

Initiating advanced laparoscopic surgery in a medical college hospital with basic laparoscopic set up: Is it feasible and safe?

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Abstract

Background: Laparoscopic surgery involves performing surgery through small incisions in abdominal wall to get access. Primary goal of this procedure is to achieve good cosmetic outcome, reduced post operative pain, early recovery and reduced hospital admission.

Objective: The main objective of this study is to see the feasibility and benefit of performing advance laparoscopic surgery in a place where basic laparoscopic surgery is done and to share my experience while performing it.

Materials and methods: A retrospective study of case sheets and discharge summary from 1st May 2008 till 1st August 2009 was done. Altogether eight patients underwent different advanced laparoscopic procedure. Cases done for the first time in the institute and those done by himself were only included. Technical feasibility, use of devices like harmonic scalpel, need for incision extension, operative time, blood product requirement, ambulation and enteral feed, post operative hospital stay and patients satisfaction regarding minimal scars were assessed.

Result: Total eight patients underwent advance laparoscopic surgery. There were two common bile duct (CBD) exploration of which one was transcystic exploration, one total laparoscopic abdominoperineal resection (APR) for rectal cancer, one laparoscopic assisted right hemicolectomy for carcinoma caecum, one laparoscopic assisted sigmoid colectomy for recurrent sigmoid volvulus, two laparoscopic right nephrectomy for non functioning right kidney, one retroperitoneal pyelolithotomy and one laparoscopic assisted splenectomy for massive splenomegaly with haemolytic anaemia.

All procedures were technically feasible with basic laparoscopic instruments. However harmonic scalpel was required for splenectomy due to difficult hilum dissection. Ureteroscope was used as a choledochoscope in CBD exploration. Blood transfusion was required only in patient with low preoperative haemoglobin. Early ambulation and enteral feed was done within 24 hours in all and within 48 hours in patients who had bowel anastomosis. Post operative hospital stay was 5-8 days. Cosmetic scar was appreciated by all. Although long term oncological outcome is yet to come in malignancy case, biopsy report of laparoscopic APR identified 13 nodes which shows complete nodal dissection on oncological principal basis.

Conclusion: Advanced laparoscopy is feasible, safe and effective in the hand of surgeons performing basic laparoscopic surgeries with guidance from surgeons who have long experience on same procedures but by open method.

Key words: Advanced Laparoscopic Surgery

With advances in minimal invasive surgery and increase in confidence level of laparoscopic surgeon, many advance laparoscopic procedure are feasible and are being performed in Nepal. However, till date no paper have been published regarding pros and cons of performing advance laparoscopic surgery in a setup meant for basic laparoscopic surgery like laparoscopic cholecystectomy, appendectomy and mesh repair. Hence, this study helps to know advantage and disadvantage of advance laparoscopic surgery in a basic laparoscopic set up.

Materials and methods

A retrospective analysis of eight cases that underwent different advance laparoscopic procedures for various disease conditions were included from 1st May 2008 till 1st Aug 2009. Case sheets and discharge summary of each were analysed.

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All the advanced laparoscopic procedure done first time in this institute and done by the author only was included.

There were two common bile duct exploration for choledocholithiasis of which one was transcystic exploration, one total laparoscopic abdominoperineal resection for rectal cancer, one laparoscopic assisted right hemicolectomy for carcinoma caecum, one laparoscopic assisted sigmoid colectomy for recurrent sigmoid volvulus, one laparoscopic right nephrectomy for non functioning right kidney, one laparoscopic retroperitoneal right pyelolithotomy and one laparoscopic assisted splenectomy for massive splenomegaly with haemolytic anaemia.

All procedures were done under general anaesthesia. First camera port was placed in umbilicus followed by two working ports to suit the ergonomics for that particular procedure except for retroperitoneal pyelolithotomy. One additional port was placed as per requirement.

Dissection, electrocautery and clipping were done with instruments used in basic laparoscopy. Intracorporeal knot tying was done where blood vessels were big for clipping. Suturing if required was done intracorporeal except bowel anastomosis. Harmonic scalpel was used only in splenectomy for short gastric vessels and to control ooze in perihilar region before intracorporeal tying of splenic vessels was done. Rigid ureteroscope was used as a choledochoscope for CBD stone removal and to check the stone clearance. Laparoscopic assisted procedure was done only for hand sewn anastomosis of colon in two cases. In splenectomy, small midline incision made for retrieval of massive spleen of 18cm x 5cm size.

Technical feasibility, instruments other than basic instruments requirement, total duration of surgery, need of incision extension, blood transfusion, early ambulation and enter feed, post operative hospital stay and patients satisfaction regarding wound cosmesis were analysed.

Table 1: Duration and instrument required in the advanced laparoscopic surgeries

Total No. N=8	Date of surgery	Accessory instruments required	Duration of surgery in minutes	Incision extension
Laparoscopic CBD exploration n=2	17 th November 2008	Ureteroscope	90 mins	No
Laparoscopic right. Nephrectomy n=1	17 th March 2009	No	180 mins	No
Laparoscopic APR n=1	2 nd May 2009	No	240 mins	No
Laparoscopic assisted sigmoid colectomy n=1	5 th May 2009	No	90 mins	For anastomosis
Laparoscopic Retroperitoneal pyelolithotomy n=1	23 rd June 2009	no	120 mins	No
Laparoscopic splenectomy n=1	28 th July 2009	Harmonic scalpel	210mins	For specimen retrieval
Laparoscopic assisted right Colectomy n=1	11 th August 2009	No	180mins	For anastomosis

Table 2: Post operative management and patient satisfaction

Total No N=8	Blood transfusion	Early ambulation / enteral feed	Post operative hospital stay	Patient satisfaction on cosmesis
Laparoscopic CBD exploration n=2	No	yes /24hrs	3days(trans cystic)/5 days	satisfied
Laparoscopic right. Nephrectomy n=1	No	Yes/24hrs	4days	satisfied
Laparoscopic APR n=1	2 units	yes/24hrs	8days	satisfied
Laparoscopic assisted rt. Colectomy n=1	No	Yes/48hrs	5days	satisfied
Laparoscopic assisted sigmoid colectomy n=1	No	Yes/48hrs	6days	satisfied
Laparoscopic splenectomy n=1	2 units	Yes/24hrs	7days	satisfied
Laparoscopic Retroperitoneal pyelolithotomy	No	Yes/24hrs	3days	satisfied

Discussion

Laparoscopic surgery has promised to improve health related outcomes. Around 20 years after first laparoscopic cholecystectomy, other advanced laparoscopic surgery was initiated. Unlike laparoscopic cholecystectomy none has become the gold standard treatment but has emerged as an alternate treatment modality with better cosmesis, early recovery and safe.

Colorectal malignancy managed by laparoscopic procedure has been a subject of intense investigation. Recent date meta-analysis comprising five randomized controlled trials confirmed its acceptable oncological outcome as primary end point and immediate post operative outcome as secondary end point^{1,2}. To satisfy the oncological principle, 12 nodes are to be harvested from the resected specimen where as in our case 13 nodes were identified in histopathological examination.

There is ongoing debate regarding the management of choledocholithiasis. The advantage of laparoscopic common bile duct (CBD) exploration over ERCP followed by laparoscopic cholecystectomy is that it is a one staged procedure. Laparoscopic CBD exploration is limited by its long learning curve and it is technically demanding³. Transcystic CBD exploration has high success rate and low morbidity⁴. But its application is in wide cystic duct to negotiate choledochoscope and small stones in the CBD. However, with use of semi

rigid ureteroscope as a choledochoscope in transcystic or trans-common bile duct have two advantages; one use of irrigation port and another use of working port for retrieval of stone with use of forceps or dormia.

Laparoscopic splenectomy has been an obvious alternative to open surgery for non enlarged spleen. For massive splenomegaly, it is feasible to mobilise and dissect inside the abdomen. But its manipulation and retrieval is cumbersome⁵. High conversion rate and morbidity are reported in literatures⁶. In my case complete dissection was possible but incision extension was done for its retrieval.

Laparoscopic nephrectomy has been one of the modalities for treatment non functioning kidney⁷. In one patient transperitoneal approach was done for huge hydronephrotic nonfunctioning kidney with use of basic laparoscopic instruments.

Availability of various modalities like extracorporeal shockwavelithotripsyandpercutaneousnephrolithotomy made use of laparoscopic approach minimal for renal stones⁸. Its use can only be if adjunct procedure is required along with stone removal like pyeloplasty. In this case, the indication was lack of PCNL and ESWL as well as large stone. Retroperitoneal approach is unfamiliar compared to transperitoneal approach.

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