Role of Laparoscopy in Chronic and Recurrent Abdominal Pain—Rural Area Experience

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Abstract Chronic and recurrent abdominal pain is a common problem faced by the medical specialist. It leads to physical and psychological disability in a person. Despite radiological and clinical investigations when diagnosis cannot be ascertained then laparoscopy is one of the modalities that could be of benefit. We aim to evaluate the diagnostic and therapeutic value of laparoscopy in cases with chronic abdominal pain. Sixty-seven patients who attended the outpatient department of MGIMS, Sewagram with chronic and recurrent abdominal pain were included in this prospective study. All patients underwent preoperative workup and were subjected to laparoscopic evaluation. The commonest site of pain was the periumbilical region and nausea was the most common accompanying clinical feature. Adhesions were the most common laparoscopic findings (48.3 %) followed by appendiceal pathology (14.6 %). Abdominal Kochs which is predominant in developing countries was seen in 11.4 % of the cases. Laparoscopy is an effective diagnostic and therapeutic modality in the management of patients with chronic abdominal pain.

Keywords Laparoscopy · Recurrent · Abdominal pain · Rural · Experience

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Abbreviations

OPD Outpatient department
COPD Chronic obstructive pulmonary disease
VAS Visual analogue scale

Introduction

Chronic and recurrent abdominal pain is a common problem faced by the medical specialist. In spite of clinical, laboratory, and radiological investigations, when the cause of abdominal pain remains obscure, the surgeon has only one choice left i.e., exploratory laparotomy. Most surgeons feel that exploratory laparotomy is a more complete examination and carries little morbidity and mortality [1]. Minimal access surgery or minimally invasive surgery has grown widely. Diagnostic laparoscopy is invasive and has both diagnostic and therapeutic value. In case of diagnostic uncertainty, laparoscopy avoids unnecessary laparotomy and provides accurate diagnosis to planned surgical treatment [2, 3]. Due to improvement in instrumentation and greater experience with therapeutic laparoscopy, the procedure is no longer limited to visualization. Operative intervention can be provided at the same instance and formation of adhesions which is an important cause of chronic abdominal pain is less compared to laparotomy.

Diagnostic laparoscopy has an important role in our country as it can reduce the cost of investigations by eliminating or minimizing the subsequent costly, time consuming, and potentially hazardous investigations. It also helps in the exclusion of serious conditions whenever pain goes undiagnosed. As the use of laparoscopy in patients with ill-defined chronic abdominal pain is controversial, we tried to evaluate the feasibility and the usefulness of diagnostic laparoscopy for

Fig. 1 Adhesions to the anterior abdominal wall

patients with chronic and recurrent abdominal pain at our rural hospital catering to a rural population.

Material and Methods

This prospective study was carried out in the Department of Surgery between October 2008 and October 2010 at MGIMS, Sevagram, Maharashtra. Patients with history of chronic and recurrent abdominal pain of more than 3 months duration and not responding to medical management, where clinical examination, laboratory investigations, and noninvasive study (USG), along with gynecological examination had been carried out but did not yield any accurate diagnosis were included in the study. Chronic abdominal pain was defined as a continuous or intermittent abdominal pain with daily intake of analgesics, and a duration of at least 3 months [4].

The etiology of chronic abdominal pain was not diagnosed; hence, they were subjected to laparoscopy. Patients with acute abdominal pain, known abdominal malignancy, on anti-psychiatric drugs, pregnant females, major comorbidities such as COPD, and patients under the age of 12 years were excluded. Ethics committee approval was obtained and all patients were subjected to complete preoperative evaluation in the form of medical history and clinical examination.

Fig. 2 Tubercles on the parietal peritoneum

Fig. 3 Subhepatic appendix

Routine preoperative investigation along with chest X-ray, abdominal X-ray, and abdominal ultrasonography were performed for all patients. Our hospital does not have 64-slice CT scan. The cost of diagnostic laparoscopy is less than the cost of CT scan at our center so we preferred to subject our patients to diagnostic laparoscopy as it is more economical and effective.

None of our patients presented with symptoms of malabsorption, bloating, or infertility, so blind loop syndrome and endometriosis were not suspected preoperatively.

Visual analogue scale (VAS) was used for grading the pain. The pain scale involved asking the patient to estimate their pain severity as a number between “0” being no pain and “10” being worst possible pain. Patients with VAS (1–4) were categorized as mild type of pain, those with VAS (5–8) were categorized into moderate type of pain, and those with VAS (9–10) were categorized into severe type of pain. Pain was graded preoperatively, on day 7, day 60, and day 180.

Operative Technique

The patient was placed in supine position and operated under general anesthesia. In cases of previous upper midline incision or suspected massive intra-abdominal adhesions, the Veress

Table 1 Intraoperative findings

Findings	No of patients	Percentage (%)
Adhesions	29	43.3
Chronic recurrent appendicitis	14	20.9
Abdominal tuberculosis	8	11.9
Adnexitis	2	3
Endometriosis	3	4.5
Meckels diverticulum	2	3
Free fluid in pouch of Douglas	2	3
Normal	7	10.4
Total	67	100

n=67

Table 2 Intraoperative findings in various studies

	Abdominal adhesion	Chronic rec. appendicitis	Series	Adnexitis	endometriosis	Meckels diverticulum	Free fluid in pod	Normal
Schrenk et al. [22]	12/31 (38.70 %)	10/31 (32.25 %)	—	—	—	—	—	5/31 (16.21 %)
Miller k [23]	26 (44.06 %)	24/59 (40.67 %)	—	1 (1.69 %)	3 (5.08 %)	2 (3.38 %)	—	6 (10.16 %)
Lavonius et al. [4]	29/46 (63.04 %)	—	—	—	—	—	—	—
Onders et al. [20]	39/70 (55.71 %)	5/70 (7.14 %)	—	—	—	—	—	10/70 (14.28 %)
Arya PK [19]	4 (8.69 %)	13 (26.53 %)	14 (28.57 %)	2 (4.08 %)	—	—	—	5 (10.28 %)
Paajanen H et al. [24]	61/72 (84.72 %)	1 (1.38 %)	—	—	—	—	—	6 (8.33 %)
El-labban GM [5]	63.3 %	10 %	—	—	—	—	—	16.7 %
Present study	29 (43.3 %)	14 (20.9 %)	8 (11.9)	2 (3 %)	3 (4.5 %)	2 (3 %)	2 (3 %)	7 (10.4 %)

needle was passed through the abdominal wall in an area with no scars, most often in the left upper quadrant of the abdomen. After pneumoperitoneum was achieved, a standard three-trocar technique was used (10-mm via umbilical trocar and two 5-mm lateral trocars). A fourth 5-mm trocar was inserted in a few cases. The whole abdominal cavity was inspected carefully starting from the liver, gallbladder, anterior surface of the stomach, and spleen. With fine smooth graspers, these structures were touched safely and elevated for further inspection. The small bowel was examined using atraumatic graspers from the ligament of Treitz to the ileocecal valve. The colon including the appendix was inspected as the small bowel. In females, the uterus, adnexa, and the pouch of Douglas was inspected and the amount of fluid, color, and its site were noted.

Intraoperative Findings

Depending on intraoperative findings, adhesions (Fig. 1) were dissected with a scissor and close to the abdominal wall to avoid injury to the bowel loops. If tubercles (Fig. 2) were seen on diagnostic laparoscopy, then patient was started on anti-Kochs therapy. If there were dense adhesions in the RIF and/or thickened appendix, appendicectomy was performed (Fig. 3).

Postoperative Outcome

In the immediate postoperative period, they received injectable diclofenac for pain relief. Postoperatively, patient condition was evaluated on day 7, 60, and 180 with the help of VAS.

Statistical Analysis

We used *t* test to compare continuous variables and Mann Whitney test to compare medians. *P* value <0.05 was considered statistically significant.

Results

Sixty-seven patients in age group 17–59 years and mean age of 33.5 years presented in the OPD with chronic and recurrent abdominal pain. Females were affected more frequently than males (male to female ratio 1:1.48). The duration of pain was considered from the time the patient first started having symptoms to the time he first presented to the hospital: 46.3 % patients presented 7–12 months after suffering from pain and only 1 patient presented 2 years later.

Twenty-three patients (34.3 %) had pain in the periumbilical region and 22 patients (32.8 %) had pain in the right lower quadrant (RLQ) followed by right upper quadrant pain.

Nausea was the most common accompanying clinical feature seen in 71.6 % patients followed by altered bowel habits (34.3 %), fever (17.9 %), and loss of weight/appetite (9 %). Eighty-three percent of patients were on home remedies for abdominal pain and pain killers were taken on and off. Twenty-four patients had scarred abdomen owing to previous surgery. Intraoperative findings are depicted in Table 1.

The average duration of operative time (diagnostic as well as therapeutic) was 49.73 min (SD 8.54; range, 32 to 84 min). Postoperative hospital stay was defined as the time in days from the day of surgery to the day of discharge of the patient. Maximum number of patients i.e., 41 patients (61.2 %) were discharged 1 day after surgery. Postoperatively, six patients (9 %) had minor port site bleeding and two patients (3 %) developed suture site infection. There were no conversions to open surgery.

The pain scores, as assessed by the visual analogue scale (0–10) in the preoperative and postoperative period (day 7, 60, 180) were: mean 5.28, 2.02, 1.37, and 0.82, respectively. The difference was statistically significant by Mann Whitney test (*p*=0.001).

Intraoperative findings were correlated with histopathology findings and found to be 100 % accurate for chronic recurrent

appendicitis, endometriosis, and diverticular disease. However, it was only 87.5 % accurate for tuberculosis, as one case with rolled up omentum and thickened peritoneum, which was suspected to be tuberculosis on diagnostic laparoscopy, proved to be negative on histopathology.

Discussion

Chronic idiopathic pain syndromes are challenging and demanding conditions to treat for the medical specialist. Potentially, it can be unrewarding for both the patient and the medical team [4].

Our findings are in agreement with El-labban et al. [5]. It is seen that most cases of chronic and recurrent abdominal pain are concentrated in the periumbilical, right lower quadrant, which corresponds to pain of pelvic and appendicular origin (whether actual or referred) and which is also a common etiology among maximum female patients. A comparative review of all studies is depicted in Table 2.

The role of laparoscopy in ill-defined pain is highly controversial [6]. Diagnostic laparoscopy with lysis of adhesions for pelvic pain has gained acceptance in the gynecological literature, but its acceptance in mainstream surgical literature and practice is slow at best [4, 6–11]. There are several theories on the formation of adhesions but no single modality for treatment [12]. Experimental studies have been performed; however, the results are further confusing—Prushik et al. [13] in their comparative study of both the modalities found open adhesiolysis to be more effective while Luciano et al. [14] in rabbits found laparoscopic adhesiolysis to be more effective. However, recent studies by us as well as others [4, 5, 12, 15] have found laparoscopy to be beneficial in case of adhesions which is the most common cause of chronic abdominal pain. In our opinion, laparoscopic adhesiolysis is beneficial and needs to be considered as a treatment modality for such patients. We could safely release adhesions in all 43 patients which we encountered.

Laparoscopy is very sensitive for diagnosis of appendicitis whether acute or chronic. It not only detects appendicitis but also avoids negative appendectomy [3, 16–18].

Abdominal tuberculosis, undiagnosed preoperatively, was a common finding in a study conducted by Arya PK et al. [19] as well as ours. Incidence of Kochs disease is high in India and many patients are even treated empirically with no proper evidence of disease. Diagnostic laparoscopy can detect nodules in the peritoneal cavity and biopsy can be taken which would confirm the diagnosis. This would avoid unnecessary overusage of anti-Kochs drugs and subsequent resistance and drug-related side effects faced by patients.

Adnexitis, endometriosis, Meckels diverticulum, and free fluid in pouch of Douglas contributed minor proportions in all previous studies. Few patients had normal findings in

diagnostic laparoscopy in almost all series, implicating requirement for further evaluation.

The relief of pain at day 7 (complete or partial) was approximately 90 % by Onders et al. [20]. While in our series, it was 71.6 % owing to inclusion of eight cases of abdominal tuberculosis. Moussa GI et al. [21] on follow up for 6 months revealed, pain relief in 53.5 %, pain reduction in 26.7 %, and persistent pain in 19.8 % of patients. We reported an increase in positive outcome from 83.7 to 86.56 % as patients of abdominal tuberculosis showed downward shift of VAS score and signs of pain relief from 2 to 6 months due to completion of anti-tubercular treatment.

“Diagnosis should precede treatment whenever possible” is quoted by Hutchison’s Clinical Methods and in accordance with this principle, diagnostic laparoscopy is necessary to formulate diagnosis in chronic abdominal pain even though invasive. After establishment of diagnosis, therapeutic intervention should be sought.

Conflict of Interest None

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