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RESEARCH ARTICLE

INVESTIGATION OF ENCOUNTERED PROBLEMS AFTER LAPAROSCOPIC SURGERY IN CHILDREN

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ABSTRACT

Purpose: This study was planned to determine the problems and affecting factors that children encounter at hospital and at home after laparoscopic surgery.
Materials and Methods: This study was conducted in accordance with the descriptive cross-sectional study type in order to determine the post-operative conditions in hospital and home problems and factors affecting the operation of the study. The study was carried out on the patients of pediatric service of whom had laparoscopic surgery. Pre-operative and post-operative descriptive features form, which was developed according to literature by researchers as data collection tool, was collected by using a diagnosis form for problems occurred at home after discharge and for problems occurred in hospital after surgery.
Results: It was found in the study that 54.5% of the children were male, 90.9% were gastrointestinal system surgeons and 65.4% were acute appendectomies. It was determined that most of the problems the children lived in hospital and at home was pain.
Conclusion: This study will contribute to the planning of nursing interventions that will be useful for the identification, prevention and early identification of the problems that children experience both at home and in the hospital, after the surgery, and to determine the maintenance criteria.

Keywords: Child, laparoscopic surgery, postoperatıve problems, nursing

INTRODUCTION

Laparoscopic surgery is most commonly used in fields such as urology, gynecology, general surgery and pediatric surgery (1,2). As a result of the increase in minimally invasive surgical applications, laparoscopic surgery, which is now widely used, has often been used in children. The latest developments are robotic surgery and single port laparoscopic surgery (3-6).

Laparoscopic surgery is more advantageous and beneficial than open surgery in children. (3,7). The children undergoing surgery with this method have less surgical damage due to small incisions and bleeding, a lower infection rate, a quicker return to daily activities, a faster post-operative recovery and a shorter hospital stay. As a result, treatment and follow-up costs are low and patient satisfaction is high. (3,6-8).

The problems experienced by children undergoing laparoscopic surgery are similar to adults (8,9. Although the incidence of postoperative complications in children is unknown, the most common complications are nausea-vomiting and respiratory problems. Children with cardiac problems are generally reported to have congenital heart disease. Children undergoing anesthesia develop

urinary retention due to the effects of anesthetics, with tremors, restlessness and delirium often observed (3,10,11).

The success of open or laparoscopic surgery in children depends on technical knowledge and skills, as well as the identification of pre- and post-operative problems and the management of these problems. In children undergoing laparoscopic surgery, a comprehensive systemic and physical assessment in the postoperative period is essential for the prevention and early diagnosis of potential complications (12-14). After discharge, many children experience various problems in the first weeks at home and return to hospital (15).

The recovery process can be accelerated by providing comprehensive and detailed discharge education to the child and their family, followed by continued follow-up at home. It is important to identify the problems that children experience in the hospital during the postoperative period and at home in the early stages, so that the content of the discharge education can be updated and qualified, and the child and family can be prepared for home care (15-17). As a result of the development of technology and increasing experience, laparoscopic surgery has become a technique that has gained a wide area of application in the pediatric patient group as well as in adults (3,6,8). Therefore, this study was conducted to determine the problems experienced by children in hospital and at home after laparoscopic surgery.

Research Questions

- What are the problems that the child has encountered at the hospital after the surgery?
- What are problems that the child has experienced at home in the early period just after discharge?
- Do the characteristics of the child's surgery (type of surgery, length of the surgery, exigency or permissiveness of the surgery) effect child's having problems after laparoscopic surgery?

MATERIAL AND METHODS

Study Design and Participants

This study was conducted using a descriptive and cross-sectional research design. The population of the study consisted of all pediatric patients who underwent laparoscopic surgery in the pediatric surgery service of a university hospital between April 2015 and March 2016. According to the study sampling data, 110 patients who met the inclusion criteria were included in the study. Inclusion criteria for the study are children aged 0-18 years who underwent surgery and who stayed in hospital for at least one night after surgery. Exclusion criteria for the sample are children with metabolic and genetic diseases and children who have undergone thoracic surgery such as pectus excavatum. At the end of the study, the power analysis using G-Power 3.1.9.2 software to check if the sample size is sufficient showed 0.99 at the 95% confidence interval.

Data Collection Tools

The data for the study were collected by means of the "Pre- and Postoperative Descriptive Characteristics Questionnaire", the "Diagnosis Sheet for Postoperative Problems in the Hospital" and the "Diagnosis Form for Post discharge Problems at Home", which were prepared by the researchers and developed in accordance with the relevant literature.

Pre- and Post-Surgery Descriptive Characteristics Questionnaire

This questionnaire includes socio-demographic characteristics (sex of the child, age of the child, number of children in the family, family type of the child, age of the mother and father, level of education of the mother and father, occupation of the mother and father, social security of the family, location, family income), characteristics related to surgery (duration, necessity or permissiveness/electiveness of the surgery, type), invasive procedures in the child, length of hospital stay, previous surgery, preoperative information, fasting time and enteroclysis status.

The Diagnosis Form for Post-Surgery Problems at Hospital

This form, developed by the researchers in accordance with the literature, consists of questions to determine the problems experienced by children in hospital during the first 24 hours after laparoscopic surgery (10,18,19). The form consists of seven chapters as general problems (pain, hypothermia, hyperthermia, etc.), diseases of the respiratory system (cough, atelectasis, sputum, etc.), circulatory system problems (hypertension, edema, tachycardia, etc.), gastrointestinal system problems (hypertension, edema, tachycardia, etc.).), gastrointestinal system problems (nausea, vomiting, bloating, etc.), urinary system problems (urinary retention, burning during urination, density, etc.), surgical incision problems (abscess at the incision site, discharge, hematoma, bleeding, etc.), and mood changes (agitation, anxiety, fear, etc.).

The Diagnosis Form for Post-Discharge Problems at Home

This form consists of questions to assess the problems experienced by children discharged from laparoscopic surgery during the first 48-72 hours at home. It includes problem statements related to breathing, circulation, elimination, pain control, surgical site, diet, exercise and emotional state and was developed in accordance with the literature (20) and based on the clinical experience of the researchers.

Prior to data collection, the parents of the children were informed of the purpose of the study and their written/verbal consent was obtained. Data were collected by the researchers through face-to-face interviews with the families and from patient records. The administration of the instruments both in the hospital and at home took approximately 10-15 minutes.

Ethical Approval

To conduct the study, the necessary permission was obtained from the Chief Physician of the University Hospital, Department of Pediatric Surgery (No: 89089531/073, date: 27.04.2015) and Dokuz Eylul University, Non-interventional Researches Ethics Committee (Decision No: 2015/13-13, Date: 14.05.2015). In preparation for the study, informed consent was obtained from the families of the children.

Statistical Analysis

Data from the study was analyzed using SPSS 15.0 (Statistical Package for Social Sciences). Descriptive statistics (numbers and percentages) were used to determine the problems experienced both in hospital and at home.

Table 1. Descriptive Features Regarding Surgery

	n	%
Exigency or permissiveness of the surgery		
Exigence	95	86.4
Optional	15	13.6
Type of Surgical Intervention		
Gastrointestinal system (GIS)	100	90.9
Genitourinary System (GUS)	10	9.1
Operations Performed		
Acute appendectomy	72	65.4
Perforated appendectomy	18	16.4
Cholecystectomy	8	7.3
Other (ovarian cyst, ovarian torsion, pyeloplasty, splenectomy, pyloric stenosis)	12	10.9
Invasive Interventions of the Patient		
Intravenous catheter	86	78.2
Intravenous catheter, naso-gastric catheter	13	11.8
Intravenous catheter, urinary catheter	7	6.4
Intravenous catheter, urinary catheter, naso-gastric catheter	4	3.6
Previous Surgery Status		
Had surgery*	18	16.4
No surgery	92	83.6
Being Informed Before Surgery		
Informed	104	94.5
Uninformed	6	5.5
Length of Hospital Stay		
24-35 hours	15	13.6
36-47 hours	34	30.9
48-71 hours	32	29.1
72 hours or more	29	26.4
TOTAL	110	100

*Patients who had previous surgery had tonsillectomy, inguinal hernia, hypospadias, cleft lip, appendectomy, ovarian cyst surgeries.

RESULTS

The study showed that 86.4% (n:95) of the operations performed on the children participating in the study were performed as an emergency measure. It was stated that 90.9% (n:100) of these operations were gastrointestinal operations and 65.4% (n:72) of these operations were acute appendectomies. It was found that 83.6% (n:92) of the children had no previous surgery. When the preoperative information status of the families was examined, it was found that 94.5% (n:104) of the families were informed. Before surgery, 78.2% (n:86) of the children had an intravenous catheter as an invasive procedure. The length of hospital stay of the children showed that 30.9% (n:34) of the children stayed in hospital for 36-47 hours (Table I).

The study also showed that maximum 3.6% (n:4) of the children (n:8) with general problems had hyperthermia; children (n:5) who had problems with the surgical wound, the highest wound discharge was 1.8% (n:2); maximum 78. 2% (n:86) of children (n:257) with gastrointestinal problems had dry mouth, 55.5% (n:61) nausea, 39.1% (n:43) vomiting; up to 14.5% (n:16) of children (n:33) with respiratory problems had secretions; incision-related pain in a maximum of 82. 7% (n:91) and shoulder pain in 56.4% (n:62) of the children (n:322) who experienced pain; at most 33.6% (n:37) of the children (n:40) with circulatory system problems had tachycardia; the children (n:76) with urinary system problems had more than 31. 8% (n:35); it was found that at most 38.2% (n:42) of the children (n:129) with mood problems experienced anxiety (Table II).

Descriptive statistics showed that of the children who had general problems at home after discharge, 2.7% (n:3) of the children with general problems had fever;

Table 2. Distribution of Postoperative Problems Experienced in Hospital (N:110)

	N	%		n	%
General Problems			**Surgical Wound Problems**		
Hyperthermia	4	3.6	Gleet	2	1.8
Hypothermia	2	1.8	Hemorrhage	1	0.9
Aphonia	2	1.8	Rubescence at wound site	2	1.8
Gastrointestinal System Problems			**Respiratory System Problems**		
Xerostomia	86	78.2	Cough	9	8.2
Constipation	5	4.5	Atelectasis	1	0.9
Diarrhea	20	18.2	Decrease in oxygen saturation	1	0.9
Nausea	61	55.5	Increase in respiratory rate	6	5.5
Vomiting	43	39.1	Sputum	16	14.5
Anorexia	29	26.4			
Dysphagia	4	3.6			
Distension	6	5.5			
Hickock	3	2.7			
Pain Problems			**Circulatory System Problems**		
Shoulder pain	62	56.4	Hypotension	1	0.9
Chest pain	23	20.9	Tachycardia	37	33.6
Back pain	24	21.8	Bradycardia	2	1.8
Sore throat	21	19.1			
Abdominal pain	56	50.9			
Pain due to incision site	91	82.7			
Pain due to invasive procedures	43	39.1			
Headache	1	0.9			
Neck pain	1	0.9			
Urinary System Problems			**Mood Change Problems**		
Urinary burning	26	23.6	Agitation	31	28.2
Urinary retention	13	11.8	Somnolence	30	27.3
Urine density higher than1020	35	31.8	Fear	42	38.2
Urine density less than 1005	1	0.9	Anxiety	26	23.6
Urinary incontinence	1	0.9			

*Children have experienced more than one problem.

Table 3. Distribution of Problems at Home After Discharge (N:110)

	N	%		n	%
General Problems			**Pain**		
			Headache	2	1.8
Fewer	3	2.7	Pain regarding wound site	50	45.5
			Shoulder, back pain	1	0.9
Nutrition			**Respiratory System Problems**		
Anorexia	19	17.3	Secretion	6	5.5
Nausea-Vomiting	4	3.6	Cough	2	1.8
Intestinal gas	10	9.1			
Weight loss	1	0.9			
Surgery Area			**Circulatory System**		
Wound infection	6	5.4	No problem		
Urinary System			**Mood**		
Constipation-diarrhea	7	6.4	Disturbed sleep	1	0.9
Burning in the urinary tract	3	2.7	Fear	23	20.9
Difficulty urinating	4	3.6	Agitation	4	3.6
Stool incontinence	1	0.9			
Activity Status			**Medication Use**		
Difficulty in walking	37	33.6	Side effects	9	8.1
Fatigue	16	14.5	Allergic reaction	1	0.9
Dizziness	6	5.5			
Asthenia	40	36.4			

* Children experienced more than one problem

up to 45.5% (n:50) of the children (n:53) with pain-related problems had pain at the wound site; up to 17.3% (n:19) of the children (n:34) with feeding problems had anorexia; a maximum of 5. 5% (n:6) of the children (n:8) with respiratory problems had secretions; 5.4% (n:6) of the children (n:15) with surgical site problems had wound infections; a maximum of 6.4% (n:7) of the children (n:15) with excretory problems had constipation- diarrhea; anxiety; fatigue; a maximum of 8.1% (n:9) of the children (n:10) with drug-related problems had drug-related side effects. It was found that the children did not have any problems related to the circulatory system at home (n:0) (Table III).

DISCUSSION

In this study, which was carried out to determine the problems experienced both in hospital and at home after laparoscopic surgery in children, it was found that 86.4% of laparoscopic surgery was performed on an emergency basis, of which 90.9% was related to the gastrointestinal system and 65.4% was acute appendectomy. Based on the data obtained in our study, the rate of emergency surgery was high as 81.8% of the children who underwent surgery had appendicitis. The study by Divarcı et al (2014) reported that laparoscopic appendectomy is frequently performed. Although there was no difference between open and laparoscopic appendectomy in terms of complications, they found that laparoscopic appendectomy could be preferred in terms of postoperative pain and return to normal activities in a short time. They also found that the hospital stay of the children was 2.4±0.5 days. On the other hand, the mean postoperative hospital stay of children in our study was 3.68±1.01 days. It has been reported that laparoscopic surgery has better postoperative recovery and shorter hospital stay (21,22). In this study, the different types of surgery, the high rate of emergency surgery, the variety of care and procedures applied to children, and the differences in postoperative problems according to the developmental stage of each child brought to mind that the length of hospital stay is affected.

The study showed that all children experienced one or more problems in hospital after surgery. Of these

problems experienced by children in hospital, 82.7% were related to the incision site and 86.4% were gastrointestinal problems, of which 78.2% were dry mouth, 55.5% nausea and 39.1% vomiting. Although the exact incidence of postoperative complications in children is not known, it has been reported that the complication rate reported in studies of pediatric surgical patients is between 3.5-23% (4). Studies have shown that 30-70% of surgical patients complain of moderate to severe pain (23,24). It has been reported that the most common problems are nausea and vomiting and respiratory problems (10). In the study by Mattioli et al (2012), the complication rate after laparoscopic surgery in 1803 children was 0.9%, and they stated that laparoscopic surgery is safer and more effective, the level of pain in children is lower and the return to daily activities is faster. In some other studies, the most common postoperative complications were respiratory problems, gastrointestinal problems, bowel obstruction and wound infection (18,25). The fact that the complication rates found in this trial differ from other trials may be related to the different types of surgery performed and the care and procedures given to patients before, during and after surgery. It has been shown that the use of expedited care protocols for postoperative pain management, early mobilization, early nutrition and use of medications minimizes problems in children discharged from hospital after laparoscopic cholecystectomy (14). Therefore, appropriate pain management, early mobilization and early nutrition in the early postoperative period may minimize the problems that children experience after surgery.

It was found that all children who underwent laparoscopic surgery had one or more problems at home after discharge. The results showed that children had problems with pain and activity status after discharge; 45.5% of them had wound pain, 36.4% had asthenia, 33.6% had difficulty walking and 14.5% had fatigue. In a study of problems experienced at home after surgery, 70.9% of patients had pain problems, 40.8% had circulatory problems, 32.1% had problems with exercise and activity, and 40.8% had problems with self-care (20). Studies have shown that 80% of children have pain problems at home in the first two weeks after discharge, and this situation negatively affects their return to daily activities and quality of life (15,23). In the study conducted by Rabbitts et al (2015), children were found to have pain problems at home for approximately one month after discharge. As shown in the literature and the results of our study, patients investigated many problems at home after surgery. Especially after laparoscopic surgery, where the length of hospital stay is shorter, these problems may be more common. Therefore, it is thought that patients and their families may need professional support to deal with these problems. In a study of children and families, it was suggested that nurses should make regular home visits or telephone counselling to identify problems experienced by families at home after discharge, and it was noted that identifying the problems experienced would help to prepare the content of discharge education (27).

Study Limitation

In this study, all data of the study is limited to patients' files were accessed by researchers. The children were well-versed about the purpose of the study and only their verbal consent was obtained.

CONCLUSION

As a result, children who have undergone laparoscopic surgery have many problems in hospital and at home after discharge. In order to minimize the problems experienced by children and their families after laparoscopic surgery, it is important to establish databases to facilitate the diagnosis and follow-up of children's postoperative problems, to provide discharge training specific to the child and the family, and to provide regular telephone counselling to reduce problems at home. In addition, it may be useful to carry out studies in larger sample groups and in different institutions to determine the problems and causes after laparoscopic surgery in children in order to determine the incidence.

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