

## A Prospective Study of Diagnostic Laparoscopy in Chronic Abdominal Pain at Tertiary Care Hospital

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### Abstract:

Chronic abdominal pain is a common complaint which is difficult to manage by both physician and surgeon. It is the 4th frequent chronic pain syndrome in general population. This condition affects the patient both physically and psychologically. More than 40% of the cases the specific etiology for chronic abdominal pain remains undiagnosed by our routine physical, laboratory and imaging. With the introduction of the diagnostic laparoscopy new tools has been added to our knowledge. Laparoscopy can identify abnormal findings and improve outcome in majority of the patients with chronic abdominal pain. This study is mainly designed to highlight the significance of laparoscopy in diagnosing the etiology of chronic abdominal pain and impact on the treatment and post-operative pain relief. Appendicular pathology is the leading cause for chronic abdominal pain of unrevealed etiology and it is about 33%, followed by adhesion is about 23%. Positive outcome is 80% in the follow up of 1 month and 90% of the patients got complete pain relief in the follow up of 3 months. Conclude that Diagnostic laparoscopy is a safe and effective tool to establish the etiology of chronic abdominal pain and allows for appropriate interventions.

**Keywords:** Diagnostic laparoscopy, Chronic abdominal pain, Appendix, Adhesions, Biopsy, Adhesiolysis, Tuberculosis.

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### Introduction

Chronic abdominal pain is a common complaint which is difficult to manage by both physician and surgeon. It is the 4th frequent chronic pain syndrome in general population [1].

This condition affects the patient both physically and psychologically. Although this patient undergone numerous diagnostic work up definite diagnosis remains challenge to the surgeon [2].

With the introduction of the diagnostic laparoscopy new tools has been added to our knowledge. Laparoscopy can identify abnormal findings and improve outcome in majority of the patients with chronic abdominal pain [3]. This study is mainly designed to highlight the significance of laparoscopy in diagnosing the etiology of chronic abdominal pain and impact on the treatment and post-operative pain relief. It also expresses diagnostic and therapeutic value of laparoscopy in chronic abdominal pain which is a most debilitating illness.

### Aim of the Study

To evaluate the diagnostic and therapeutic value of laparoscopy in chronic abdominal pain. Patients with chronic abdominal pain, undiagnosed by routine laboratory and imaging modality were enrolled in this study, their clinical presentation, intra operative findings, various occult etiology and clinical improvement were evaluated in this group, which will improve the awareness and importance of diagnostic laparoscopy among the surgeons.

### Objective of the Study

1. To find the various unrevealed aetiology for chronic abdominal pain.
2. To analyse the accuracy of diagnostic laparoscopy in chronic abdominal pain.
3. To evaluate the efficacy of laparoscopy in management of chronic abdominal pain.

### Material & Methods

This study was conducted in patients presented with abdominal pain more than 3 months whose diagnosis was doubtful or could not be made by our routing physical, laboratory and imaging modalities.

Between October 2020 and September 2021, a total number of 30 consecutive patients with chronic abdominal pain were enrolled in this prospective descriptive cross-sectional study.

#### Inclusion Criteria

- Age between 15 and 55
- Both males and females
- Abdominal pain more than 3 months

#### Exclusion Criteria

- Known abdominal malignancy patient
- Known psychiatric patient

After getting consent from the patients, they were thoroughly interrogated and examined including per rectal and per vaginal examination and following investigations were done in all patients.

Complete haemogram with ESR, Blood Sugar, Blood Urea and Serum creatinine, Stool routine, microscopy and occult blood, Urine routine and culture, Plain X-ray abdomen, X-ray chest, Ultrasound abdomen and pelvis, CT abdomen and pelvis, Upper GI endoscopy, Colonoscopy.

Some patients were subjected to additional investigation according to symptoms, like Contrast gastro intestinal series, Serology for tuberculosis, Liver function test. After undergoing thorough preoperative evaluation, their intensity of the pain was assessed by using the Verbal Rating Scale (VRS): the patient is asked to rate their pain on a

five-point scale as "none, mild, moderate, severe or very severe". These patients were posted for diagnostic laparoscopy

#### Preparation

Bowel preparation is not usually indicated, but overnight fasting and rectal enema can improve the manipulation and retraction of the bowel and the solid organ which help us to survey the whole abdominal cavity. Diagnostic laparoscopy is a clean surgery, even though some procedure like biopsy or intervention might be needed, so prophylactic antibiotic was given to all patient.

Graduated elastic stocking was applied to all the patients undergone diagnostic laparoscopy, but deep vein thrombosis prophylaxis like mechanical compression leggings or preoperative heparin was given the high risk patient like age more the 60, previous history of deep vein thrombosis.

#### Anaesthesia

General anaesthesia was preferred over the region anaesthesia, because some therapeutic interventions might be needed in some cases.

#### Position

Patient was kept in the supine position and bladder was catheterised with Foley's, Ryles tube was kept to decompress the stomach. Usually operating surgeon was standing on the left side of the patient and assistance also on the same side. Scrub nurse stand in the opposite side to the surgeon with instrument trolley.

Monitor was placed in the foot or head end of the patient according to the site of the abdominal pain.

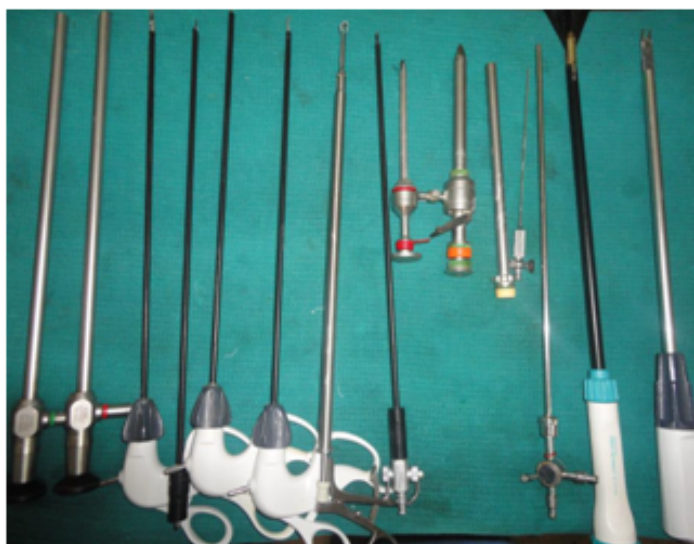


Figure 1:

## Laparoscopy Instrument

### Abdominal access

Abdominal cavity was access by creating the pneumoperitoneum. Both the open (Hasson's) and closed (Veress needle) method was used to create the pneumoperitoneum according to the cases. If the bowel adhesion is suspected as like the previous history of surgery, Veress needle was inserted in the Palmers point to create the pneumoperitoneum to

avoid the inadvertent bowel injury. Open method is a safe method to create the pneumoperitoneum, hence one can visualise the peritoneal cavity before putting the trocar.

We prefer 10 mm camera port in the infra or supra umbilical region, but camera port may vary according to the suspected abdominal pathology.

2 or 3 working ports were made according to the therapeutic intervention as per laparoscopy.



Figure 2:

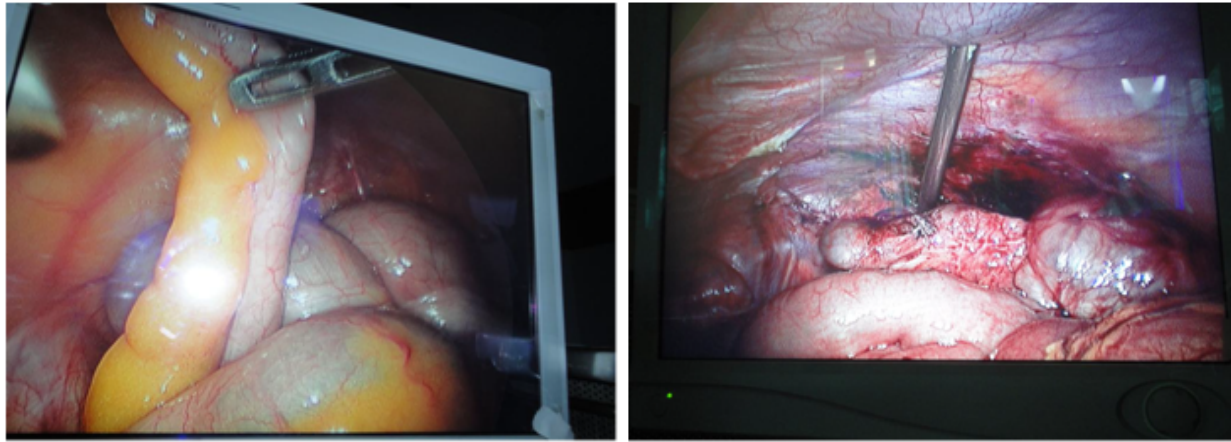
### Veress Needle Technique



Hasson's Open Technique



Ports Placement



**Appendicular Pathology**

**Inflamed Appendix Adherent to the Parietal Wall**

**Figure 3: Veress Needle Technique**

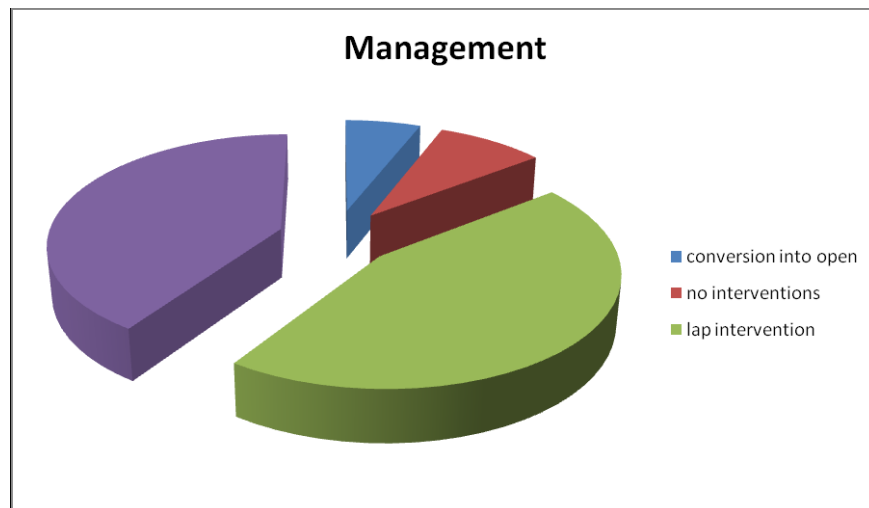
**Results**

**Table 1: Site of Pain**

Site	Percentage
Right Upper Quadrant	3 (10%)
Right Lower Quadrant	18 (60%)
Left upper Quadrant	1 (3%)
Left lower Quadrant	5 (17%)
Periumbical	6 (20%)

**Table 2: Intra operative findings**

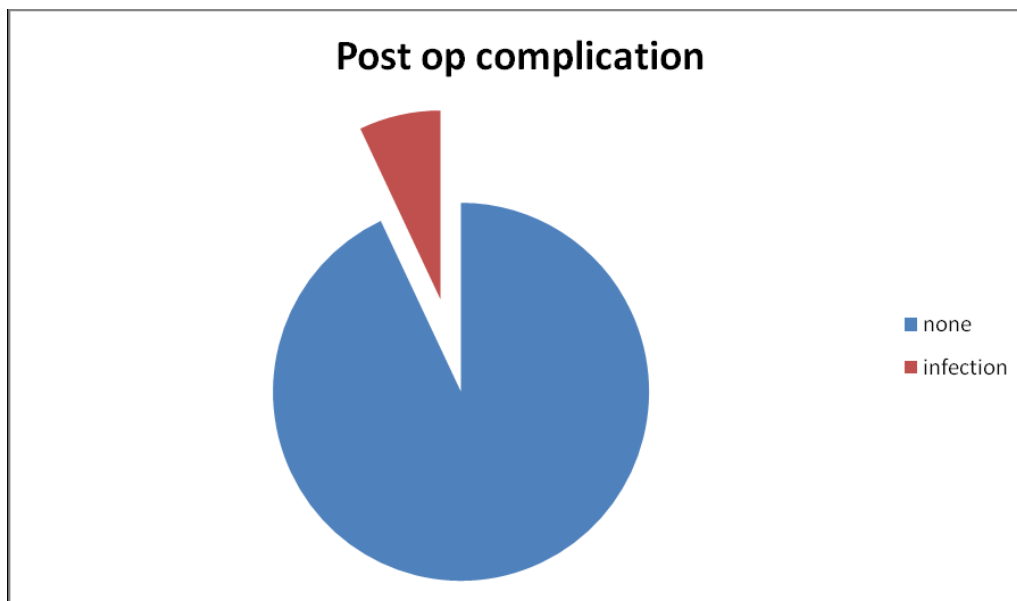
Site	Percentage
Thickened appendix	10 (33%)
Adhesions	7 (23%)
Enlarge mesenteric nodes	5 (17%)
Koch's abdomen	4 (13%)
Neoplasia	3 (10%)
Hernia	2 (7%)
No abnormality	3 (10%)



**Figure 4: Management**

**Table 3: laparoscopic Intervention**

Lap interventions	Percentage
Appendicetomy	10 (55%)
Adhesiolysis	6 (33%)
Hernia repair	2 (11%)



**Figure 5: Post OP Complications**

**Table 4: Pre-OP Pain Grading**

Grading	Percentage
Mild	2 (6%)
Moderate	21 (70%)
Severe	7 (23%)
Very Severe	0 (0%)

**Table 5: Post OP pain Relief**

Duration	Positive outcome	Negative outcome
After 1 month	80%	20%
After 3 months	90%	10%

**Discussion**

Chronic abdominal pain is defined as continuous or intermittent pain in the abdomen more than 3 months duration. Diagnosis and treatment of these patients is usually difficult and frustrating.

It is one of the most common surgical symptoms and most challenging problem facing by the surgeons and physicians [4].

We evaluated the 30 consecutive patients of chronic abdominal pain with no obvious cause and uncertain diagnosis was evaluated laparoscopically. Diagnostic laparoscopy revealed normal anatomy and no pathological lesion was found in 7% of the patients. The laparoscopic study of Marana and his coworker

[5] and Gowri and Krolikowski [6] who detected that laparoscopy failed to detect any abnormalities in 20% of the patients but in this study it is 7% Common site for chronic abdominal pain is right lower quadrant (60%) followed by periumbilical region (20%). The first laparoscopic examination was performed by Georg Kelling, and he called it as "Celioscopy". In 1901 he performed this procedure on the abdomen of a dog using a Nitze-cystoscope.

In 1901 D.O.tt a Russian Gynaecologist demonstrated "ventroscope", by illuminating the abdominal cavity using culdoscopy during pregnancy. "New instrument for puncture of the thoracic cavity for pneumothorax", was published by Janos Veress of Hungeri in 1938. This needle became popularised and

nowadays it is commonly used to create a pneumoperitoneum.

Richard Zollikofer of Switzerland insisted that CO<sub>2</sub> to be the preferred insufflations gas in 1924. Prof. Kurt Semm developed automatic gas insufflators in 1960. From 1964 he played an important role in the development of laparoscopy. The next 15 to 20 years he created so many laparoscopic instruments and techniques.

The first video guided surgery was demonstrated by Prof. Kurt Semm. He did the first laparoscopic appendectomy by using a television monitor. In 1985 CCD camera system was utilised to perform more than 80 laparoscopic cholecystectomies by a German Surgeon.

The first laparoscopy cholecystectomy in human was demonstrated by Mourt, Lyon in 1987. Within a year Dubois, Perisiat, Cuschieri, Mckeman, Saye, Reddick and Olsen performed the same at their institution.

Laparoscopic-assisted appendectomy was performed by Dekok in 1977. Ligation and excision of the appendix was done through a small laparotomy. First incidental appendectomy was done by Semm in 1983 and Patrick O. Regan performed laparoscopic appendectomy for acute appendicitis.

After 1987 Pier and Gotz reported 625 laparoscopic appendectomy, after that laparoscopic appendectomy became popular. Arrigui was the first surgeon who developed preperitoneal mesh repair for hernia. Fitzgibbons, Filipi and Salemo demonstrated intra peritoneal onlay mesh repair in 1990.

Bailey and Zuckr in USA popularised the anterior highly selective vagotomy with posterior truncal vagotomy.

Dr. Bernard Dallemagne of Leig, Belgium performed the first laparoscopic Nissen Fundoplication in 1991

History of diagnostic laparoscopy goes 100 years ago. Initially Gynecologists and Physicians were very much involved in laparoscopy in looking the female pelvic organs and liver in hepatic disease respectively. It was rarely performed by general surgeon except in few centre like Europe in those days [2]. A Swedish physician, Jacobaeus described laparoscopic examination of abdominal organs in human in 1910 [4].

Bertram Bernheim reported two cases of diagnostic laparoscopy in U.S in 1911, one of which he found advanced pancreatic malignancy and he termed it as "Organoscopy"[4].

H.Kalk, a German published "Experience with laparoscopy together with the description of a new instrument", in 1929 and also he demonstrated the role of angled laparoscope in diagnostic laparoscopy.

In 1930, an American Surgeon, Ruddock documented 500 cases of diagnostic laparoscopy [3]. Laparoscopic cholecystectomy was described in 1980 and got popularized. After that General surgeons were very much interested in doing diagnostic laparoscopy.

Common intra operative findings were abnormal appendix (33%) followed by adhesions (23%) which requires appendectomy and adhesiolysis.

Di Lorenzo and colleagues [7] reported frequency of abdominal adhesions in chronic abdominal pain were 18.6% in their study but it is 23% in this study. It was found that location of pain in the site of adhesions in 90% of cases, although there was no correlation between extent of adhesion and severity of pain [8]. The pain in the adhesion is due to restrict mobility and distension of the organ particularly bowel [9] 7 % of patients required conversion into open techniques this is because of the extensive bowel adhesions.

Positive outcome is 80% in the follow up of 1 month and 90% of the patients got complete pain relief in the follow up of 3 months. This figure coincides with Gouda and Emad's 10 study which reports, "the diagnostic laparoscopy yields 80% positive outcome in evaluation of chronic abdominal pain in the follow up of 2 months."

### Conclusion

- The role of diagnostic laparoscopy in chronic abdominal pain is tremendous which increases our knowledge about various underlying abdominal disorders.
- Diagnostic laparoscopy can identify abnormal findings and improve the outcome in patients with chronic abdominal pain. However, it should be considered only after a complete diagnostic evaluation has been carried out.
- It allows the effective surgical treatment of many conditions encountered at the time of diagnostic laparoscopy.
- It is a safe and effective tool to establish the etiology of chronic abdominal pain and allows for appropriate interventions.

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