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Role of Laparoscopy in Diagnosis of Patients with Chronic Pain Abdomen

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Abstract: Chronic abdominal pain is a common problem faced by the surgical 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. 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. Mesenteric lymphadenopathy, Ascites, Adhesions were the most common laparoscopic findings followed by appendiceal pathology. Histopathology of samples taken by laparoscopy shows Abdominal Kochs is predominant cause of chronic pain abdomen.In our study we tried to evaluate the feasibility and the usefulness of diagnostic laparoscopy for patients with chronic and recurrent abdominal pain in our hospital catering to a rural population.
Keywords: chronic abdominal pain, diagnostic laparoscopy, abdominal kochs.

INTRODUCTION

Chronic and recurrent abdominal pain is a common problem faced by the medical specialist. Relatively young patients, especially females, with nonspecific abdominal pain constitute a significant proportion of general surgical admissions [1]. Many of these patients have persistent symptoms and are difficult to discharge, undergo multiple, often costly investigations and have repeat admissions. 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 morbidity and mortality [2]. 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 [3, 4]. 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 [5]. "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. Diagnostic and therapeutic laparoscopy has its most important and ultimate application in the developing world [6]. Less than 20% of the population in the developing world has access to imaging devices like ultrasound, CT scan, magnetic resonance imaging (MRI) or Doppler. By a happy paradox, vast areas of the developing world have access to a laparoscope, thanks largely to its use in widespread government-sponsored family planning campaigns in almost every developing country throughout the world [7].

Nonspecific features of the abdominal tuberculosis result in difficulty in establishing a diagnosis. After a diagnosis has been established, prompt initiation of treatment helps prevent morbidity and mortality as it is a treatable disease. The abdominal TB usually occurs in four forms: tuberculous lymphadenopathy, peritoneal tuberculosis, gastrointestinal (GI) tuberculosis and visceral tuberculosis involving the solid organs. Usually a combination of these findings occurs in any individual patient [8]. Ascitic fluid adenosine deaminase (ADA) levels are elevated in tubercular ascites. Serum ADA level above 54 U/L, ascitic fluid ADA level above 36

U/L and an ascitic fluid to serum ADA ratio more than 0.98 are suggestive of tuberculosis [9]. Traditionally the peritoneal TB is divided into three types: (1) The wet ascitic type is more common and is associated with large amounts of free or loculated fluid in abdomen; the ascites is usually of high density due to increased protein content of the inflammatory exudate. Associated peritoneal enhancement is usually present; (2) the fixed fibrotic type is relatively less common and is characterized by involvement of omentum and mesentery and is characterized by presence of matted bowel loops on imaging. Loculated ascites can be occasionally present; and (3) the dry plastic type is characterized by fibrous peritoneal reaction, peritoneal nodules and presence of adhesions. However, this classification is usually not adequate and a combination of features is usually noted [10, 2].

Aim & Objectives

- To find out role of diagnostic laparoscopy among undiagnosed chronic pain abdomen cases.
- Role of diagnostic laparoscopy as diagnostic as well as therapeutic in chronic pain abdomen cases.

MATERIALS & METHODS

This hospital based descriptive type of observational study was conducted in department of general surgery, SMS medical college Jaipur from july 2016 to july 2017 on 150 cases of chronic pain abdomen.

Inclusion criteria

- Patient admitted with complaint of chronic pain abdomen (>6 weeks undiagnosed after routine and specific (usg whole abdomen & cect abdomen and pelvis) investigations.
- Patients admitted with recurrent sub-acute intestinal obstruction.

Exclusion criteria

- Patients with American society of anesthesiologist (ASA) grade 3 0r more, patients with severe systemic organ dysfunction (renal, cardiac, hepatic disease).
- Age <12 years and > 70 years were excluded.

Operative technique

The procedure was entirely performed with the patient under general anesthesia. If there was a previous upper midline incision or massive intra-abdominal adhesions were suspected, the Veress needle was passed through the abdominal wall in an area with no scars, most often in the left upper quadrant of the abdomen, a few centimeters below the costal margin. After establishment of the pneumoperitoneum, a standard three-trocar technique was used (10-mm optic 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 could be touched safely and elevated for further inspection. The small bowel was examined using these atraumatic graspers. It was inspected thoroughly from the ligament of Treitz to the ileocaecal valve, keeping in mind the fact that the loops with the large bit had to be grasped as much as possible to avoid the pinpoint fixation of the bowel with its perforation risk. Mesentry of small bowel inspected. The colon including the appendix was inspected in the same manner as the small bowel. Finally, the gynecological organs and peritoneal surfaces were inspected. If adhesions were seen between the intestinal loops and the abdominal wall or between the abdominal organs, they were dissected with a scissors in a vast majority of patients. Electrocautery was used mainly for hemostasis and as a dissection technique in few cases. The dissection was made close to the abdominal wall to avoid injury to the bowel loops. Laparoscopic procedures such as appendectomy, mesenteric lymph biopsy, ascetic fluid aspiration and biopsies were performed according to the patient's condition.

OBSERVATIONS & DISCUSSION

Table-1: Age and Sex incidence relationship

S.no	Age	Female	Male	total	%
1	20 or less	15	16	31	20.6
2	21-30	39	28	67	44.66
3	31-40	18	14	32	21.33
4	41-50	07	05	12	08.00
5	51-60	02	03	05	03.33
6	61-70	01	02	03	02.00
7	Total	82	68	150	100

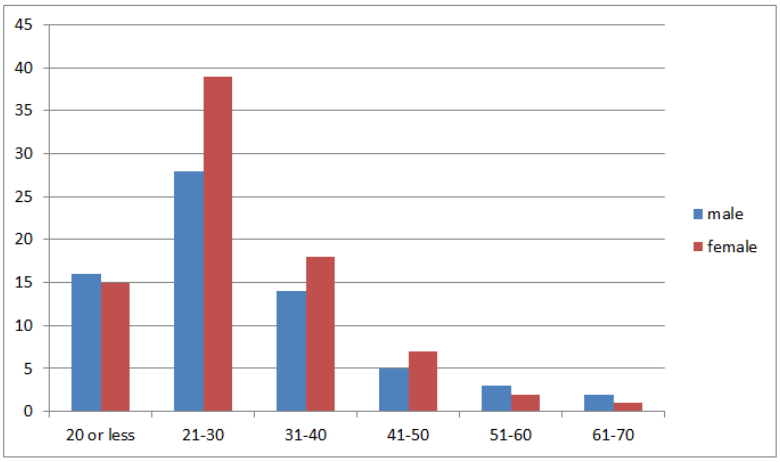

Fig-1: Age and Sex relationship

Table-2: Distribution of cases on basis of Socio-economic status

S.no	Status	Female	Male	Total	%
1	Lower	62	48	110	73.33
2	Middle	16	14	30	20.00
3	Upper	04	06	10	06.66
4	Total	82	68	150	100

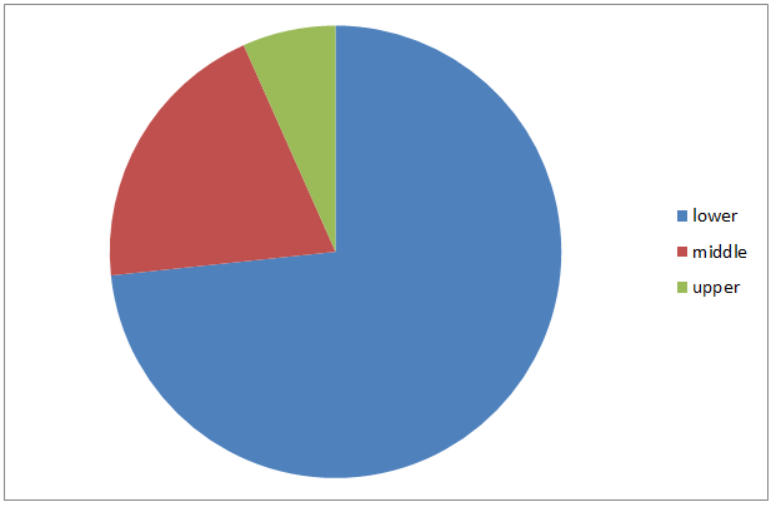

Fig-2: Socio-economic status of patients

Table-3: Most common associated Symptoms and Sign

S.no	Symptoms & Sign	Female	Male	Total	%
1	Abdominal pain	82	68	150	100
2	Vomiting	42	38	80	53.33
3	Nausea	53	43	96	64.00
4	Fever	37	22	59	39.33
5	Anorexia	35	30	65	43.33
6	Weight loss	20	18	38	25.33
7	Constipation	15	24	39	26.00
8	History of Gola formation	02	04	06	04.00
9	Tenderness	06	02	08	05.33
10	Abdominal Lump	05	04	09	06.00
11	Abdominal Distention	03	04	07	04.66

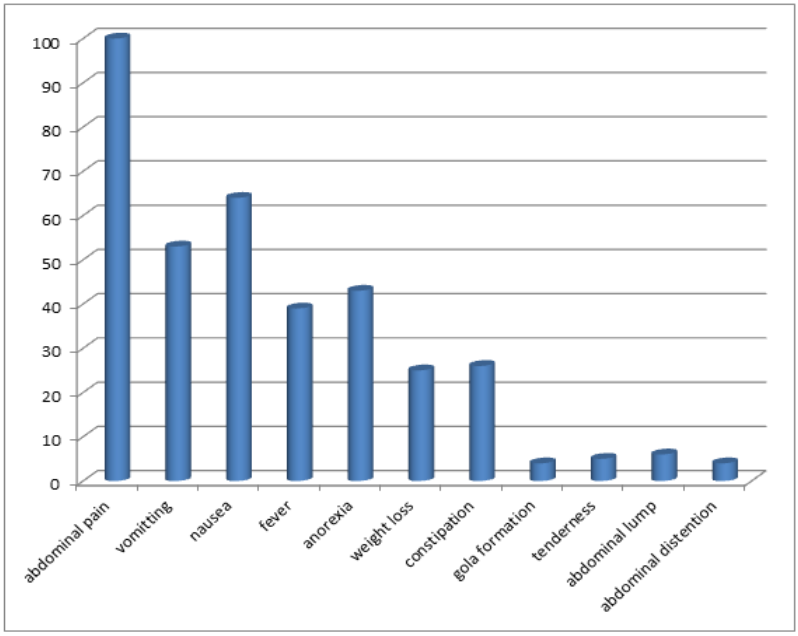

Fig-3: Most common associated symptoms and sign

Table-4: Distribution of cases on the basis of USG whole abdomen findings

S.no	USG finding	female	male	total	%
1	Normal study	67	56	123	82.00
2	Suggestive of appendicitis	04	02	06	04.00
3	Dilated bowel loops	01	03	04	02.66
4	Free fluid in pouch of douglus	06	00	06	04.66
5	Mild to moderate ascites	01	02	03	02.00
6	Mesenteric lymph node	03	05	08	05.33
7	Total	82	68	150	100

Table-5: Distribution of cases on the basis of CECT whole Abdomen

S.no	CECT finding	female	male	total	%
1	Normal study	34	25	59	39.33
2	Dilated Bowel loops with ascites	08	10	18	12.00
3	Ileocecal Thicking	06	08	14	09.33
4	Appendicitis	11	08	19	12.66
5	Mesenteric lymph node with ascites	13	11	24	16.00
6	Moderate ascites	02	03	05	03.33
7	Ileal strictures	01	02	03	02.00
8	Tobo ovarian mass	02	00	02	01.33
9	GB Mass with ascites	02	01	03	02.00
10	Rt ovarian cyst	03	00	03	02.00
11	Total	82	68	150	100

Table-6: Distribution of cases on the basis of Operative findings

S. no	Operative finding	Female	Male	Total	%
1	Inter bowel Adhesion, tubercle	14	11	25	16.66
2	Adhesion from peritoneum	07	06	13	08.66
3	Mesenteric lymph node with ascites	17	16	33	22.00
4	Cirrhosis with ascites	01	02	03	02.00
5	GB mass with ascites	02	01	03	02.00
6	Ileocecal mass with ascites	06	08	14	09.33
7	Inflamed appendix with appendicolith	11	08	18	12.00
8	Multiple ileal stricture with dilated bowel loops	05	06	11	07.33
9	Ascites with military tubercles	02	02	04	02.66
10	Lt Tubo ovarian mass	01	00	01	00.66
11	Rt ovarian cyst	02	00	02	01.33
12	Abdominal cocoon	02	02	04	02.66
13	Fluid in pouch of douglus	06	00	06	04.00
14	Meckle diverticulitis	01	02	03	02.00
15	Endometrisis	02	00	02	01.33
16	Chronic pancreatitis	00	02	02	01.33
17	Normal	03	02	05	03.33
18	Total	82	68	150	100

Table-7: Distribution of cases on the basis of Operative procedures

S.no	Operative Procedure		Female	Male	Total	%
1	Adhesiolysis		25	22	47	31.33
2	Appendisectomy		11	08	19	12.66
3	Stricturoplasty		01	02	03	02.00
4	Rt ovarian cystectomy		02	00	02	01.33
5	Meckle diverticulectomy		01	02	03	02.00
6	Biopsy from	GB mass	02	01	03	02.00
7	Biopsy from	Mesenteric LN	19	16	35	23.33
8	Biopsy from	Miliary tubercle over peritoneum	02	02	04	02.66
9	Biopsy from	Ascetic fluid	18	15	33	22.00
10	Biopsy from	Tubo ovarian mass	01	00	01	0.66
11	Total		82	68	150	100

Table-8: Cases in which Lap to open conversion done

S.no	Cause of conversion	Female	Male	Total	%
1	Dense adhesion.	01	01	02	01.33
2	Resection anastomosis for Multiple ileal strictures.	01	01	02	01.33
3	Abdominal coccon.	01	00	01	00.66
4	Total	03	02	05	03.33

Table-9: Distribution of cases on basis of final histopathology

S. no	Histopathology	Female	Male	Total	%
1	Abdominal tuberculosis	56	42	98	65.33
2	Appendicitis	11	08	19	12.66
3	Meckle diverticulitis	01	02	03	02.00
4	Liver Cirrhosis	01	01	02	01.33
5	Adenocarcinoma gall bladder	02	01	03	02.00
6	Benign ovarian cyst	03	00	03	02.00
7	Reactive hyperlpasia	03	02	05	03.33
8	Chronic pancreatitis	00	02	02	01.33
9	Non specific	05	04	09	06.00
10	Total	82		150	100

DISCCUSSION

Vague abdominal pain is a diagnostic dilemma. In many cases despite all the routine laboratory investigations and ultrasonography, cases remain undiagnosed. It accounts for an estimated 13-40% of all emergency surgical admissions. The abdominal disease is obscure, and patients usually undergo a battery of hi-tech investigations and even exploratory laparotomy for definitive diagnosis. It can all be unyielding for the surgeon as well as patient. In such conditions, diagnostic laparoscopy is a better choice. It can directly visualize the abdominal cavity, provide adequate material for histopathological assessment, and in good hands is an excellent therapeutic tool with cosmetic acceptable scars. 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.

Chronic Abdominal pain usually affects all age group, no age is bar to the disease. In our study females are affected more than males as observed as other studies Rai S *et al*. [1], McLaughlin S *et al*. [6]. In our study maximum no. of patient belonged to age group of 21-30 years (44.66%). second most common group is 31-40 years. The cause of female predominance is ignorance, poverty, illiteracy and malnourishment Badaoui E *et al*. [8], Uzunkoy A *et al*. [15].

In our Society, decreased immunity (malnutrition) and poor socio-economic conditions are more responsible, which is also evident from our data as majority of our patients belonged to poverty stricken, low socio-economic status as shows in figure 2.

In our study 100% of patients presented with chronic abdominal pain as also reported by Demir *et al*. in his study. The most common associated symptoms in our study are reported nausea (64%), vomiting (53%), anorexia (43%), fever (39%), and weight loss (25%), and constipation (26%), history of gola formation (4%).

In contrast to other study Safarpor *et al*. [23] chronic pain abdomen (85%), vomiting (69%), constipation (64%), weight loss (70%), fever (22%), anorexia (72%) reportsd. In our study most common physical findings are abdominal lump (6%), tenderness (5%), and abdominal distention (4%). In contrast to other study tenderness is the most common physical sign Easter DW *et al*. [14], Paajanen Hannu *et al*. [17], Safarpor Faizollah *et al*. [18], and Krishnan P *et al*. [20].

In present study, USG done in all cases (150), aided in the diagnosis of few cases only. In USG whole abdomen out of 150 cases in 123 cases no abnormality were detected. USG suggestive of appendicitis in 6 cases, mesenteric lymphadenopathy in 8 cases, free fluid in pouch of douglus 6 cases, dilated bowel loops in 4 cases, mild to moderate ascites in 3 cases. Though ultrasound is considered to be quite informative in cases of chronic abdominal pain but in our study ultrasound findings were mostly normal or inconclusive as also seen in other studies. Mohamed A. A.R *et al*. [22], Malik A *et al*. [29].

CECT whole abdomen was done in all cases. In 59 cases (39.33%) final pathology could not find out. Most of the CECT findings were mesenteric lymphadenopathy with ascites 24 cases, appendicitis 19 cases, dilated bowel loops with ascites 18 cases, ileocecal thicking 14 cases , moderate ascites 5 cases,

Ileal strictures 3 cases, GB mass with ascites 3 cases, rt ovarian cyst 3 cases, tubo-ovarian mass 2 cases. CECT whole abdomen gives a better view for diagnosis in patients with chronic pain abdomen. Abdominal lymphadenopathy was the most common manifestation (16%) in our study as similar finding in other study Gilani SI *et al.* [24], Baloch NA *et al*. [25].

Histopathological Examination is an appropriate method both for diagnosis abdominal tuberculosis and for ruling out other pathology like malignancy. It is quite difficult because of suboptimal non-invasive access to intra-abdominal organs. Laparoscopy has become the diagnostic procedure of choice and we found adhesion and band (25%) most common operative finding followed by mesenteric lymphadenopathy with ascites (22%), appendicitis with appendicolith (12%), ileocecal thickning with ascites (9.3%) as similar findings found in other study Radzi M *et al*. [21], Gilani SI *et al*. [24], Bhansali SK *et al*. [26], Scott HJ *et al.* [28].

Macroscopic examination by laparoscopy is the most useful method in the diagnosis of abdominal tuberculosis and diagnostic rate was 82%. The macroscopic diagnostic rate by laparoscopy was 78% in our study for abdominal tuberculosis, 12% for appendiceal pathology. During laparoscopy , abdominal TB is suggested by macroscopic signs like tubercles/nodules over the peritoneal surfaces, thickingand hyperemia of omentum,inflammatory adhesions and a long fibrous band extending from the parirtal to visceral peritoneum called ‘Stalactic band’ which is quite characteristic of abdominal TB Baloch NA *et al*. [25], Nagy AG *et al*. [27].

In our study adhesiolysis done in 47 cases, appendisectomy in 19 cases , ascites fluid for biochemical analysis in 33 cases, mesenteric lymphnode biopsy in 35 cases and other procedure

shown in table 07 .Safarpor Faizollah *et al*. [18] Peters AA *et al*. [19].

In 5 cases conversion to open laparotomy was done, 2 cases for dense adhesion, 2 cases for resection and end to end anastomosis for multiple ileal strictures, 1 case for abdominal coccon. Thus conversion rate is 3.33% which is also seen in other study Krishnan P *et al*. [20].

There was no mortality in our study. Morbidity was observed in 8 cases, 2 cases developed wound infection, 2 cases developed chest infection, 1 case had right shoulder pain. Morbidity rate are similar to other study which shows 0%-10% Jamal S *et al*. [23].

In our study all patients undergone diagnostic laparoscopy and biopsies taken and send for histopathological examination. Final diagnosis made on the basis of HPE reports. Most common cause of chronic pain abdomen is abdominal tuberculosis 65.33% in various form followed by appendicitis 12.66%. In our study other less common causes of chronic pain abdomen are shown in table 9. In 6% cases no specific cause found Al-Aska AK *et al*. [16], Krishnan P *et al.* [20].

Abdominal tuberculosis, undiagnosed preoperatively, was a common finding in study conducted. 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 over usage of anti-Kochs drugs and subsequent resistance and drug-related side effects faced by patients.

Laparoscopy is very sensitive for diagnosis of appendicitis whether acute or chronic. It not only detects appendicitis but also avoids negative appendectomy Fayez JA *et al*.[10].

Adnexitis, endometriosis, benign ovarian disease in female and Meckels diverticulitis, chronic pancreatitis, liver cirrhosis and metastatic diseases contributed minor proportions for chronic pain abdomen conditions. Few patients had normal findings in diagnostic laparoscopy in almost all series, implicating requirement for further evaluation. Ultrasound is an initial modality of choice which is useful in picking up lymphadenopathy, tubercular ascites, peritoneal thickening, omental thickening and bowel wall thickening in some cases. Plain radiographs may show enteroliths, perforation and features of intestinal obstruction. Contrast enhanced CT and CT enterography provide adequate cross sectional imaging in depicting various forms of abdominal TB Safarpor Faizollah *et al*. [18], Krishnan P *et al*. [20], Radzi M *et al*.[21], Bhansali SK *et al*. [26], Scott HJ *et al*. [28], Malik A *et al*. [29] .

The relief of pain at day 7 (complete or partial) was approximately 89.2 %. On follow up for 6 months revealed pain relief in 69.5 %, pain reduction in 23.3 %, and persistent pain in 6.8 % of patients. We reported an increase in positive outcome from 83.7 to 89.26 % 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 Sharma SK *et al*. [30].

Laparoscopy can be proved to be an important tool in the minimally invasive exploration of selected patients with chronic abdominal disorders, whose diagnosis remains uncertain, despite exploring the requisite laboratory and imaging investigations like ultrasonography, CT scan, and the like. Chronic abdominal conditions are associated with poor quality of life and significant levels of depressive symptoms. Much is known about the prevalence, social burden, and suffering associated with chronic abdominal conditions.

CONCLUSION

Unfortunately Laproscopy is still used as a last resort when all the other investigation fails to provide accurate diagnosis. The present study strengthen the evidence that laproscopy is the investigation of choice in a patient of chronic pain abdomen with advantage of histological confirmation.

Diagnostic laproscopy should be considered in the work up of all patients with chronic abdominal pain because this minimally invasive technique can prevent many serious morbidities and mortalities.

Therefore it can be concluded that Laproscopy is a very safe, quick, cost effective and useful diagnostic tool in undiagnosed lower abdominal pain and permits early commencement of proper treatment. Laproscopy shortens hospital stay and minimizes hospital visits, thus decreasing patient's expenses. Laproscopy should be performed as an early investigative procedure in these patients.

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