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"A Study on Role of Diagnostic Laparoscopy in Evaluation of Chronic Lower Abdominal Pain"

Dr. Baidya Nath Sadhu, Prof(Dr) Subrata Das, Dr. Binaya Kumar Padhi,
Junior resident,dept. Of general surgery,hi-tech medical college and hospital,bhubaneswar.
, professor,dept. Of general surgery
Hi-tech medical college and hospital,bhubaneswar
Junior resident,dept. Of general surgery,hi-tech medical college and hospital,bhubaneswar.

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ABSTRACT
BACKGROUND
In our surgical practice, we often encounter patients with undiagnosed lower abdominal pain who even after careful evaluation with sophisticated investigations remain undiagnosed. These group of patients pose a major challenge to the diagnostic capabilities of the surgeon. About 13% of patients remains undiagnosed even after battery of investigations.
Aims and objectives:
To assess the benefit of using laparoscopy as a diagnostic tool in patients with undiagnosed chronic abdominal pain.
To find various causes leading to chronic abdominal pain by diagnostic laparoscopy.
Materials and methods:
In this observational study, 85 patients are included. Patients who were not diagnosed by clinical diagnosis and imaging investigations such as ultrasonography and computed tomography are included in this study. All the quadrants of the abdomen are examined in a sequential manner. Pathologies identified during the procedure is documented. Therapeutic intervention if possible, is done according to the observed diagnosis.
Results:
In this study, it was observed that 81 out of 85 patients (95%) were diagnosed. Sub-acute appendicitis (43.5%), adhesions(24.8%), peritoneal tubercles (9.5%), normal study (4.7%), adnexitis (2.3%), hydrosalphinx (4.7%), mesenteric adenopathy(2.3%), mesenteric panniculitis (2.3%), ileocecal tuberculosis (1.2%) ovarian cyst(1.2%) and endometriosis (2.3%). Patients with sub-acute appendicitis and adhesions underwent laparoscopic appendectomy and laparoscopic adhesiolysis respectively.
Conclusion:
Diagnostic laparoscopy is an effective tool which can be used to diagnose and treat the patients with chronic abdominal pain who remain undiagnosed after clinical examination and imaging modalities.

Keywords :Chronic lower abdominal pain, diagnostic laparoscopy, appendicitis, adhesions, laparoscopic appendectomy.

I. INTRODUCTION

In our surgical practice we often encounter patients with undiagnosed lower abdominal pain who even after careful evaluation with sophisticated investigations remain undiagnosed[1]. This group of patients pose a major challenge to the diagnostic capabilities of the surgeon. These patients with undiagnosed abdominal pain are difficult to treat and they tend to have a chronic phase of suffering from the unremitting nature of the pain. This results in loss of doctor patient relationship.

This situation leads to chronic form of depression among these patients. These group of patients are often neglected and they are labeled as functional. To overcome this situation, these patients must be investigated in a proper manner and a goal directed approach has to be followed.

Diagnostic laparoscopy is a valuable tool that can be used in these group of patients to overcome this problem[2]. Diagnostic laparoscopy is used in these patients when the modern imaging techniques fall short in identifying the causes of undiagnosed lower abdominal pain[3].

Diagnostic laparoscopy allows the surgeon to visualize the internal organs and help in identifying the pathologies that are not apparent to the modern day imaging studies. It is much more helpful in female patients whose gynaecological problems offer a great deal of difficulty in coming to a diagnosis.

There are numerous differential diagnoses for the patients with undiagnosed chronic lower abdominal pain. Since diagnostic laparoscopy has a high yield in diagnosing these patients, it has become a major diagnostic modality in surgeons armory.

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

These patients are evaluated clinically and with imaging studies. Patients who remain undiagnosed are given the choice of diagnostic laparoscopy to identify the cause. Patients giving consent are further evaluated with diagnostic laparoscopy.

AIM OF THE STUDY

- To assess the benefit of using laparoscopy as a diagnostic tool in patients with undiagnosed chronic lower abdominal pain.
- To find various causes leading to chronic abdominal pain by diagnostic laparoscopy

II. MATERIALS AND METHODS

Source (study population):

The patients admitted in Hi-Tech Medical College and Hospital ,Bhubaneswar at Department of General Surgery who are having undiagnosed chronic lower abdominal pain.

Study period:

March 2020 to August 2020

INCLUSION CRITERIA :

- Patients with undiagnosed chronic lower abdominal pain for greater than 3 months duration.
- Patients with or without previous abdominal surgeries.
- Patients of both sexes.
- Patient of age group 18 to 65 years.

EXCLUSION CRITERIA

- Patients with established diagnosis after laboratory and radiological investigations.
- Patients with comorbid conditions.
- Patients with acute abdomen and peritonitis
- Patients with functional bowel diseases.

III. METHODOLOGY

In this study, patients with chronic lower abdominal pain for greater than 3 months are studied. Detailed history obtained from the patients including the previous abdominal surgeries. Data are collected in proforma. These patients are examined clinically.

Blood investigations such as complete blood count, renal function tests, liver function tests, urine routine and urine culture are done to find the cause of chronic lower abdominal pain.

If the cause is not diagnosed by above investigations then radiological imaging such as x ray, ultrasound abdomen and pelvis and CECT abdomen and pelvis are done in a sequential manner to find the cause. Additional investigations such as colonoscopy are done according to the patient symptoms.

If the cause is diagnosed at any point during the above mentioned investigations, the patients will be excluded from the study.

Only those patients who remain undiagnosed even after all these above mentioned investigations are incuded in the study. Patients with established diagnosis, co morbid conditions and acute peritonitis are excluded from the study.

A proforma will be used to record the socio-demographic data of the patients along with clinical findings, investigations, laparoscopic findings, diagnosis, and complications

All patients included for the study are informed about the rationale of using diagnostic laparoscopy to find the cause of undiagnosed chronic lower abdominal pain. Informed consent is obtained from patients who are willing to undergo diagnostic laparoscopy.

Pre operative preparation is done by anxiolytics, sedatives and bowel enema. Standard diagnostic laparoscopic procedure is undertaken. All the quadrants of the abdomen are visualized in a sequential manner. Solid organs, small bowel and large bowel are visualized and pathology if any is identified. Ovaries, fallopian tubes and uterus are examined for any pathology in female patients.

Appendix is visualized in all patients and if any pathology identified is managed accordingly. If possible, pathologies that can be treated by laparoscopy will be treated or managed accordingly.

Various conditions leading to chronic lower abdominal pain that are observed in the diagnostic laparoscopy are documented.

The diagnostic value of the laparoscopy is analyzed by assessing the proportion of cases in which the cause of the chronic lower abdominal pain gets identified. Further the percentage of the various causes leading to chronic lower abdominal pain are studied.

IV. OBSERVATION AND DATA ANALYSIS

In this study, 85 patients with undiagnosed chronic lower abdominal pain are evaluated with diagnostic laparoscopy and the results are as follows:

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 1: AGE DISTRIBUTION

S.NO	AGE DISTRIBUTION (in years)	NO. OF SUBJECTS	PERCENTAGE
1.	18-25	10	12%
2.	26-35	39	46%
3.	36-45	20	24%
4.	46-55	7	8%
5.	56-65	9	10%
	TOTAL	85	100%

It can be observed that out of 85 patients, 26 – 35 years age group patients accounted for 39 patients which accounted for about 46% of the patients.

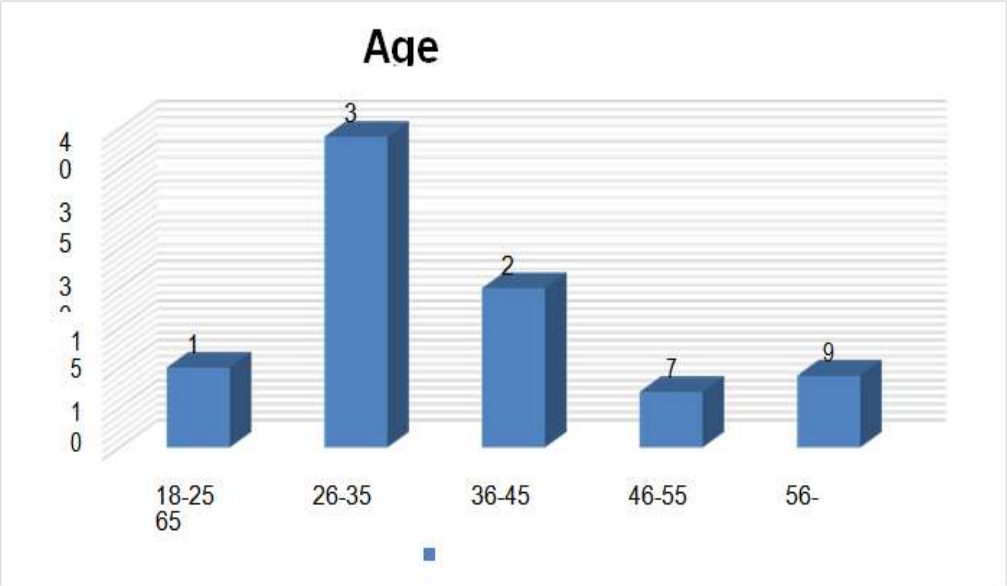
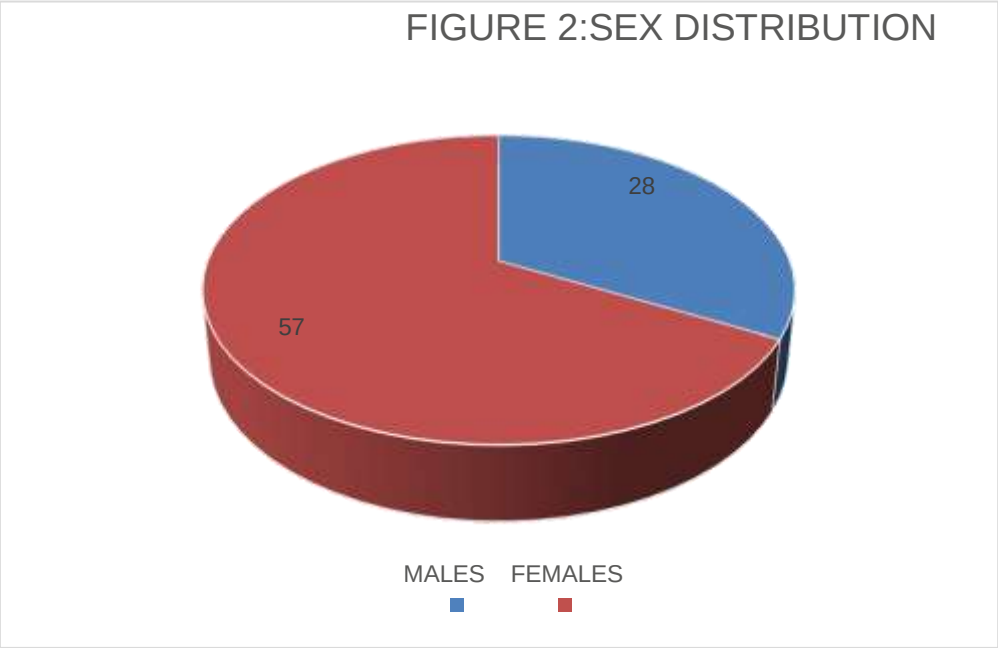


FIGURE 1: AGE DISTRIUTION AMONG STUDY SUBJECTS

TABLE NO: 2 SEX DISTRIBUTION

	NUMBER	PERCENTAGE
MALES	28	33
FEMALES	57	67
TOTAL	85	100



It can be observed that 57 out of 85 patients are females and account for about 67% and 28 out of 85 patients are males and account for about 33%.

TABLE 3: AGE WISE SEX DISTRIBUTION

S.NO	AGE (in years)	NO.OF MALES	PERCENTAGE	NO. OF FEMALES	PERCENTAGE
1.	18-25	7	8	3	3.5
2.	26-35	10	12	29	34
3.	36-45	4	5	16	19
4.	46-55	00	00	07	8
5.	56-65	07	8	2	2.5
	TOTAL	28	33	57	67

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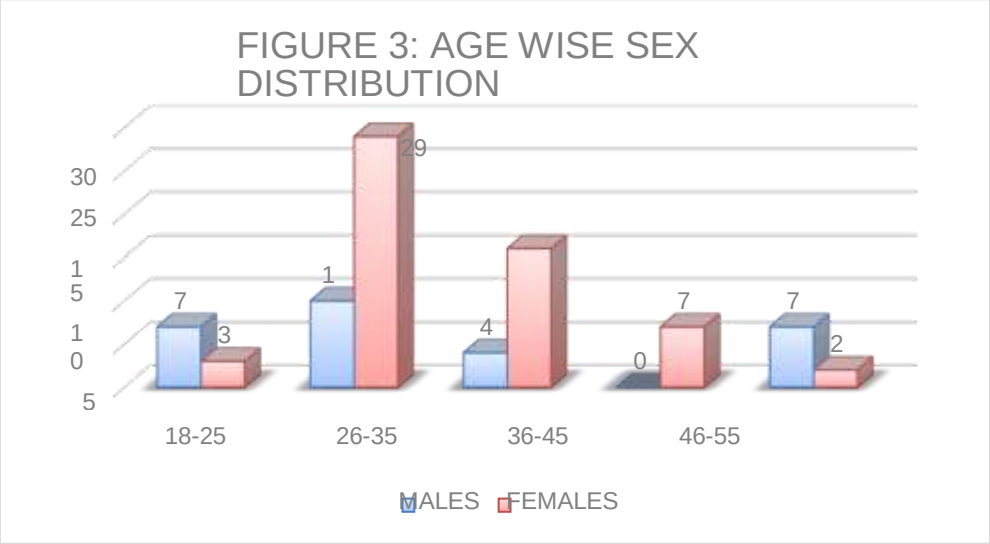


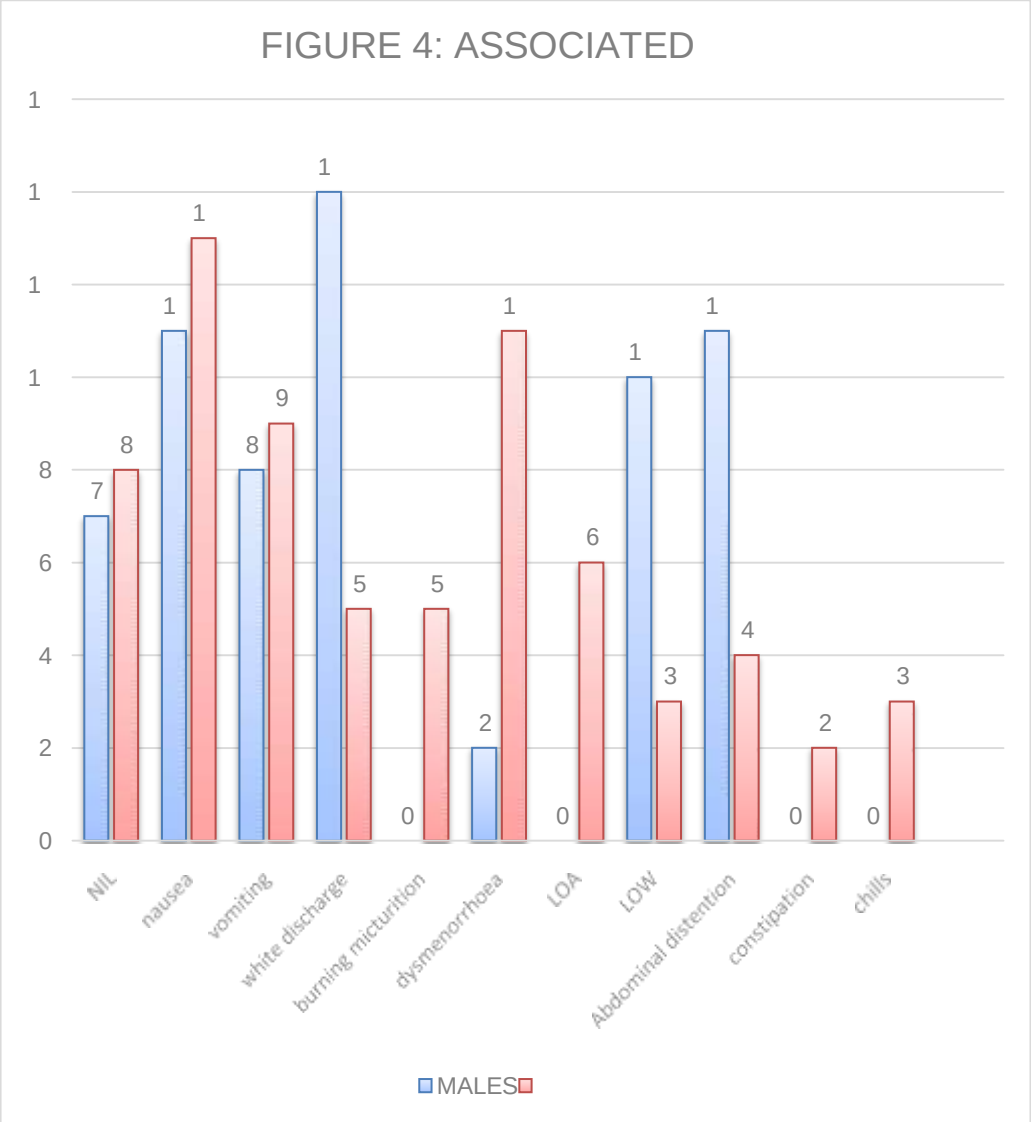
As observed above, 10 out of 28 male patients and 29 out of 58 female patients belonged to 26-36 years age group.

TABLE NO:4 ASSOCIATED SYMPTOMS

SYMPTOMS	MALES	FEMALES	TOTAL
NIL	7	8	15
NAUSEA	11	13	24
VOMITING	8	9	17
FEVER	14	5	19
WHITE DISCHARGE	00	5	05
BURNING MICTURITION	2	11	13
DYSMENORRHOEA	00	6	06

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

LOSS OF APPETITE	10	3	13
LOSS OF WEIGHT	11	4	15
ABDOMINAL DISTENTION	00	2	02
CONSTIPATION	00	4	04
CHILLS	00	3	03

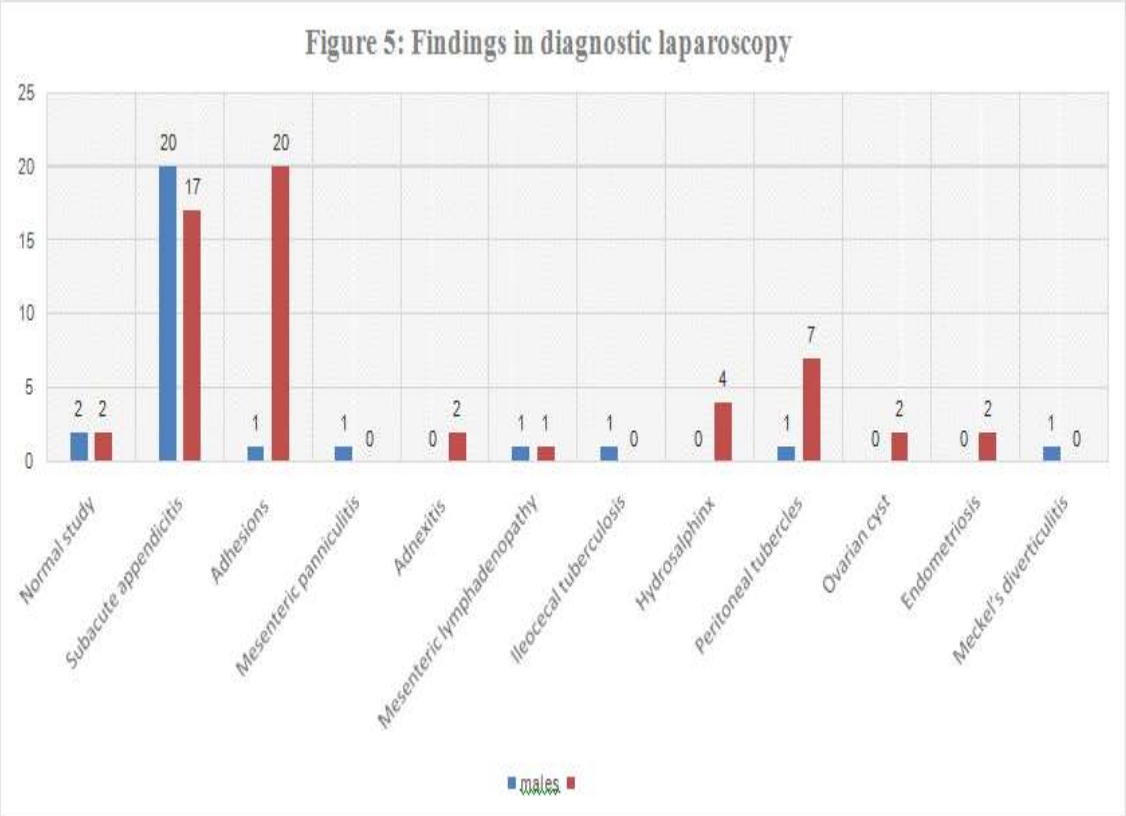


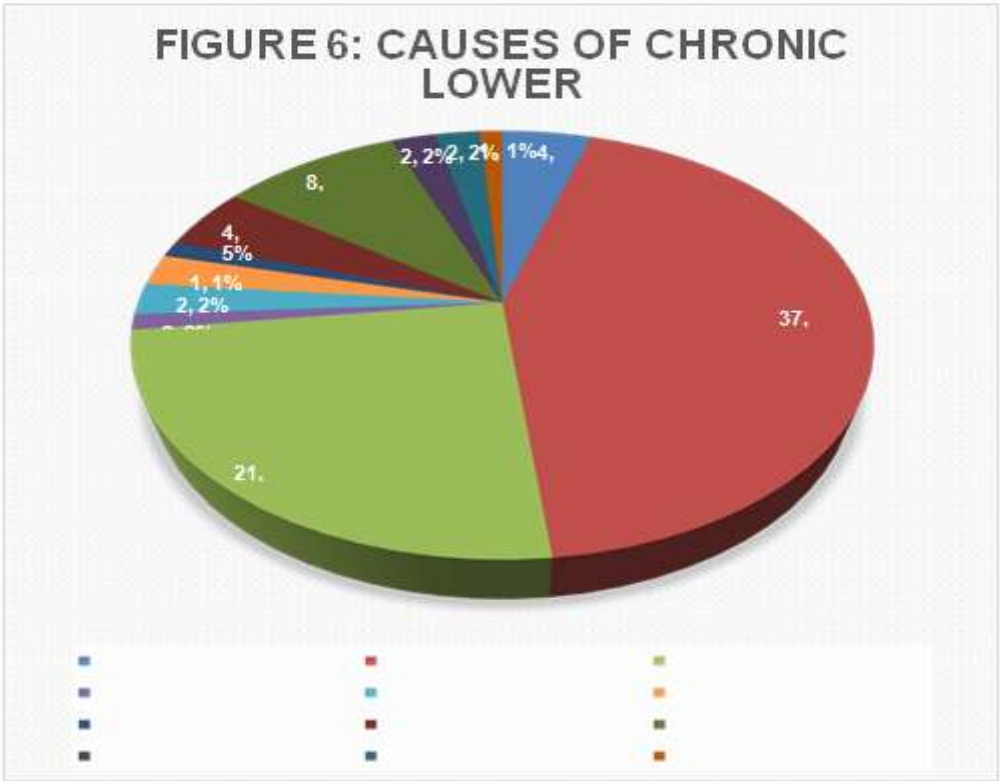
International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 5: DIAGNOSTIC LAPAROSCOPIC FINDINGS

FINDINGS	MALES	FEMALES	TOTAL	PERCENTAGE
Normal study	02	02	04	4.7
Subacute appendicitis	20	17	37	43.5
Adhesions	01	20	21	24.8
Mesenteric panniculitis	01	00	01	1.2
Adnexitis	00	02	02	2.3
Mesenteric lymphadenopathy	01	01	02	2.3
Ileocecal tuberculosis	01	00	01	1.2
Hydrosalphinx	00	04	04	4.7
Peritoneal tubercles	01	07	08	9.5
Ovarian cyst	00	02	02	2.3
Endometriosis	00	02	02	2.3
Meckel's diverticulitis	01	00	01	1.2

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018



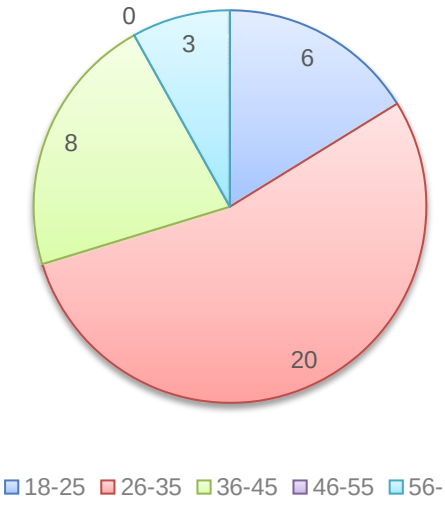


Normal study	Subacute appendicitis	Adhesions
Mesenteric panniculitis	Adnexitis	Mesenteric lymphadenopathy
Ileocecal tuberculosis	Hydrosalphinx	Peritoneal tubercles
Ovarian cyst	Endometriosis	meckel's diverticulitis

TABLE 6: SUBACUTE APPENDICITIS AGE DISTRIBUTION

Age in years	Sub acute appendicitis	Percentage
18-25	06	16.2
26-35	20	54
36-45	08	21.6
46-55	00	00
56-65	03	08.2

Figure 7: subacte appendicitis - age

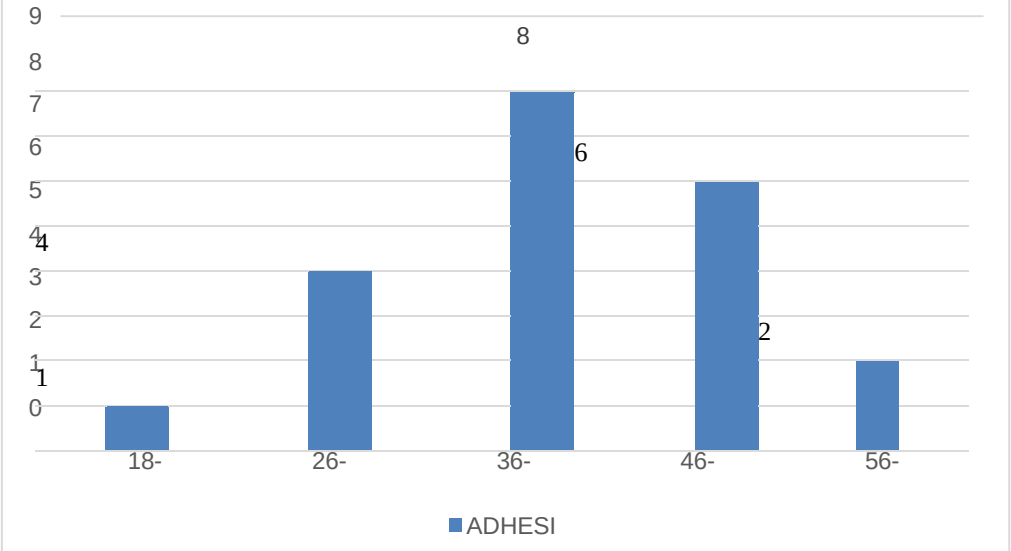


International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 7: ADHESIONS – AGE DISTRIBUTION

Age in years	ADHESIONS	PERCENTAGE
18-25	01	4.8
26-35	04	19
36-45	08	38
46-55	06	28.6
56-65	02	9.6

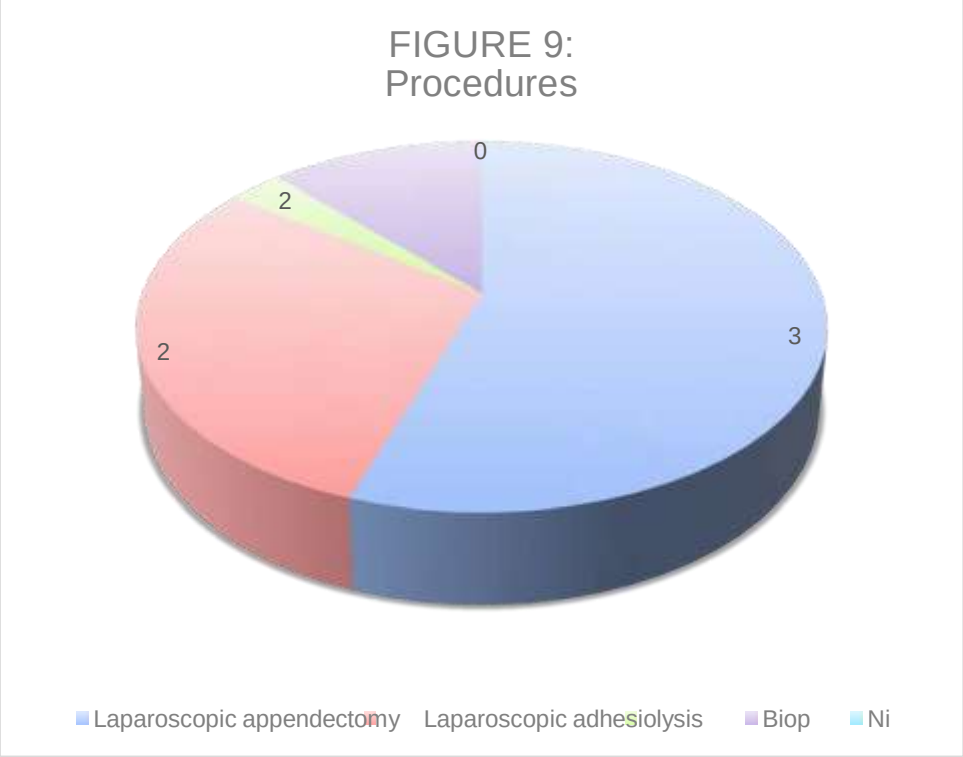
FIGURE 8:



International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 8: PROCEDURES

PROCEDURE	MALES	FEMALES	TOTAL
Laparoscopic appendectomy	20	17	37
Laparoscopic adhesiolysis	01	20	21
Ablation	00	02	02
Biopsy	03	08	11
Nil	04	10	14



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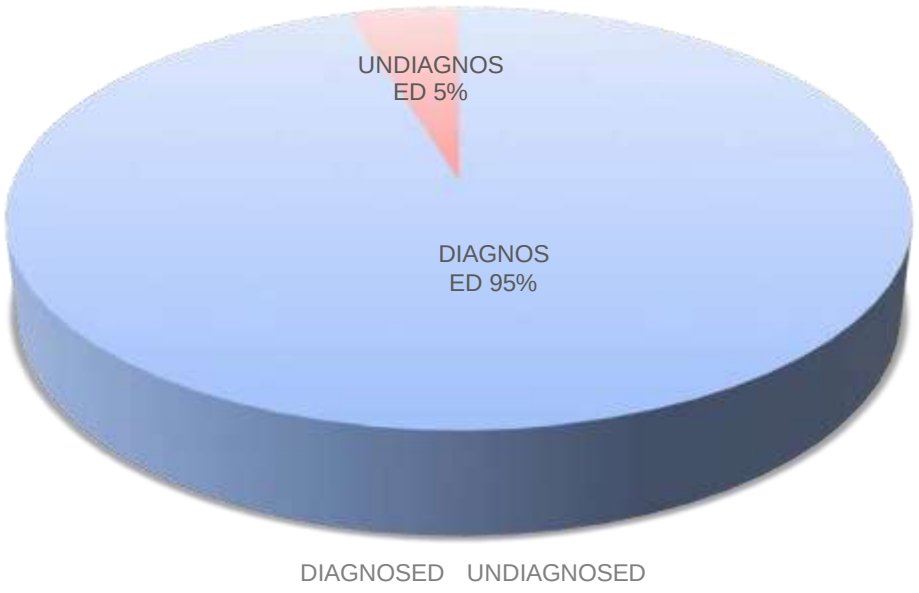
Volume 3, Issue 5, Sep-Oct 2021 pp 633-646 www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 10: 0UTCOMES OF DIAGNOSTIC LAPAROSCOPY



V. RESULTS

In this observational study (A study on role of diagnostic laparoscopy in evaluation of chronic lower abdominal pain), 85 patients were analyzed.

There were 28 males and 57 females. Lowest and highest age of the patients included in the study was 18 and 6 respectively.

Patients with chronic lower abdominal pain had associated symptoms such as nausea, vomiting, fever, burning micturition, white discharge, loss of appetite, loss of weight, constipation, dysmenorrhea and abdominal distention. The most common associated symptom was nausea which was found in 24 patients.

The abnormal findings that were observed by diagnostic laparoscopy include sub acute appendicitis, adhesions, ileocecal tuberculosis, peritoneal tubercles, adnexitis, mesenteric adenitis, mesenteric panniculitis, hydrosalphinx, ovarian cyst, endometriosis and meckel's diverticulitis.

Sub acute appendicitis was present in 37 patients which accounted for about 46% of patients. Out of 37 patients with sub acute appendicitis, 20 patients were males and 17 patients were females. Out of 37 patients with sub acute appendicitis 20 patients were in the 26-35 years age group.

In this study, adhesions were found in 21 patients in which 20 patients were females. 8 out of 21 patients belonged to the 36-45 years age group. Most of the female patients had previous abdominal surgeries such as lower segment caesarean section and or sterilization. Adhesions were most commonly found adhering to the scar over the anterior abdominal wall. All the 21 patients with adhesions were treated with laparoscopic adhesiolysis in the same sitting without any complications.

Peritoneal tubercles were observed in 8 patients in which 7 patients were females. Ileocecal tuberculosis was present in 1 patient. Biopsy was taken in all these patients and they were diagnosed to have abdominal tuberculosis. They are started on anti tubercular drugs.

Gynaecological problems were present in about 10 female patients. Out of 10 patients, 4 patients had hydrosalphinx, 2 patients had adnexitis, 2 patients had endometriosis and 2 patients had ovarian cysts.

Out of 57 female patients, only 10 patients had gynaecological pathologies. Majority of the female patients had non gynaecological problems like sub acute appendicitis, adhesions and peritoneal tubercles.

Out of 85 patients included in the study, 4 patients had normal study. Out of 4 patients, 2 were males and 2 were females.

Out of 85 patients with undiagnosed chronic lower abdominal pain, 81 patients had definitive diagnosis at the end of the procedure.

In this study, 60 patients had definitive therapeutic procedures which is about 70%. 11 patients had biopsy done. 71 out 85 patients had either definitive procedures or ancillary procedures done.

VI. DISCUSSION

In this observational study, 85 patients were studied during the period of March 2020 to August 2020. It is observed that females underwent diagnostic laparoscopy more commonly when compared to female patients. The reason for increased incidence of chronic lower abdominal pain in female patients can be attributed to the additional gynaecological problems that occur in the female patients.

26-35 years age group patients were most commonly affected in our study. This can be attributed to the most commonly observed diagnoses in this study namely sub acute appendicitis and adhesions, which are usually seen in this reproductive age group.

Nausea is the most commonly associated symptom which is present in about 28 percent of the patients. It is because, sub acute appendicitis being the most common diagnosis, is usually associated with nausea.

Sub acute appendicitis is the most common finding which accounted for about 46 percent of the total findings. Males and females are equally affected with sub acute appendicitis.

Adhesions is the second most common finding observed after subacute appendicitis accounting for about 24 percent of the findings. It is most commonly found in females. The female preponderance can be attributed to the lower abdominal surgeries done in females namely caesarian section and sterilization.

83 percent of the females had non gynaecological problems and 17 percent of the females had gynaecological problems.

About 5% of the patients had normal findings on diagnostic laparoscopy. Remaining 95 percent of the patients had their definite diagnosis at the end of the procedure. It shows the high diagnostic yield of using diagnostic laparoscopy in patients with undiagnosed chronic lower abdominal pain. Diagnostic laparoscopy is a boon to these patients as they tend to have more prolonged suffering as their condition mostly goes undiagnosed by other sophisticated imaging modalities.

84percent of the patients had either therapeutic procedures or ancillary procedures performed on them. Most commonly performed procedure was laparoscopic appendectomy followed by laparoscopic adhesiolysis and biopsy.

In this study, it was observed that diagnostic laparoscopy has high diagnostic yield in patients with undiagnosed lower abdominal pain in which the imaging modalities such as ultrasonogram and computed tomography fails to identify any definitive pathology.

Diagnostic laparoscopy is not a substitute for clinical examination. All patients should be examined thoroughly and investigated with non invasive imaging modalities such as ultrasonogram and computed tomography to find the cause. The patients who remain undiagnosed even after these investigations were included in the study.

Diagnostic laparoscopy is a valuable tool and when used judiciously it has a high diagnostic yield. It also has an added advantage of performing therapeutic procedures at the same sitting if a treatable pathology is identified during diagnostic laparoscopy.

VII. CONCLUSION

In this observational study that has been conducted for 6 months from March 2020 to August 2020, the use of laparoscopy as a diagnostic and therapeutic tool in patients with chronic lower abdominal pain was studied. The blood and radiological investigations namely ultrasonogram and computed tomographic studies were inconclusive in those patients.

In patients presented with chronic lower abdominal pain, ninety five percent of them had a definitive diagnosis at the end of the procedure suggesting that diagnostic laparoscopy has a high yield in this group of patients.

So, laparoscopy can be used in patients with non specific abdominal pain that is diagnosed by other methods.

Laparoscopic has a high diagnostic yield in women of child bearing age because of the associated gynaecological problems. Unnecessary radiation exposure can be avoided in these patients.

It has therapeutic role in eighty four percent of the patients.

Diagnosis and treatment can be done at the same sitting.

Diagnostic laparoscopy is very much useful in diagnosing and treating the patients with undiagnosed chronic lower abdominal pain.

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