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· Surgical Treatment Review Improves Children's Healing Process



Pediatric surgery is in general a very clinically oriented field, though there is an increased emphasis on research in our division. At CHRMC most of our research activity has been oriented toward what we do in the operating room and on the hospital ward, however new faculty have background in and are focusing on tissue engineering and outcomes research. It is important to examine the way we practice surgery and by either randomized prospective trial or by retrospective review determine how we can make changes that will benefit our patients. These studies may involve a wide spectrum of both congenital defects and problems encountered in the older child.

The treatment of Hirschsprung's disease, for example, as well as that of other congenital anomalies, has experienced a trend towards one stage surgical repair in the neonate rather than traditional delayed or multiple stage repairs. One of our recent submissions for publication detailed the technique and reported the results of our use of the transanal Swenson performed in the first several days of life. This technique, in which the Swenson is performed through the anus, thus avoiding a large abdominal dissection, had not previously been described. There are several advantages of the one stage repair. Colostomy is avoided, along with its potential complications, which in the infant may approach a rate of 20%. The length of hospital stay is decreased and hospitalization for colostomy closure is avoided entirely. In theory, long term function may be improved by earlier development of neural connections controlling anal sphincter function.

Minimally invasive surgery (MIS) is becoming an increasingly important technique in the treatment of pediatric surgical disease. MIS has often been advocated in both adult and pediatric patients based on its appeal to the

patient or consumer rather than by any rigorous trial. In one attempt to correct this problem, several years ago an attempt was made at a national level with NIH funding to examine the efficacy of MIS in the pediatric oncology patient. The questions asked dealt with safety and accuracy in obtaining tissue for histologic diagnosis. Though this study never came to fruition at a national collaborative level, we examined our own results at CHRMC to determine whether both laparoscopy and thoracoscopy were useful, accurate ways to obtain tissue. We examined patient outcome and treatment of disease based on decisions made from tissues obtained by MIS techniques. MIS was found to be an excellent, accurate method with no adverse or inappropriate clinical decisions made based on the tissues obtained.

Many MIS procedures take special skills and advanced training in order to become proficient. Often these techniques are espoused to the surgical community with little regard as to what experience is needed to be able to reasonably perform the operation. Few MIS procedures in children are encountered as often as some of those in adults, so that the ability for any one pediatric surgeon to become very experienced may be limited. Some of our studies helped to establish a learning curve with laparoscopic splenectomy and pyloromyotomy so that other surgeons learning how to do the operation might know what to expect in the early stages of learning the procedure. We have also recently examined outcomes and results of both open and laparoscopic pyloromyotomy in order to determine the efficacy of the laparoscopic approach. Future projects will involve outcomes research in pediatric gastroesophageal reflux and Nissen fundoplication.

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Other studies have answered simple questions about everyday clinical situations such as whether a period of water seal is needed to safely remove chest tubes in children. We have evaluated our use of ERCP in children when symptoms or studies suggested common duct gallstones and tried to discern useful protocols or pathways to help determine when ERCP should be performed preoperatively rather than after cholecystectomy and intraoperative cholangiogram. Our goal was to avoid unnecessary ERCP and the general anesthetic needed to perform it in children.

Ongoing collaborative efforts with colleagues in other divisions such as orthopedics have enabled us to expand the use of minimally invasive surgery for conditions such as pediatric scoliosis by doing thoracoscopic exposures as well as thoracoscopic anterior fusion and instrumentation. A joint effort with orthopedics and pulmonary medicine has allowed us to be part of a national collaborative study on the use of the expandable titanium rib, used to treat

children suffering from thoracic insufficiency syndrome. Prior to the development of this device no good method existed for the treatment of this condition. It is hoped that the use of the expandable rib will allow us over time to expand the thorax of children with Jeune's syndrome or thoracic insufficiency from other congenital problems such as scoliosis, fused ribs or congenital diaphragmatic hernia. Children's was an FDA study center for the evaluation of this device and we are taking lead roles in determining the efficacy of this treatment.

Each of us in pediatric surgery does a high volume of clinical work and it is important to step back on occasion to examine how well one is doing and to question whether something could be done better. This has been our primary focus and the underlying intent of these and many other projects conducted in our division.

RELATED PUBLICATIONS

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