personal growth and development.^[9]

Since the postoperative period often causes difficulties, for example, due to pain and nausea, interventions such as subsequent telephone consultation by a nurse can be useful to reduce the frequency of repeat visits, not only for the patient, but also for economic health benefits. In the study, individual authors compared telephone consultations with a doctor’s visit on the corresponding postoperative days. Interestingly, in the follow-up group carried out by a medical specialist, the children had less pain, they used more analgesics, and their fluid intake improved more than in the group that re-visited their doctor.

It is possible to draw certain conclusions about the benefits that telephone consultations have brought. Thus, the children in the intervention group received more analgesics, they increased their fluid intake, such children experienced less pain, and they required less medical services. Based on the available data, it can be concluded that the follow-up of a nurse by phone after a tonsillectomy is probably a useful method of postoperative management of children, an effective means of helping parents cope with pain and the appropriate administration of analgesics. However, more qualitative studies, preferably randomized controlled trials on large groups of patients, are needed to confirm these positive results.^[10]

Not only pain, but also anxiety is a common postoperative problem, as patients/parents report high levels of anxiety before and after tonsillectomy. The results of a study of a certain group of authors, where children in the group who received text messages were less anxious than children in the control group, showed that the use of text messaging improved the quality of life and shortened the period of postoperative

rehabilitation for children who underwent tonsillectomy. The researchers found that the intervention appeared to reduce anxiety and anxiety levels during and after surgery.^[11]

The educational approach to reducing perioperative anxiety consists in providing information and preparing for the upcoming surgical intervention in a child. Preoperative preparation is a long-standing practice that was originally introduced not only to give patients and their families the opportunity to learn about the operation process, but also to establish mutual understanding with medical professionals when the operation required a long stay in the hospital.

Preoperative training can eliminate gaps in the patient’s or family’s understanding of procedures and outcomes, thereby helping to adjust their expectations of surgery and reduce anxiety. That is, having realistic and manageable expectations regarding the perioperative period, children can better prepare for inpatient and outpatient operations and cope with them. Further research is needed to determine the exact mechanisms by which these programs reduce latent anxiety, and for whom these programs are most effective.

Educational training programs often include a tour of the operating room and PACU, familiarization with medical equipment and its functions, as well as descriptions or visual images of perioperative procedures. Such programs are still used for both inpatient and outpatient surgical procedures. The relevance of educational methods is further emphasized by studies showing that children need comprehensive perioperative information, including details related to the procedure and results.

Medical professionals should describe in detail the course of the operation (i.e. what will happen to the child), indicate who will be involved (i.e. which doctors, nurses and practitioners will work with the child), and describe the sensory aspects (i.e. what will happen during the operation). Since a child’s processing of preparatory information can be influenced by many factors, including previous experience in the surgical environment and level of development, his or her understanding should be periodically checked by medical professionals. The time of submission of preparatory information may also affect how much information will be saved; although the optimal timing is unknown, early work suggests that information should be provided at least 5 days in advance for children over 6 years old and no more than a week for children under 6 years old.^[12]

Preparation for surgery may consist of providing families with educational resources relevant to the child’s upcoming surgery. In addition to simply providing information, comprehensive training programs may also include modeling and improving behavioral coping skills. Cognitive behavioral interventions focus specifically on helping children develop and use such skills effectively as a primary means of reducing their anxiety related to the procedure, as opposed to relying solely on the provision of information or medication. The components of cognitive behavioral therapy can be adapted to the specific needs of children who have undergone surgery and can be used in tandem with other methods to reduce anxiety. In fact, learning and developing coping skills are the most effective methods of reducing perioperative anxiety.

Coping skills are especially useful when children are taught before surgery, and they have the opportunity to develop competence through rehearsals. However, most of the training

programs currently implemented in hospitals are limited to providing information, since this is the simplest and most cost-effective method. Distraction is one example of an effective cognitive coping skill that can be used by children who have undergone surgery. This skill encourages children to divert their attention from unpleasant or threatening aspects of the perioperative process and engage in more soothing and pleasant activities or thoughts. As with other methods of cognitive behavioral therapy, targeted active distraction can be taught to children and rehearsed before their procedure, and is usually useful when parents or medical professionals act as trainers, encouraging the use of skills throughout the perioperative process. For children, it may be especially useful for parents or caregivers to provide children with appropriate distractions, such as toys or games, in waiting or recovery areas.^[13]

Coping skills within cognitive behavioral therapy that promote relaxation are also effective for relieving perioperative anxiety. Diaphragmatic breathing and progressive muscle relaxation can be used by children as early as the age of 4, and guided image exercises can be used by school-age children to overcome the stress associated with the procedure. Diaphragmatic breathing, also referred to in the literature as conscious breathing and deep breathing, is a behavioral therapy that involves deep controlled inhalation and exhalation using the diaphragm. Progressive muscle relaxation also includes controlled relaxation of targeted muscle groups as directed by a doctor or parent until complete physical relaxation of the body is achieved. Guided imagination is a cognitive therapy during which children recall or reconstruct sensory and affective experiences (i.e. visual, auditory, olfactory and emotional stimuli), and they are invited to strategically recreate or return to this mental image in moments of severe stress in a perioperative setting. These behavioral and cognitive relaxation skills work to minimize anxiety, similar to distraction.

Training in breathing, muscle relaxation and visualization techniques can be conducted by suppliers either in person, or by video, or by audio recording; these are repeatable exercises that do not require additional material after children have sufficiently mastered and worked out the skills. Parents can also be trained in these methods of teaching children through appropriate exercises. Thus, these relaxation-promoting cognitive behavioral therapy techniques are an incredibly cost-effective method of reducing anxiety. The general dynamic and adaptive nature of the discussed CBT methods can also be especially useful for children who have undergone several surgical interventions and need new therapeutic experience to achieve an anxiolytic effect.^[14]

Cognitive behavioral skills do not have to be taught to children directly from a caregiver, and personal skills training in some cases may not be possible due to lack of time. The use of a live or videotaped model, often of the same age, demonstrating coping skills and positive behavior for children, invariably proves effective in reducing preoperative anxiety and improving postoperative results. This practice is based on the theory of social learning, which states that children will learn and benefit from observing the successful work of peers through consistency and emotions, including fear and anxiety, of an expected event such as surgery.

Coping skills used by models may include positive self-talk (e.g., "I know I can do this"), distraction, and relaxation exercises, as discussed. After observing a peer model successfully using coping skills and actively rehearsing demonstrated coping strategies, children should be able to use appropriate coping strategies with their own perioperative anxiety. Peer modeling may be most useful for children who have had no prior surgical experience or are undergoing a new procedure and, therefore, do not have a pre-existing idea of which survival strategies will be most effective. Behavioral skills training should be appropriately adapted to the understanding of children and the stage of development in order to optimize the usefulness of these strategies, since it is not known for which children it will be most useful. Teaching children various methods of cognitive behavioral therapy during their preparation for surgery is useful because children can rehearse and then use the strategies they consider most important when they face perioperative distress. Thus, children can play an active role in managing their own anxiety, contributing to the internal locus of control and, in general, more successful over-coming.^[15]

Accordingly, not only postoperative communication, but also interventions such as modeling the attitude to surgery, preoperative booklets, smartphone applications, text message programs, video programs and Internet resources, as well as programs for caregivers, can improve the management of pain and anxiety of young patients and lead to fewer visits to emergency departments.^[16]

The researchers determined that the children who received Internet training had better knowledge and higher satisfaction, and also showed the lowest score on the pain scale, although insignificant. However, one of the main methodological shortcomings of the study was that patients who did not follow the study protocol for the group into which they were randomized were then assigned to the group without treatment. This reduces the reliability of their results.

CONCLUSION

Thus, some perioperative advantages are that interventions such as preoperative preparation and subsequent telephone supervision by a specialist can positively affect children's knowledge, anxiety levels, the use of analgesics, pain perception, fluid intake and the use of medical services.

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