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Hassan Ishaq
Aga Khan University

Saqib Hamid Qazi
Aga Khan University, saqib.qazi@aku.edu

Sohail Dogar
Indus Hospital

Muhammad Younus Khan Durrani,
Aga Khan University

Ahmad Vaqas Faruque
Aga Khan University

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PAEDIATRIC SURGERY

SHORT REPORT

Pediatric laparoscopic surgery; initial experience from Pakistan; first 100 cases in single center

Hassan Ishaq,¹ Saqib Hamid Qazi,² Sohail Dogar,³ Muhammad Younus Khan Durrani,⁴ Ahmad Vaqas Faruque⁵

Abstract

In a developing country like Pakistan, laparoscopic surgeries are not considered favourable by many, possibly because of high costs or a lack of expertise. It is an established fact that laparoscopic surgery offers better surgical treatments with a shorter hospital stay and fewer complications. The current retrospective study was conducted at a tertiary care hospital in Karachi and comprised of laparoscopy cases performed by a single surgeon from March 2012 to September of 2014. A total of 100 laparoscopic surgeries were performed; mostly appendectomies 49(49%) and undescended testes (UDTs) 34(34%). Overall, there were 70(70%) male patients. The mean age of the patients was 7.1 years and standard deviation (SD) of 2. Four (4%) patients had cellulitis. Laparoscopy paediatric surgery offered advantages of fewer wound-associated complications, less incisional pain, a shorter recovery time, and improved cosmesis.

Keywords: Laparoscopic paediatric surgery, Children, Minimally invasive.

Introduction

Minimal surgery time, fewer complications and reduced recovery time is the desire of every surgeon. Technological advances along with increasing surgical and anaesthetic expertise have increased the range of laparoscopic procedures presently being undertaken in children.

In Pakistan laparoscopic surgery is mostly done in the adult age group. There are very few centres that perform these procedures on children. The use of laparoscopic techniques at our hospital started in

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¹Undergraduate Medical Student, Aga Khan Medical College, ^{2,3}Section of Pediatric Surgery, The Aga Khan University Hospital, ³Section of Pediatric Surgery, Indus Hospital, ⁴Intern, Aga Khan Medical College, Karachi, Pakistan.

Correspondence: Saqib Hamid Qazi. Email: saqib.qazi@aku.edu

March 2012. There have been around 100 patients that underwent treatment through this procedure at our centre.

The current study was planned to share the initial experience of performing laparoscopic surgeries on paediatric patients at our centre.

Methods and Results

This retrospective study was conducted at Aga Khan University Hospital, Karachi, and comprised all laparoscopic procedures in the paediatrics age group performed by a single surgeon from March 2012 to September 2014. Cases were identified using the hospital information management system (HIMS).

Of the 100 patients, 70(70%) were male. The overall mean age was 7.1 years (SD ± 2). Laparoscopic procedures were performed mostly for appendectomies 49(49%) and undescended testis 34(34%) (Figure). Among patients who were operated on due to undescended testis, 10(29.4%) underwent single-stage orchidopexy, 10(29.4%) were operated for diagnostic purposes, and 14(41.2%) underwent Stephen Flower stage 1 procedure. Among laparoscopic appendectomy patients, 47(96%) underwent emergency appendectomy and 2(4%) had interval appendectomy. The mean operating time for laparoscopic procedures was 88 minutes (SD ± 9.8). The

Table: Operative dynamics and morbidities of cases.

Cases	Operative time (Minutes)	Hospital stay (Days)	30-day morbidity	
			Minor	Major
Total 100 cases				
Orchidopexy		1	0	0
Appendectomy		3.5	4	0
Cholecystectomy		1	0	0
Ovarian detorsion		1	0	0
Liver biopsy		1	0	0
CDH repair		3	0	0
Overall	88		0	0

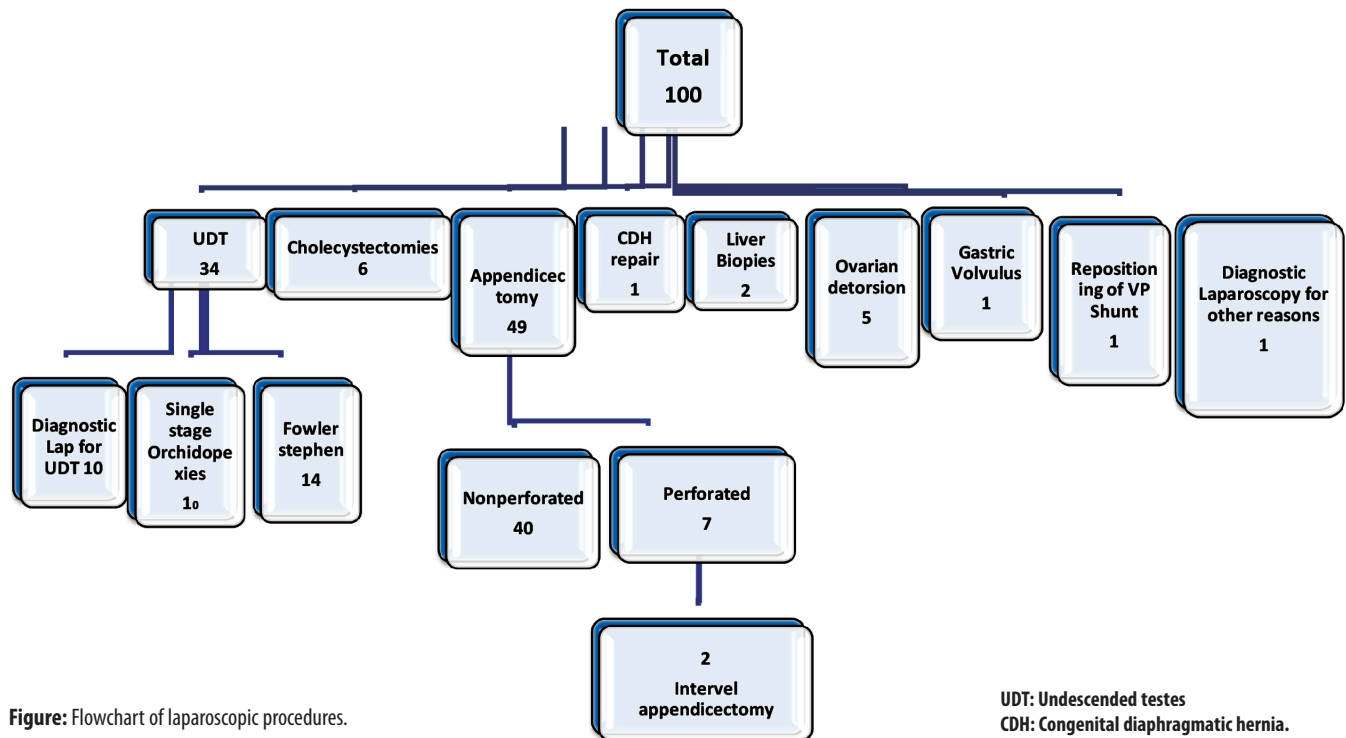


Figure: Flowchart of laparoscopic procedures.

mean hospital stay for patients who underwent appendectomy was 3.5 days (SD ± 0.7), while all the other laparoscopic procedures had a mean hospital stay of 1 day (Table). The most common complication displayed by the patients within 30 days following the operation was umbilical port cellulitis in 4(4%) patients.

Conclusion

Laparoscopy has been considered a safer choice, with few complications compared to the open procedure. It is believed to conserve the normal immune function, reduce scar marks on the patient's body, reduce pain and blood loss, and the procedure overall is less time-consuming, hence leading to reduced patient morbidity.¹ Furthermore, laparoscopy has reduced the risk of postoperative adhesions. This is attributed to minimal manipulation of the bowel.

A randomised trial concluded that open cholecystectomy (OC) increases the chances of bacteraemia, endotoxaemia and systemic inflammation compared to laparoscopic cholecystectomy (LC).² Also, total leucocyte count (TLC) in patients came down to normal values within 2 postoperative days in the LC group, whereas it took longer in the OC group. Interleukin-1 (IL-1), IL-6 and C-reactive protein (CRP) were all markedly elevated within one hour of LC compared to OC which are clear markers of

increased morbidities.²

In various cases, early-stage endometrial cancer, for instance,³ it has been established that laparoscopic approach is associated with similar overall and disease-free survival. However, the risk of bladder, ureteric and vascular injury in the two approaches is similar. The same meta-analysis reported that all the severe early and late postoperative complications were seen in laparotomy groups.³

In paediatric age group, initially laparoscopy was used merely as a diagnostic tool. It later became useful for performing diaphragmatic hernia, oesophageal atresia, duodenal atresia, chronic abdominal pain, biliary atresia, abdominal trauma and various other diagnostic and therapeutic purposes with acceptably low complication rates, which include occasional bleeding, perforations of viscera, ileus and increase intracranial pressure.⁴

In non-acute conditions, laparoscopy can be performed on an outpatient basis.⁵ Complication rate of laparoscopic appendectomy, according to a study, was 1.35% with conversion rate of 3.6%.⁶ When compared to laparotomy, laparoscopy is more efficient, but many surgeons are reluctant to perform complex procedures via laparoscope: only one-third of the surgeons perform laparoscopic pyloromyotomy for pyloric stenosis and only 11% recommend doing it this way.⁷ Fewer than one-fifth

offer Ladd's procedure via laparoscope for malrotation.⁷

In recent years, there has been a lot of advancements in laparoscopic paediatric surgical techniques.⁸⁻¹⁰ Currently in Pakistan there are very few centres offering paediatric laparoscopic surgeries. We started doing laparoscopic procedures after one of the surgeons got trained in laparoscopic paediatric surgery.

This is not a population-based study as it recorded only cases who underwent laparoscopy at a single centre, but it has major implications. There is a need for future trainees to be fully trained in minimally invasive techniques for better provision of care to children with surgical diseases.

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