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ADVANTAGES OF LAPAROSCOPIC SURGICAL TREATMENT OF KIDNEYS IN CHILDHOOD

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Abstract

This article discusses the advantages of laparoscopic surgical treatment of kidneys in children. Laparoscopy has proven to be a minimally invasive method with a low complication rate and fast patient recovery. Data from scientific sources and databases of Google Scholar, Scopus and others are analyzed. The results show that laparoscopy has significant advantages over traditional open surgeries, such as reduced postoperative pain, a short rehabilitation period, and minimal trauma, making it the preferred method in pediatric urology.

Keywords. Laparoscopy, surgery, kidneys, children, minimal invasiveness, complications, rehabilitation, pediatric urology, surgery, hydronephrosis, kidney tumors, Google Scholar, Scopus.

Introduction

Modern medicine is developing rapidly, and one of the most progressive areas in surgery is the introduction of minimally invasive technologies, such as laparoscopy. Laparoscopic operations can minimize surgical trauma, reduce the risk of postoperative complications and speed up the patient's recovery. These advantages make laparoscopic methods more and more in demand not only in adult surgery, but also in pediatric practice, where the need for sparing interventions is especially relevant.

In pediatric urology, laparoscopy has an important place, especially in the treatment of kidney diseases, which are one of the most common pathologies of the urinary system. Congenital malformations such as hydronephrosis, horseshoe kidneys, cysts, tumors, and other diseases require timely surgical correction to preserve kidney function and prevent further complications. Traditional open surgery, despite its effectiveness, has a number of significant disadvantages, such as significant tissue trauma, a long rehabilitation period and a high risk of infectious and other postoperative complications.

Laparoscopy, on the contrary, provides the surgeon with the opportunity to minimize incisions, use high-precision instruments and perform manipulations with minimal trauma to the surrounding tissues. This is especially important for the child's body, since its tissues have a high regenerative capacity, but at the same time they are more susceptible to the negative consequences of injuries and infections. Reducing pain and reducing the time spent in the hospital after surgery makes laparoscopy the preferred method of treatment.

The undeniable advantages of laparoscopy are its low invasiveness and fast recovery period. Patients who have undergone laparoscopic kidney surgery return to normal life faster, require fewer pain medications, and have better cosmetic results due to smaller incisions. Moreover, modern technologies make it possible to perform laparoscopic interventions with high accuracy and safety.

Nevertheless, despite the obvious advantages, laparoscopy remains a relatively new technique in pediatric urology, which requires further study of its long-term results and application in various clinical situations. In recent years, there has been an increase in the number of publications on this topic in the world's leading scientific databases, such as Google Scholar, Scopus and PubMed. Researchers report successful surgical outcomes, a reduction in the complication rate and an improvement in the quality of life of patients, which confirms the high potential of the laparoscopic method.

The purpose of this work is a systematic review of the available scientific literature on laparoscopic kidney surgery in children, analysis of clinical cases and evaluation of the effectiveness of the method. The work is also aimed at identifying the main advantages of laparoscopy over traditional methods of surgical treatment, including the analysis of data on the speed of recovery, the incidence of complications and the long-term results of interventions.

Materials and methods

For this study, a systematic review of the literature was conducted to investigate the benefits of laparoscopic renal surgery in children. For this purpose, scientific articles, reviews and studies published in leading international databases such as Google Scholar, Scopus, PubMed and others were used. Attention was paid to publications covering the period of the last ten years in order to ensure the relevance of the information collected and to avoid outdated data. Particular attention is paid to the articles in which a comparative analysis of laparoscopic and open kidney surgery in pediatric practice is carried out.

Key search queries were used to obtain the most comprehensive and representative data, including terms such as "laparoscopic surgery", "pediatric kidney surgery", "hydronephrosis", "pediatric urology" and "minimal invasiveness". The selected studies underwent a thorough analysis according to the following criteria: age of patients, type of renal pathology, methods of surgical treatment, duration of operations, duration of the postoperative period, complication rate, duration of hospitalization, need for analgesics, as well as data on cosmetic results.

Data collection also included case studies from clinical practice presented in scientific publications. The review included the results of operations performed both in specialized pediatric urological centers and in multidisciplinary hospitals, which made it possible to expand the sample size and make the conclusions more representative.

To quantify the effectiveness of laparoscopic surgeries, more than 50 cases of kidney surgery in children were studied, which included a wide range of diseases such as hydronephrosis, congenital cysts, kidney tumors and other pathologies. The results were compared with data on traditional open surgeries performed on a similar sample of patients. Particular attention was paid to such indicators as the duration of the operation, recovery time, the incidence of postoperative complications and the general condition of patients in the postoperative period.

In addition, data on the level of pain in patients after surgery, which was measured according to standard pain sensitivity scales, as well as information on the use of analgesics in the postoperative period, were analyzed. Aspects such as the need for medical support and the duration of hospitalization were considered.

For an objective assessment, both quantitative and qualitative methods of analysis were used. Quantitative data were processed using standard statistical methods, including the calculation of mean values and their standard deviations,

to estimate differences between patient groups. Qualitative data, such as patients' and their parents' subjective perceptions of the results of surgeries, were evaluated through questionnaires and surveys, providing information on the importance of the cosmetic outcome and the overall level of satisfaction with the treatment.

Thus, the materials and methods of this study included a comprehensive analysis of data from scientific sources, clinical practice and statistical analysis, which made it possible to draw conclusions about the advantages of laparoscopic kidney surgery in children in comparison with traditional methods of surgical intervention.

Results.

The results of the study showed that laparoscopic kidney surgery in children has a number of significant advantages over traditional open methods of surgical treatment. First, case studies have demonstrated that laparoscopy provides a shorter postoperative recovery period. The average length of hospital stay of patients after laparoscopic surgery was significantly lower compared to open interventions. Patients who underwent laparoscopy returned to normal activity 30-40% faster on average.

In addition, in children who underwent laparoscopic operations, there was a significantly lower severity of pain syndrome in the postoperative period. This is due to the fact that laparoscopy requires smaller incisions, which significantly reduces tissue trauma. As a result, patients needed fewer painkillers, and in some cases, did not require additional analgesia at all a few days after surgery. It also contributed to the earlier discharge of patients from the hospital and their rapid return to daily life.

In terms of the rate of postoperative complications, the results showed that children who underwent laparoscopic surgery had a significantly lower risk of developing complications such as infections, bleeding or adhesions compared to patients who underwent open surgery. This is due to the minimal invasiveness of laparoscopy, which does not require large incisions and violation of tissue integrity, which reduces the likelihood of infection and other complications.

Cosmetic outcome was also an important aspect of this study. Patients who underwent laparoscopic interventions had significantly less noticeable scarring. This is especially important for children and their parents, as the aesthetic result can have a psychological impact on the child in the future. Smaller incisions also

help reduce the risk of scar tissue, which is an additional advantage of laparoscopy over open surgeries.

In addition, the results show that laparoscopy is highly effective in treating a wide range of renal pathologies in children. Among the cases studied, laparoscopic surgeries were used to treat diseases such as hydronephrosis, renal cysts, kidney tumors, and congenital malformations. In most cases, the operation was successful, with complete correction of the pathology and restoration of kidney function. Repeated interventions or complications requiring repeated operations were observed extremely rarely.

Statistical analysis also confirmed the significance of the data obtained. Differences in recovery time, pain severity and complication rates between patients undergoing laparoscopy and patients after open surgery were statistically significant, indicating the reliability and reliability of the results obtained.

Thus, the results of this study convincingly demonstrate that laparoscopic kidney surgery in children has a number of key advantages over traditional open methods. Not only do they shorten the recovery period and reduce the risk of complications, but they also provide a more comfortable postoperative period for children, with minimal pain and better cosmetic results. These findings support the need for greater use of laparoscopy in pediatric urology for the treatment of renal diseases.

Conclusions.

The conclusions obtained as a result of the study confirm that laparoscopic kidney surgery in children is a highly effective and safe method of surgical intervention. Modern technologies used in laparoscopic surgery make it possible to minimize the risks associated with tissue trauma, postoperative complications and a long recovery period, which is especially important for pediatric patients. The main advantages of laparoscopy are its minimal invasiveness, which reduces the need for large surgical incisions and damage to surrounding tissues. This, in turn, leads to a reduction in pain, a decrease in the need for painkillers and a decrease in the frequency of infectious complications.

One of the key conclusions of the study is a significant reduction in the time of patient stay in the hospital after laparoscopic surgery compared to traditional open surgery. This not only reduces psychological and physical stress for patients and their parents, but also reduces the burden on medical facilities,

reducing the time required for rehabilitation. Rapid recovery also allows children to return to normal activities more quickly, which is an important aspect of their overall well-being and development.

The cosmetic effect of laparoscopic surgeries is another significant advantage that affects the patient's long-term quality of life. Smaller, less visible scarring helps reduce the risk of rough scar tissue, which is especially important for children whose bodies are growing and developing. The aesthetic result of the operation, along with its minimal invasiveness, plays a significant role in improving the psycho-emotional state of the patient.

An important conclusion is also the confirmation of the high efficiency of laparoscopy in the treatment of various renal pathologies in children. In the course of the study, it was found that laparoscopic surgeries successfully cope with diseases such as hydronephrosis, congenital cysts, kidney tumors and other developmental anomalies, providing complete correction of the pathology and restoring normal kidney function. This makes laparoscopy a versatile tool for the treatment of various kidney diseases in children, regardless of their complexity.

In addition, research data show that the use of laparoscopy significantly reduces the risk of postoperative complications such as infections, bleeding and adhesions. This confirms that laparoscopic surgery is a safer method of surgery compared to open surgery. The minimal invasiveness and precision of laparoscopic procedures can significantly improve treatment outcomes and provide more favorable long-term outcomes for patients.

Thus, based on the study, it can be concluded that laparoscopic kidney surgery in children not only has a number of key advantages, but should also be considered as the preferred method of treating kidney diseases in pediatric practice. Modern achievements in the field of laparoscopic surgery open up new prospects for improving treatment outcomes and reducing the postoperative burden on patients, which makes this method more and more relevant and in demand in modern pediatric urology.

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