



ORIGINAL RESEARCH PAPER

Surgery

DIAGNOSTIC LAPAROSCOPY IN A TERTIARY CARE TEACHING HOSPITAL IN NORTH EAST INDIA – A 3 YEAR REVIEW

KEY WORDS: Diagnostic Laparoscopy, Abdominal Tuberculosis, Chronic abdominal pain

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ABSTRACT

Introduction: Diagnostic Laparoscopy (DL) is a well established yet evolving modality in the modern surgical setup. Its importance in resource limited setting is even higher due to its cost effectiveness. We present a three year study on DL in a tertiary care teaching hospital in north east India.

Methods: Retrospectively, secondary data was analysed and patients were followed up for 6 months.

Results: 44 patients were analysed. Most patients who are put up for DL present with chronic or non specific abdominal pain. In our setup, abdominal tuberculosis followed by internal hernias, appendiceal pathology and adhesions are the most commonly encountered pathologies. Only 22.7% cases needed conversion to open procedure and there were no major complications.

Conclusion: DL is a safe, effective and powerful surgical tool. Its role in developing countries merits further introspection for integration into management algorithms.

INTRODUCTION

Diagnostic Laparoscopy (DL), although introduced over a hundred years ago, has continued to rise in importance in a modern surgical setup. With the spectrum of diseases changing due to higher rates of early detection and newer treatment modalities, Diagnostic Laparoscopy has kept its place as an important diagnostic tool which can easily be converted into therapeutic as well. In the context of a resource limited setting, DL is also favoured as an alternative to repeated imaging modalities, which leads to extending the indications of DL(Sasivannan, Ponnusamy, & Kannan, 2018). Advanced uses of DL are also now well recognised, such as, as a bedside tool in a critical care setup(Martin et al., 2018; Thomas & Sing, 2018). We look into the uses of DL where this kind of advanced setup is lacking and DL is still used in a more traditional manner.

DL is also found to have a high diagnostic yield in the identification of intra- abdominal injuries, and by exclusion of injuries, reduces the non therapeutic laparotomy (Fabian et al., 1993). Due to a significant trauma related cases load and mortalities in our country, it is important to consider the use of DL as a routine tool.

This study is an attempt to understand the impact and utility of DL in a tertiary care setup in a resource limited setting, the diseases whose management it affects and the possibility of furthering its use in the most optimised manner. Reporting of findings from the north eastern India is necessary to deal with its unique disease spectrum and the difficulty in diagnosis of some common yet serious ailments like abdominal tuberculosis and early carcinoma gall bladder.(Bali, Jain, Zahoor, & Mittal, 2017; Goel, Bansal, Rana, & Kumar, 2018) An analysis of cost is also necessary in a resource constraints country like ours where health insurance is not yet a well established practice and public welfare health schemes are not being able to cater to the majority of the population, as we finally attempt to gain insight on if DL should be considered as a norm or only if necessity.(Marks, Youngelman, & Berk, 1997)

METHODS

The study was conducted in a retrospective manner by looking into hospital and patient records of the past three years (September 2015 to August 2018) and going into the operative records in the Dept of Surgery, Assam Medical College. All cases with DL in their operative procedure were included, including staging laparoscopy for malignancies and those that required conversion to open procedures. Records were studied for their indication, intraoperative findings and decisions and in-hospital post operative complications. Patients were followed up by telephone to evaluate long term complications and mortality for upto 6 months after they were discharged. The operative procedure of all patients included adhered to the SAGES guidelines(SAGES, 2010).

In all the cases, the decision to undertake DL was because of inconclusiveness of radiological and clinical information, the radiological modalities being Ultrasound imaging, X rays and CT. Tissue biopsy were taken wherever required, and processed as per standard procedure by the Dept of Pathology and Microbiology. Suspected cases of tuberculosis were confirmed by tissue diagnosis.

RESULTS

A total of 44 patients (Males = 21, Females = 23; Average age = 43 years) were found to have undergone diagnostic laparoscopy in the study period.

Table 1: Pre Operative radiological investigations performed in the patients listed for DL

Investigation Done	No of Patients
Ultrasound Whole abdomen	44
Ultrasound of pelvic organs	38
X ray Kidney, Ureter, Bladder	40
X Ray Plain Picture Abdomen (Erect or lateral)	44
CECT abdomen	28
MRI Abdomen	8
Barium follow through / Enema	6
Upper Gastro Intestinal Endoscopy	28
Colonoscopy	14

Table 1 shows the preoperative investigations done for the patients enrolled in this study. Ultrasonography and X ray plain picture of the abdomen were done for all patients. Other investigations included CT, MRI, Barium studies and endoscopy.

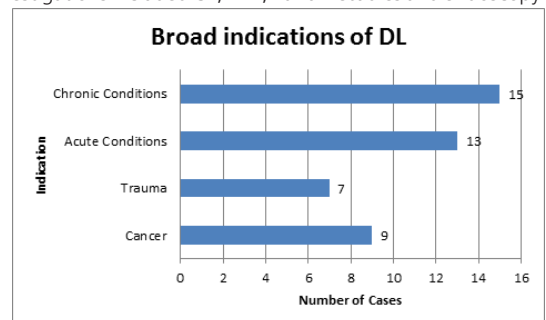


Figure 1: Broad Indications of DL

Figure 1 shows the indications for which DL was done in our setup, categorised into broad headings of chronic and acute abdominal

pain, trauma cases and cancer. Table 2 shows the breakdown of those indications. The highest number of cases that warranted a DL presented with chronic abdominal pain, followed by acute non specific abdominal pain. Among the cases of chronic abdominal pain, the highest number of cases presented with a diffuse pain abdomen (5 cases), followed by epigastric pain (4 cases) and right upper pain and pelvic pain (3 cases each).

Table 2: Breakdown of indications

Indication type	Subtype	Number of Cases
Chronic Conditions	Chronic Abdominal Pain	15
Acute conditions	Non specific Abdominal Pain (NSAP)	7
	Sub Acute Intestinal Obstruction (SAIO)	5
	Intestinal Perforation	1
Trauma	Blunt Trauma	4
	Penetrating Trauma	2
	Iatrogenic Trauma	1
Cancer	Biliary Tract	3
	Head of Pancreas	2
	Colorectal	3
	Gastric	1

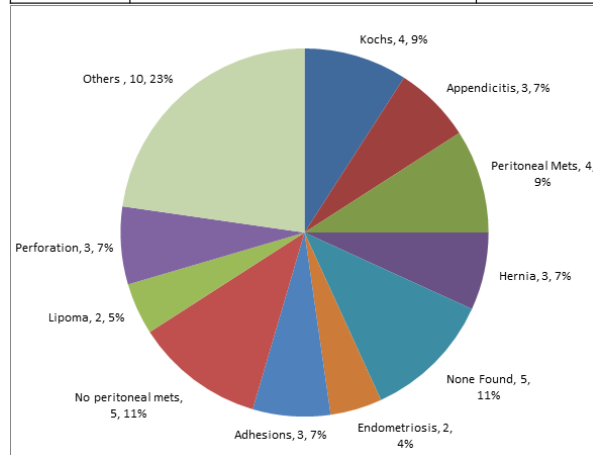


Figure 2: Intra Op Findings

Figure 2 shows the findings of DL. The most common finding was that of abdominal tuberculosis (biopsy taken and later confirmed), followed by internal hernias, appendiceal pathology and adhesions. Among the cases put up for staging laparoscopy, peritoneal metastases were found in 4 cases. Importantly, in 5 cases (11%), no obvious pathology was detected for the symptoms.

Out of all the cases, only 10 (22.7%) cases had to be converted to open procedures. Of the remaining patients, therapeutic procedures were done in 19 cases (43.18%).

During the followup period, 4 patients had post operative surgical site infection and 1 patient had biliary leak. All the cases were managed conservatively and resolved within an acceptable time. In the period of follow up, two patients expired out of complications of their surgical disease and one expired due to a comorbidity.

DISCUSSION

The spectrum of cases in our setup that necessitated a diagnostic laparoscopy included chronic and acute conditions including trauma and malignancy. Available radiological and endoscopic imaging investigations were performed in most of the patients preoperatively, which shows that even after the best utilisation of available investigative modalities, the diagnosis remains obscure in a fraction of patients. Laparoscopy is not only safe, but also quick and effective investigation tool for conditions like chronic abdominal pain. It has the ability to find a cause for the complaint and thus mostly excludes further investigations.(Sasivannan et al.,

2018) The wide range of indications encountered in our setup are comparable to the studies performed in India recently. This includes abdominal Kochs and appendicitis among the acute abdomen causes(Sharma, Sethi, & Sethi, 2018) and blunt trauma in cases of trauma(Parajuli et al., 2018). Among the cases of malignancy, laparoscopy can help with staging, enabling clinicians to avoid unnecessary laparotomy in many cases. It is useful for tumors of the liver, gall- bladder, stomach, large intestine, ovary, and pancreas among other organs.(Udwadia, 2004)

The incidence of abdominal tuberculosis is rising all over the world; however very scant literature and knowledge has been updated for the same despite it making up for a large fraction of cases in our setup, making it a diagnostic dilemma.(Awasthi, Saxena, Ahmad, Kumar, & Dutta, 2015) Sharma et al (2015)found suspected tuberculosis in 6.7% of cases(Sharma et al., 2018) and 12.5% in Sasivannan et al (2018)(Sasivannan et al., 2018). Our study found tuberculosis in 9% of the patients. This, in suspicion of abdominal tuberculosis with negative ZiehlNeelsen staining, the use of laparoscopy is justified to obtain a correct diagnosis and is a useful, rapid and noninvasive diagnostic tool.(Muroni, Rouet, Brocheriou, & Houry, 2015)

The use of Diagnostic Laparoscopy as a tool for diagnosis of acute abdomen and chronic abdominal pain has been well documented, especially its cost effectiveness and sensitivity(Chao, Mandigo, Opoku-Anane, & Maine, 2016; Marks et al., 1997). The results of our study, where no diagnosis was obtained in only 11% cases showed that about 90% patients were successfully diagnosed or treated with DL and avoided a negative laparotomy. This result is close to those obtained by Sinha et al in 2016(Sinha, 2016)(84%) and Miller et al in 1996 (89.8%)(Miller, Mayer, & Moritz, 1996). Among the cases who presented with chronic abdominal pain the location the site of the pain was almost equitably distributed in our study. Studies with larger sample size, like those of Sinha et al, show a tilt towards diffuse and lower abdominal pain(Sinha, 2016).

Appendiceal pathology was noted in 3% patients. Kumar et al reported this at 6% in 2016(Kumar, Saxena, Chaudhary, Ahirwar, & Gautam, 2016), as compared to 32% found by Sinha et al (Sinha, 2016) and 33% by Jain et al in 2016(Jain & Gupta, 2016). This shows that despite advanced imaging modalities, appendicitis, especially chronic appendiceal inflammation.

The use of laparoscopy in trauma is limited in our setup due to the lack of a dedicated emergency trauma operative setup. However, 4 cases of blunt trauma abdomen who presented with persistent pain abdomen and inconclusive imaging reports were put up for DL as well as 2 cases of penetrating trauma, which resulted in findings ranging from splenic to liver to mesenteric injuries. 1 case of post operative bleeding was also explored by DL which was concluded as a port site bleed. Udwadia et al in 2004 found that Superficial liver lacerations constitute more than 50% of all liver injuries and stop bleeding spontaneously, requiring no treatment.(Udwadia, 2004) If laparoscopy shows no active liver bleeding and no other organ injury, unnecessary surgery can be avoided.(Carnevale, Baron, Acute, & 1977, 1977)

Finally, DL is shown to have a very low rate of complications. Around 10% cases had surgical site infection, 5% had port site bleeding and 1 had bile leak which were managed conservatively. In other studies too, the rate of complications were low(Sharma et al., 2018; Sinha, 2016) Thus, DL is a safe and well tolerated procedure in patients of both acute and chronic presentations.

CONCLUSION

DL is a useful tool for prompt and accurate diagnosis of various abdominal conditions that remain obscure even after in hand clinical and radiological investigations. It has the advantage of being converted to a therapeutic procedure in the same setting and commands a very high rate of success with a low rate of complications. In resource limited settings and in developing countries, it has the potential to be considered for use as an alternative to repeated radiological imaging or even as a first line of diagnosis in appropriate conditions. Further studies should explore

the cost factors associated with DL and formulate guidelines for its indications in resource limited setups.

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