

# Laparoscopy in children of Bangladesh: a brief history, the prospect and the challenges

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When it comes to health care delivery, people are now demanding an improvement in quality and services and at the same time reduction in cost. Upgrading the quality of health care delivery may require that health care facility invest in new technologies, which may be costly and often involves a steep learning curve for practitioners. Change is the only constant in health care, so practitioners need to be aware of the changes that are on the horizon for the health care industry and find ways to successfully deal with the inevitable challenges these changes will bring.<sup>1</sup> It is a challenging task to provide the entire population with the state-of-the-art health care in developing countries like ours. And the children who constitute almost 50% of the population are lagging far behind. We, the pediatric surgeons, principally deal with various congenital deformities in children. Once born, I think every human being has got the right to get appropriate facilities to live a reasonably fruitful life.

The practice of surgery has changed dramatically over the past three decades. The two main driving forces behind these changes have been advances in medical technology and greater public expectations. Minimally invasive techniques such as microsurgery, fibre-optic endoscopy, laparoscopic and arthroscopic surgery and interventional radiology have broadened the range of therapeutic options.<sup>2</sup> The types and number of minimally invasive or laparoscopic techniques increases every year. Although minimally invasive procedures were once considered merely a surgical trend, physicians in nearly all surgical specialties now are performing minimally invasive procedures on almost all anatomical areas.<sup>1</sup>

Laparoscopic surgery owes much of its history to the development of endoscopic technique. Early physicians such as the Arabian, Albukasim (936–1013 AD), and later in 1805, the Frankfurt-born physician, Phillip Bozzini, were among the first to develop methods to examine body orifices. The first effective open tube endoscope was developed in 1853 by Desormeaux and other physicians including Kussmaul and Nitze refined the original endoscopic models and began utilizing in their medical practice. Laparoscopy or endoscopically examining the peritoneal cavity was first attempted in 1901 by George Kelling who called this examining procedure “Celioscopy.” In the early 1930s, the first reports of laparoscopic interventions for non-diagnostic purposes were published. Initial procedures included lysis of abdominal adhesions and diagnostic biopsies of abdominal organs under direct

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visualization. Throughout the 1960s and 1970s, laparoscopy became a vital part of gynecological practice. Despite these technological advances, it was not until after 1986, following the development of a video computer chip that allowed the magnification and projection of images onto television screens, that the techniques of laparoscopic surgery truly became integrated into the discipline of general surgery.<sup>3</sup>

The first publicized laparoscopic cholecystectomy performed on a human patient was done in 1987 by the French physician Philip Mouret.<sup>3</sup> The laparoscopic cholecystectomy is now considered standard therapy for routine gall bladder removal. The rapid acceptance of the technique of laparoscopic surgery by the general population is unparalleled in surgical history. It has changed the field of general surgery more drastically and more rapidly than any other surgical milestone, including the introduction of anaesthesia and the later introduction of antibiotics.<sup>3</sup>

Reports of minimally invasive surgery (MIS) in infants and children are found from the early 1970s<sup>4</sup> and were largely confined to simple diagnostic procedures. The evolution of the field in pediatrics has been much slower compared to its advancement in adults. Endoscopic surgery for pediatric patients was a challenge for pediatric anesthesiologists as long as data were not available on physiological changes induced by carbon dioxide insufflations. Experimental and clinical studies were required to prevent complications. It was also necessary to develop new instruments for pediatric endoscopic surgery, as treatment might be needed in children of all ages, including neonates. The modern era of pediatric laparoscopy began in the early 1990s with the adaptation of adult instruments to our younger patients for therapeutic procedures such as cholecystectomy.<sup>5</sup> Enthusiasm has grown worldwide in the pediatric surgical community over the past 30 years with the advent of many technological improvements, rendering laparoscopy and thoracoscopy safer and more available to our younger and smaller patients. Advancements in optics, video, lighting, microchips, miniaturization and ergonomics have allowed execution of “old” procedures using less invasive techniques, while fostering the development of more advanced procedures.

Opponents were always there to denounce this technological advancement. Kurt Semm who was an engineer as well as a gynecologist had developed the CO<sub>2</sub> insufflators and the Roeder loop. In 1983, he reported the first laparoscopic appendectomy. Soon after this presentation, the leaders of the German Surgical Society demanded Semm's suspension from medical practice. His colleagues in his hospital

proposed that he undergo a brain scan to see if his erratic and bizarre behaviour of wanting to operate through a telescope was because of some organic and potentially remedial problem.<sup>4</sup> One pediatric surgeon recently raised the following questions and tried to prove that everything was wrong<sup>6</sup>:

1. Is pediatric laparoscopy minimally invasive?
2. Is laparoscopy cosmetically superior?
3. Is laparoscopy painless?
4. Is laparoscopy economical?
5. Is laparoscopy associated with fewer complications?

During the early periods of pediatric laparoscopy, these questions might have been valid. However, after a long journey and vast experience, we can say that pediatric laparoscopy is minimal invasive, cosmetically superior, less painful and economical with fewer complications.<sup>7-10</sup>

The first laparoscopic cholecystectomy was done in Bangladesh back in 1991 by Sarder A. Nayeem and his team in an adult patient. General surgeons then took up and adapted to the technology rapidly. Our gynecologists, urologists, ENT surgeons and neurosurgeons are moving forward and have proved that at least in some cases it is equally possible to offer laparoscopic/MIS safely within reasonable cost. However it took us more than a decade to start pediatric laparoscopy. The younger pediatric surgeons were aware of the feasibility but there was no one for guidance. The author had the opportunity to attend a conference in India in late 2004 and observed several interesting presentations on pediatric laparoscopy. The author then took the initiative, joined by Dr. Ashrarur Rahman and Dr. Arifur Rahman, went to Prof. Anirudh V. Shah in Ahmedabad, Gujarat, India for training. Back home, the first case (Laparoscopy-Assisted Orchiopexy) was done on 25 April 2005 in Shishu Sashthya Foundation Hospital in Mirpur, Dhaka by Dr. Arifur Rahman and the author with the help of Dr. Aminur Rashid Minu, a general laparoscopic surgeon. Later on, the author started doing laparoscopy in children in Chattagram Maa-O-Shishu Hospital Medical College, Chittagong, regularly since October 2005. Dr. Alak Kumar Nandy, the chief of anaesthesiology in this institute took keen interest which helped us a lot particularly in neonatal cases. Chittagong Medical College was the first to procure pediatric laparoscopic instruments in the government sector during that time. Dr. Ashraf Ul Huq Kazal took the initiative there to start laparoscopy in government sector. He then carried the torch to Dhaka Medical College and doing a great deal regarding training of junior surgeons on pediatric laparoscopy. During 2005–2006, several

government medical colleges and Dhaka Shishu Hospital procured the instruments and surgeons in those institutes began practicing laparoscopic procedures in children.

During the early days, we had to overcome the mindset of some senior pediatric surgeons who were not convinced about the feasibility and prospect of pediatric laparoscopy. Another issue in 2005 was that the general surgeons have been doing mostly laparoscopic cholecystectomy till then, which was not much common in children. When we started doing several different types of operation, notably appendectomy, it became apparent that this technique is superior to open technique even in children. Print and electronic media played an important role during our early days of laparoscopic endeavours to popularize this among general population as well as pediatric surgeons and physicians. In December 2005, we presented our works in the conference of Federation of Associations of Pediatric Surgeons of SAARC held in Chittagong, along with many world-renowned pediatric laparoscopic surgeons including Prof. Steven Rothenberg. That conference was an eye opener for our pediatric surgeons and great deal of enthusiasm was created.

So far around 3500 laparoscopic procedures have been done in children in Bangladesh. The author's institution has done the majority (about 2500) followed by Dhaka Shishu Hospital (329), Shishu Sashthya Foundation Hospital, Dhaka (226), Chittagong Medical College (175), Dhaka Medical College (125), Square Hospital (96), Apollo Hospital (73), SSMC & Mitford Hospital (45), Sylhet MAG Osmani Medical College (30) and Rangpur Medical College (15). Majority cases are appendectomy; followed by inguinal hernia repair, pull-through for Hirschsprung's disease (HD), orchiopexy, pyloromyotomy, cholecystectomy, ovarian cystectomy, diagnostic etc.

Our institute has played an important role for the training of Pediatric Laparoscopic Surgeons from Bangladesh. We have organized two workshops during 2006 and 2008, respectively, by two renowned laparoscopic surgeons from France (Dr. Jerome Atger and Prof. De Lagausie Pascal). These workshops were attended by many pediatric surgeons as well as surgeons from other specialties from across the country. Later in 2010 Prof. Benno Ure also came to Chittagong Medical College for another workshop. The author has presented his works in many national and international meetings including in Egypt, Nepal, Japan, Czech Republic, UK and USA which helped creating awareness among Bangladeshi surgeons, at the same time, letting the international community to know about our works. We have

developed our own training programmes, and pediatric surgeons from home and abroad (Nepal, Hungary and Switzerland) had their training here. Few other pediatric surgeons from Bangladesh also went abroad for laparoscopic training and returning back they practiced this field.

From my own experiences, I can say that Pediatric Laparoscopy is now a well accepted modality of treatment among the physicians as well as general population in our country. However, for the survival of the specialty in the long run, we need new blood, and this can be achieved with proper training of junior surgeons. Now is the time that we think about establishing a formal training programme for our future generation. It is also my observation that the initial enthusiasm has somehow abated and it is reflected in the reduced number of cases performed in different centres of Bangladesh, although they have got basic laparoscopic facilities. I think we have to be careful of what we do because some of the enthusiasm can turn sour if not handled correctly. It is important for surgeons to recognize their limitations and to seek appropriate training and understanding of new techniques before they attempt it.

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