

# MEET THE *Team*

We understand that no surgery is simple. That is why patients need surgeons who are pediatric-trained and experienced in treating a wide range of conditions. Our team of pediatric general surgeons includes:

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# SURGERY *Update*

A newsletter from Children's  
Physician Group-Pediatric Surgery

WINTER 2017

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A newsletter from Children's  
Physician Group-Pediatric Surgery

Surgery Update is a newsletter from Children's Physician Group-Pediatric Surgery intended to keep you informed regarding the latest in pediatric general surgery.

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- 2016 publications

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**Children's**  
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Children's Physician Group

# Minimally invasive surgery in infants and children

Samiksha Bansal, M.D.

## Overview

Starting from its first use in gynecology, and slowly making its way through laparoscopic cholecystectomy and other procedures in adults, laparoscopy has become the preferred method for many procedures in the field of pediatric surgery. The advent of laparoscopy has revolutionized the way surgery is practiced today. It has not only become the preferred method for commonly performed operations, but has also made its way into more advanced procedures due to its inherent advantages, such as magnification and improved visualization. While the basic principles of the surgical anatomy and dissection remain unchanged, the approach for minimally invasive surgery (MIS) is unique and requires special training and proficiency.

## Scope for minimally invasive surgery

MIS techniques were embraced by adult general surgeons soon after the first laparoscopic cholecystectomy was performed in 1987 by Philippe Mouret. MIS in the pediatric community progressed more slowly. In earlier years, this was because of equipment that didn't adapt well to pediatric use, combined with the technical complexity of operating on most pediatric surgical patients. However, many of these initial obstacles have been overcome with increasing surgical expertise and marked improvements in video equipment and instrumentation. Laparoscopic procedures that can now be performed safely include pyloromyotomy, appendectomy, fundoplication with or without gastrostomy, duodenal atresia repair, Ladd's procedure for malrotation, colonic pull-through for Hirschsprung's disease or anorectal malformation, cholecystectomy, and choledochal cyst excision, among others.

Thoracoscopy in the pediatric population is also proliferating with refinements in technology and technique. Initially used primarily for decortications in empyema, lung biopsy and wedge resection in patients with interstitial lung disease (ILD), and metastatic lesions, thoracoscopy is now used routinely for pulmonary resections, including segmentectomy and lobectomy; for infectious diseases; sequestrations; lobar emphysema; congenital pulmonary airway malformations; and neoplasms. It also allows excellent access and visualization for biopsy and resection of various mediastinal masses such as lymph nodes, thymic lesions, cystic hygromas, foregut

duplications, ganglioneuromas and neuroblastomas. In recent years, its use has been extended to more advanced thoracoscopic procedures like repair of diaphragmatic hernia, repair of tracheoesophageal fistula, ligation of patent ductus arteriosus, and division of vascular rings. Advanced surgical skills, combined with the availability of appropriately sized instruments, have made these minimally invasive procedures feasible for neonates and infants, even those weighing less than 5 kilograms.

## Basic principles and preoperative considerations

The general considerations for MIS include the operating surgeon's comfort with the procedure, knowledge of available technology, appropriate patient selection, and appropriate intraoperative management. Indication and nature of the procedure, port sites, alternate approaches, and the risks and benefits of the surgery should be discussed with the parents and patients.

Children are generally healthier than adults, but children with congenital heart disease or prematurity with respiratory insufficiency and children on prolonged ventilatory support may still undergo laparoscopic or thoracoscopic intervention after careful assessment of their cardiorespiratory function. Today, laparoscopic procedures can be safely performed in children with congenital cyanotic heart disease with appropriate perioperative monitoring and care, an experienced anesthesiologist and good team communication. Relative contraindications for MIS approaches include when the patients are hemodynamically unstable, are not on conventional ventilation, cannot be safely transported to the operating suite, are of extremely low birth weight, have difficulty maintaining pneumoperitoneum or pneumothorax, and have adhesions from previous surgery. With increasing surgical expertise with MIS, procedures that were considered impossible only a few years ago are now routinely performed at many centers.

## Benefits of minimally invasive approach

Laparoscopic procedures in neonates and older children are not only safe and effective, but result in significantly decreased morbidity with less

painful convalescence, decreased postoperative narcotic requirements and shorter hospital stays. They can also result in an earlier return of gastrointestinal function, fewer pulmonary complications, quicker recovery and return to full activity, improved cosmesis, and reduced overall hospital cost. Children can be spared from potential scoliosis and other mechanical chest wall deformities by using the thoracoscopic approach. Multiple procedures can be performed simultaneously with minimal additional morbidity (for example, splenectomy and cholecystectomy). Similarly, presence of contralateral hernias can be

evaluated without making additional or unnecessary incisions. The long-term benefit of decreased adhesion and scar tissue formation may be the strongest argument for pursuing this approach.

The use of MIS in pediatric surgery has come a long way, and single-site laparoscopic surgery (SILS), robotics, and access through natural orifices show promise for still more advancements in the field. Contact the general surgery team at Children's Healthcare of Atlanta for more information.

## 2016 publications from our team

Badru, F., Litton, T., Puckett, Y., Bansal, S., Guzman, M., Vane, D., and Villalona, G.V. (April 2016). Spontaneous gallbladder perforation in a child secondary to a gallbladder cyst: a rare presentation and review of literature. *Pediatric Surgery International*, DOI: 10.1007/s00383-016-3891-4.

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## Contact us

Children's Physician Group—Pediatric Surgery provides comprehensive general and thoracic pediatric surgical care for children and adolescents throughout Georgia and the Southeast. Our offices are located at:

### Main offices

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### Surgical locations

We perform surgeries at Egleston hospital, Scottish Rite hospital, Children's at Meridian Mark Outpatient Surgery Center and Children's at Satellite Boulevard Outpatient Surgery Center.