

# Commitment to Children's Health

## The Endoscopic Surgery In Children

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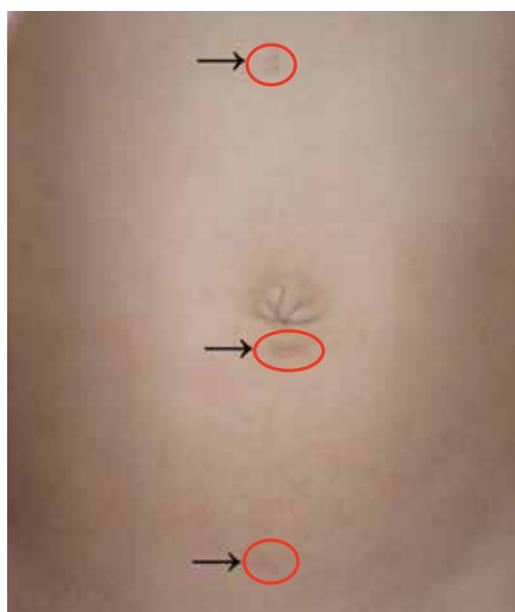
While Laparoscopic Surgery for adults is an alternative approach that is gaining widespread acceptance for its small incisions and advantages, the adoption of it to children has more significant and challenging. A 2cm wound is considered a small wound to an adult, but to a young child whose weight is less than 10kg, it is comparatively large. Therefore, incision on a child must be even smaller for the surgery to be truly considered minimally invasive. Laparoscopic Surgery requires the undergoing of insufflations of gas into patient's intra-abdomen and then long instruments are inserted to operate within the abdominal cavity. The smaller abdominal cavity of a child will limit the operating range of the long instrument, which makes the application of laparoscopic surgery in pediatric urology significantly later than in adults.

### **The Beginning of Pediatric Laparoscopic Surgery**

Inguinal hernia is a defect in the abdominal wall that allows the intestines and the interior gas to migrate under the skin to formulate a bulge. It is a very common condition among children, and the most common treatment is surgery, with a success rate above 95%. Traditional open hernia repair surgery, besides a large incision, also brings a risk



**Dr. Shei-Dei Yang attends to a child with urological diseases. His pediatric patients regarded him with deep friendship and trust.**



**After the laparoscopic surgery, the wound is almost invisible.**



**Incisions from a conventional pediatric surgery**

of 20% chance of contralateral hernia which may occur one or two years later. Avoiding the second anesthesia and surgery has always been a concern of pediatric surgeons and urologists.

In 1995, while studying in Brown University, USA, I first witnessed laparoscopic surgery in pediatric urology. The most common method at that time was to proceed the following: while performing a traditional hernia surgery, an endoscope, which was inserted through the opening of an internal ring of the hernia sac, was extended to the opposite side of the abdominal cavity to inspect for an occult (or previously undiagnosed) hernia. Using this method, there was no need to make another incision in the patient's belly, as the endoscope was extended into the abdomen along with the hernia sac. This method was safe, but the accuracy was low, so the technique was eventually abandoned.

Starting from 1999, we began to use a standard laparoscopic set and instruments to repair hernia: three 0.3cm incisions made on the abdominal wall to remove the hernia sac and suture the peritoneal defects. The surgical procedure received international attention, as the end result was effective, yielded excellent cosmetic result, raised the success rate up to 98%, and more importantly, significantly reduced the chance of a postoperative

contralateral hernia to less than 1%. In the past 13 years, we have published 7 papers regarding pediatric hernia surgery. The following article "Mini-laparoscopic herniorrhaphy with hernia sac transection in children and young adults: a preliminary report", published in the Journal of the Society of Laparoendoscopic Surgeons 2007, is a landmark paper for this surgery and received the World Endoscopic Surgeons Society Research Award for Young Doctors.

### **Vesicoureteral Reflux Surgery - An Exemplarity of Pediatric Laparoscopic Surgery**

Vesicoureteral reflux (VUR), a very common disease for children with urinary tract infection, is the backflow of urine from bladder to kidney through ureter. VUR is considered to be a major culprit in renal failure and renal scarring. Therefore, to learn how to successfully treat vesicoureteral reflux became one of my major focuses during my training in 1995. Conventional surgery required making an 8-cm "smile-shaped" incision on the lower abdominal wall, cutting open the detrusor muscle while retaining the bladder mucosa, and then re-implanting ureter into the bladder to increase ureteral resistance to achieve an anti-reflux result. Based on the principle

of laparoscopic surgery, only three 0.3 cm incisions required to complete this complex surgery. In 2006, Taipei Tzu Chi General Hospital pioneered the surgery, which benefited numerous children, and the result was soon published in international periodicals.

### Unbounded Application in Pediatric Laparoscopic Surgery

We have expanded the application of laparoscopy surgery to a variety of surgeries. Surgeons are now proficient in applying it to critical nephrectomy (kidney removal surgery), or delicate ureter anastomosis surgery, which is the reconnection with stitches. The pyeloplasty of an ureteropelvic junction obstruction, often causes hydronephrosis, is to cut-off stenosis and then perform anastomosis on the junction. The critical part is to perform perfect sutures and to prevent stenosis recurrence. Complementing the above surgical skills with endoscopic suture skills, we can perform perfect pyeloplasty on not only adults and children, but 3-month-old baby as well.

“You name it, we do it.” To be able to perform any conventional abdominal surgeries in any textbook is our goal and our commitment to pediatric health.



Dr. Shei-Dei Yang has dedicated, from early in his medical career, to pediatric laparoscopic surgery and is committed to reduce the trauma caused by surgical procedures. This picture shows him performing a hernia surgery on a five-month old baby in 2005□



The indicated arrow refers to the three miniature incisions used in laparoscopic surgery. Below is the “smiley-shaped incision” from conventional surgery.



A radiograph of vesicoureteral reflux (VUR) indicates the urine did not progress normally through the urinary tract but refluxes toward to the kidney.