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Original Article

Audit of Diagnostic Laparoscopy in Tertiary Care Hospital

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ABSTRACT

***Objective*:** To conduct a thorough audit of laparoscopy as a diagnostic and therapeutic modality in patients with chronic pain abdomen.

***Study Design*:** Cross-sectional study.

Place and Duration of Study: Department of General Surgery, Combined Military Hospital, Multan Pakistan, from Jul 2015 to Dec 2021.

***Methodology*:** One hundred fifty-three patients with chronic abdominal pain were included in this study. The cause of pain in all patients was unknown despite undergoing thorough history, examination and appropriate investigations. Laparoscopy was performed in all patients, and findings were recorded accordingly.

***Results*:** A total of 153 patients were included in this study 67(43.8%) patients were male, and 86 (56.2%) were female. The mean age was 33.268±12.171 years (ranging from 15 to 60 years). The average duration of pain was 10.23±2.204 weeks. The diagnosis was confirmed laparoscopically in 143(93.33%) patients. Ten patients remain undiagnosed (6.66%). The most common cause was chronic appendicitis in 68(44.4%), followed by ovarian disorders 35(22.9%). There was a significant improvement in mean pain scores between the pre-and post-operatively periods [6.765±1.116 Vs. 2.961±1.572 (p-value< 0.001)].

***Conclusion*:** Diagnostic laparoscopy has a higher diagnostic and therapeutic accuracy in patients with chronic abdominal pain. It significantly improves post-operative pain.

Keywords: Appendicitis, Chronic pain abdomen, Laparoscopy, Visual analogue pain score.

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INTRODUCTION

Chronic pain abdomen, which is defined as pain which persists for more than six months, still presents as a diagnostic dilemma for surgeons despite the presence of advanced modalities like ultrasound, MRI, CT scan abdomen etc.[1,2] As it remains un-diagnosed, it is resulting in inconclusive surgical procedures or laparotomies.[3] More than 40% of the patients with chronic abdominal pain remain un-diagnosed.[4] Conditions which commonly causes chronic abdominal pain include appendicitis, abdominal adhesion, biliary disorders, intestinal adhesions, abdominal wall disorders, functional dyspepsia, irritable bowel disease and motility disorders.[5] Laparoscopy was developed in the twentieth century as a diagnostic tool. It is a simple, safe, rapid and effective modality of choice with minimal pain and early return to work.[6] Laparoscopy has got some disadvantages like its cost-effectiveness, prolonged operative time, the requirement of general anaesthesia, limitation in acute pain and above all an invasive procedure.[7]

Despite its few disadvantages, laparoscopy can identify the cause in patients with chronic pain abdomen being a safe and effective tool.[10] Therapeutic laparoscopy can achieve pain relief in more than 70-74% of patients.[8] There is acceptance of the diagnostic and therapeutic value of laparoscopy which can obviate the need of imaging modalities in patients for diagnosis in chronic pain abdomen.[9] A standard laparoscopy makes the patient mentally relax and tension free with comfortable early return to home/work. On the contrary, the surgeon feels a high sense of professionalism besides contributing significantly to the institute from many aspects.[10]

Despite significant evidence, there is still some controversy about the use of laparoscopy as the initial modality in diagnosing and managing patients with chronic abdominal pain. This study aimed to highlight the use of laparoscopy as an initial modality of diagnostic and therapeutic value in patients, especially with chronic pain.

METHODOLOGY

The cross-sectional study was conducted at General Surgery Department, Combined Military Hospital, Multan, from July 2015 to December 2021, after approval from the Institution Ethical Committee (ID no 13/Trg/2022). The sample size was calculated using the OpenEpi calculator, taking a proportion of the

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population achieving pain relief at 70% after laparoscopy.[11] Sample collection was done by the non-probability consecutive method.

Inclusion Criteria: All the patients aged between 15 and 60 years with a clinical diagnosis of chronic abdominal pain of unknown aetiology of more than six weeks, who underwent routine diagnostic investigations, were included in the study.

Exclusion Criteria: Patients with a history of previous abdominal surgeries, having severe pulmonary and cardiac disabilities and non-consenting cases were excluded from the study.

After a detailed history and examination, all patients underwent complete blood count, urine routine examination, chest x-ray and USG of the abdomen and pelvis. All patients underwent diagnostic and therapeutic laparoscopy with written consent to be converted to open surgery as per indications. A single dosage of prophylactic antibiotic was given before induction. The structeued proforma was used to record demographic data, ASA status, operating position, laparoscope features, ports size and positions, operating surgeon, induction time, operating time, diagnostic findings, therapeutic intervention, preoperative complications and post-operative orders. In addition, the biopsy specimens which were taken during the procedure were also recorded and sent for histopathology. Pre and post-operative pain was calculated using a Visual Analogue score from 0-10. Zero is no pain, and 10 is unbearable pain.

Statistical Package for Social Sciences (SPSS) version 21 was used for data analysis. Descriptive statistics were used to calculate mean and standard deviation for age, frequencies, and percentages for gender. Student t-test was applied to ascertain significance in pre and post-operative pain, keeping *p*-value ≤0.05.

RESULTS

A total of 153 patients were included in this study, in which diagnosis remained a challenge. Among these, 67(43.8%) patients were male, and 86(56.2%) were female. The mean age was 33.26±12.17 years (ranging from 15 to 60 years). The average duration of pain was 10.23±2.204 weeks. The mean duration of operation was 13.71±13.669 minutes rest, as shown in Table-I.

Table-I: Laparoscopic Operating Time (n=153)

Time(minutes)	n(%)
<10	9(5.9%)
10-20	12(7.8%)
21-30	62(40.5%)
31-40	39(25.5%)
>40	31(20.3%)

The diagnosis was confirmed laparoscopically in 142 patients (92.8%). On the other hand, 11 patients (7.2%) remained undiagnosed. The most common cause was chronic appendicitis 68(44.4%), followed by ovarian disorders 35(22.9%), as shown in Table-II. 13 (8.5%) patients had more than one pathology (double diagnosis). When post-operative pain was compared, the pain was resolved in 115(75%) of patients after a week, whereas 15(10%) patients showed some improvement in pain scores, while 13(8.5%) patients reported that their pain remained unchanged. A significant improvement in pain post-operatively (p<0.001), is shown in Table-III. There were no significant post-operative complications. The average hospital stay was two days. There was only one case in which laparoscopy was converted to open surgery in which a hydatid cyst was present.

Table-II: Laparoscopically confirmed Diagnosis (n=153)

Diagnosis	n(%)
Appendicitis	68(44.4%)
Adhesion	11(7.2%)
Ovarian pathology	35(22.9%)
Undescended testicle (UDT)	04(2.6%)
Abscess formation	04(2.6%)
Tuberculosis	04(2.6%)
Malignancy (likely)	11(7.2%)
Miscellaneous	16(10.5%)

Table-III: Mean comparison of Outcome of pain (n=153)

Outcome of pain	Mean±SD	*p*-value
Pre-operative pain	6.765±1.116	<0.001
Post-operative pain	2.961±1.572	

DISCUSSION

Chronic abdominal pain remains a challenge from a diagnostic and treatment point of view for surgeons and especially gynaecologists, in female patients. The emergence of laparoscopy has provided significant relief in this aspect.[12,13] A previous reported an incidence of appendicitis and ovarian cysts at 28.5% and 5.7%, respectively.[14] In our study, appendicitis was the leading cause (44.4%), followed by ovarian disorders (22.9%). This significant difference between the two studies can be due to study design, as our case collection was more thorough and encompassed patients with pain for up to 3 months. One study showed that 31.4% of patients had tuberculosis, while the incidence of adhesion was 5.7%.[15] In comparison to our study, the incidence of tuberculosis was 2.6%. Another study showed a very low incidence of appendicitis compared to our study, which they elaborated as having different selection criteria and definitions of chronic pain abdomen.[16] However; the interesting

element of their study was a 0% conversion rate. In our study, we had a conversion rate of 0.66%. They also found adhesion in 63.3% of patients. They favoured the use of laparoscopy in adhesiolysis. We operated on 11(7.2%) patients who were having adhesion. The high adhesion incidence in their study was due to the inclusion of many patients who previously underwent one or more surgeries.

Another study performed by Shibumon *et al*. showed that laparoscopy was beneficial in 100% of patients to establish the diagnosis. They stated that its therapeutic value remained around 97.95%; the reason they explained was all male patients, fewer alternative diagnosis and additional help with the ultrasound. Compared to our study, the therapeutic value is 98.33%.[17]

The net effect in achieving pain relief is seen differently in different studies. It is a multi-factorial issue which depends on the underlying pathology, patient status, psychological impacts (pre and post-surgery), surgical approach and sophistication of the procedure. Rathod *et al*. in their study on 72 patients, mentioned that chronic abdominal pain was healed in 33%, diminished in 46%, and remained unchanged in 21% of the patients. Moreover, 65 patients (90%) reported that laparoscopic surgery remained very effective in relieving pain. They mentioned 82.0% of patients in which pain was resolved and 17.40% of patients with unchanged pain.[18] In comparison to our study, we met 75.00% of patients in which pain was resolved after a week, 10.00% patients in which pain diminished over next 3-4 weeks, while 8.33% patients reported that, their pain is unchanged. There was significant improvement when mean pre- and post-operative pain scores were compared (p-value <0.001). Interestingly, this group of patients had malignant pathologies of different organs.

CONCLUSION

Laparoscopy is an effective diagnostic and therapeutic modality of choice for patients with chronic abdominal pain. It is a simple, safe, short, speedy and cost-effective procedure that can save time and avoids extensive, cumbersome surgeries with significant improvement in diagnosis and post-operative pain.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

SAA: & AAK: Data acquisition, data analysis, data interpretation, approval of the final version to be published.

ABS: & FAM: Study design, drafting the manuscript, critical review, approval of the final version to be published.

HS: Critical review, concept, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated & resolved.

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