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Research Article

Role of elective laparoscopic appendicectomy in chronic right lower quadrant pain: a prospective & interventional study

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ABSTRACT

Background: Chronic pain occurring in the Right Lower Quadrant (RLQ) region is a common clinical entity and has many differential diagnoses. Chronic/Recurrent appendicitis is an important cause. We evaluate here whether undiagnosed chronic RLQ pain can be relieved after elective laparoscopic appendectomy.
Methods: 30 patients, 5-65 years of age, with undiagnosed chronic RLQ pain underwent laparoscopic appendectomy between 2012 and 2014. Inclusion criteria was pain of more than 3 months' duration. Exclusion criteria was patients who had previously been treated conservatively for appendicitis or appendicular lump, previous abdominal surgery, diagnosed cases of specific urological, gynecological or gastrointestinal diseases. Patients were followed up for 6 months and their pain was graded in the following manner - grade 1 (pain worse than before), grade 2 (pain decreased, but not completely gone) and grade 3 (completely pain free). The histopathology of the appendices was also compared with the grades of pain.
Results: Out of 30 patients, 26 were completely pain free at the end of 6 months. 4 patients had a pain grading of 2. Most of the patients had appendicular adhesions. There was 1 patient who had disseminated abdominal tuberculosis. Other intra-operative findings were ascites, free fluid in cul-de-sac, mesenteric lymphadenopathy and intussusception. There was no significant co-relation between pain relief and histopathology of the appendix.
Conclusions: Laparoscopy is an invaluable tool in diagnosing other conditions existing concurrently. There is no correlation between the relief of chronic right lower quadrant pain and histopathology of the appendix. Chronic right lower quadrant pain is relieved by performing laparoscopic appendicectomy.

Keywords: Recurrent/chronic, Laparoscopic, Appendectomy, Appendicitis

INTRODUCTION

Chronic pain occurring in the right lower quadrant region is a common clinical entity and has many differential diagnoses. It continues to remain a diagnostic problem and has, hence generated a lot of interest in recent years.[1] Patients often complain of a nagging pain in the right lower quadrant of weeks to years, for which no treatment was taken. Appendicitis is an important cause. Laparoscopic appendicectomy as a treatment modality in such cases has proven to be of significant use. Histopathology of appendix shows fibrotic changes, lymphocytic infiltration and luminal obstruction.[2] Chronic appendicitis as a separate clinical entity is still not accepted by many, but it does occur quite frequently in children and adolescents and is often misdiagnosed. Histopathology has shown chronic changes in the appendices of such patients.[3] Laboratory and radiological evaluations are typically normal. Histopathology of the specimen shows chronic inflammation.[4] We did laparoscopic appendectomy in the patients in our study

and evaluated them with respect to their pain relief and histopathologies of their appendices.

METHODS

The study was carried out at Indira Gandhi govt. medical college & hospital over a period of 2 years from 2012 to 2014. Patients with right lower quadrant which remained undiagnosed were chosen. 30 patients were included in the study.

Inclusion criteria: Patients included in the study were in the age group of 5 years to 65 years. Patients included had recurrent or chronic right lower quadrant pain of more than 3 months' duration.

Exclusion criteria: Patients having chronic low back ache, patients having undergone previous abdominal surgery, patients with diagnosed specific gastrointestinal (e.g. inflammatory bowel diseases), gynaecological or urological disorders, diagnosed patients of abdominal Koch's and patients who were previously managed conservatively for appendicitis or appendicular lump.

Routine investigations such as complete blood count, ESR, serum creatinine, blood urea levels, random blood sugar, urine routine & microscopy, abdominal ultrasonography (USG) and chest & abdomen radiograph were done prior to inclusion in the study. Only those patients whose USG abdomen was normal were included in the study. The histopathological examination was done by blinded pathologists of the pathology department of our institute.

A written informed consent was taken from all patients and they were explained about the nuances of the study. They were asked to keep a record of the intensity of their pain to compare it with the pain post-operatively.

The statistical analysis was done by single sample t-test.

All patients were given a single dose of pre-operative antibiotic. Laparoscopic appendectomy was performed by the standard 3-port technique, with a 10mm umbilical port and 5mm supra-umbilical and left iliac fossa ports. Abdominal cavity was inspected for other abnormalities and any, if found, were noted. The appendix and any other specimen removed were sent for histopathology.

All patients were asked to follow-up in the OPD of our institute on day 10 for suture removal. They were further asked to follow-up after 3 weeks, 3 months and 6 months and relief of pain at the end of 6 months was recorded. The pain was graded in the following manner:

Grade 1 - Pain worse than before

Grade 2 - Pain decreased, but not completely pain free

Grade 3 - Completely pain free

A comparison was made between the histopathology of the appendix and the grade of pain.

RESULTS

Thirty patients met our inclusion criteria and underwent laparoscopic appendicectomy after all investigations. 15 patients (50%) were male and 15 (50%) were female with a median age of 26 years (range 5-65 years). The age group with the maximum number of patients having RLQ pain was 21-30 years, constituting 33.3% of cases.

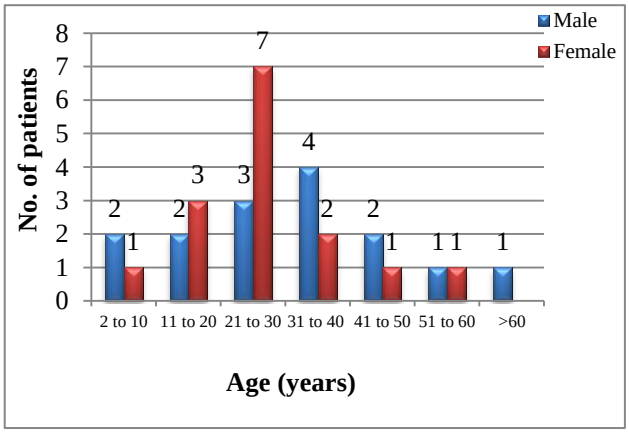

Figure 1: Age & sex distribution.

The pain relief grading at regular follow-up is shown in Table 1. The number of patients having pain relief increased with the follow-up period. At the end of 6 months, 26 out of 30 (86.6%) patients were completely pain free. There were 4 patients with residual pain remaining even after 6 months. There was no patient whose pain was worse than before.

Table 1: Grades of pain at follow-up.

Grade of pain	3 weeks	3 months	6 months
Grade 3	18 (60%)	20 (66.6%)	26 (86.6%)
Grade 2	12 (40%)	10 (33.4%)	4 (13.4%)
Grade 1	0	0	0
Total	30	30	30

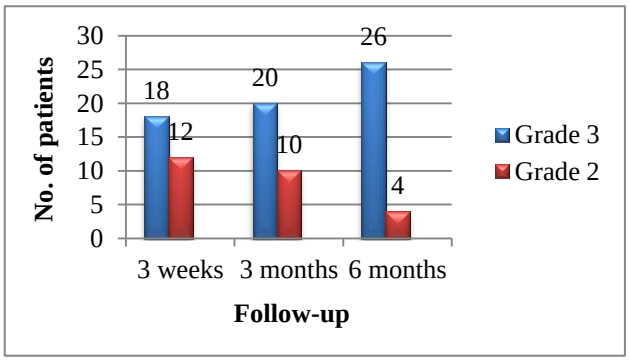

Figure 2: Grades of pain at follow-up.

None of the patients had any intra-operative or post-operative complications. There was no mortality seen.

Table 2 shows the histopathology reports of appendices of all patients and their co-relation with relief of pain. 22 out of 30 patients had recurrent appendicitis as their histopathology, while in 8 patients the appendix was found to be normal. The relief pain was not seen to co-relate with the histopathology.

Table 2: Histopathology reports of all patients.

Histopathology of appendix	Number of patients	Patients with relieved pain
Recurrent appendicitis	22 (73.4%)	20 (66.66%)
Acute appendicitis	0	0
Normal	8 (26.6%)	6 (20%)

The intra-operative findings noted during the laparoscopic appendicectomy procedure in these patients are given in Table 3.

Apart from appendicular adhesions in patients with recurrent appendicitis, there were other important findings noted. 4 patients had mesenteric lymphadenopathy, while there was 1 patient each who had free fluid in cul-de-sac, tubercles on serosal surface of bowel and intussusception.

Table 3: Intra-operative findings.

Intra-operative findings	No. of patients (N=30)	Percentage
Appendicular adhesions	12	40%
Normal	11	36.8%
Mesenteric lymphadenopathy	4	13.3%
Free fluid in cul-de-sac	1	3.3%
Intussusception	1	3.3%
Tubercles	1	3.3%
Total	30	100%

DISCUSSION

Multiple techniques have been evaluated to assist in the diagnosis of chronic appendicitis. Laparoscopy has changed the view of surgeons about exploration in patients with chronic right lower quadrant pain. Laparoscopic advances have made exploration much less invasive and provide the option of diagnostic and therapeutic treatment.

All 30 patients in our study had the complaint of right lower quadrant pain. Additional history of fever was present in 3 patients while vomiting was present in 8 patients. This indicates a chronic or sub-acute or recurrent type of pathology in most of our patients, rather than the classical presentation in acute appendicitis.

The appendices of the patients were subjected to histopathology, which revealed chronic inflammation in 73.4% cases. There were no reports of acute inflammation of the appendix. 8 patients had normal appendices. These results co-relate with the chronicity of the pain in all of our patients and provide more evidence to the existence of chronic appendicitis.

In Roumen[5] et al.'s randomized clinical trial in 2008 evaluating laparoscopic appendicectomy in chronic right lower quadrant pain, 40 patients were randomized into two groups, laparoscopic appendicectomy group (18 patients) and laparoscopic inspection only group (22 patients). Post-operative pain scores and histopathology of appendix was compared between the two groups. A co-relation between clinical outcome and histopathology of the removed appendix was also sought. Their results showed a significantly higher proportion of patients in the laparoscopic appendicectomy group had an improvement in pain symptom than in the laparoscopic inspection only group. Out of 18 patients in the laparoscopic appendicectomy group, 7 appendices were found to be normal and 11 showed signs of appendicopathy. It was concluded that there was no significant relationship between post-operative pain scores and the histopathology findings of the appendices.

Bhavuray Teli[6] et al. performed laparoscopic appendectomy in 40 patients having chronic right lower quadrant pain. 90% of patients were completely pain free 6 months after the procedure while 10% patients did not improve. The appendices of 55% (22 patients) was pathological, with 10 showing features of acute appendicitis and 12 showing features of chronic appendicitis. 45% (18 patients) had histologically normal appendices. They concluded that laparoscopic appendicectomy can be an effective therapeutic procedure in chronic right lower quadrant pain and that there was no significant relation between clinical improvement and histology of appendix.

Charles C van Rossen[7] et al. performed laparoscopic appendicectomy in 10 patients with right lower quadrant pain of 2 months and in whom there was no abnormality found on ultrasonography of abdomen. 8 out of 10 patients had inflammatory changes in the appendix and the average Visual Analogue Scale (VAS) score after 3 weeks was 1. They concluded that laparoscopic appendicectomy in chronic right lower quadrant pain relieved the pain significantly and the histopathology of the appendices could be co-related with the diagnoses.

M. Safaei[8] et al. carried out a prospective crossover study in patients having Right Lower Quadrant (RLQ) abdominal pain for at least two weeks which was undiagnosed by all investigations. 18 patients underwent appendicectomies and were followed up for one year. In 17 patients, the pain had improved completely. In 88.8% of patients, the appendix showed chronic inflammation. They concluded that chronic or grumbler appendicitis

should be assumed as an independent diagnostic entity while approaching to recurrent pain in RLQ and appendectomy as a useful way of treating it.

R. L. Kolts[9] et al. conducted a prospective study of exploratory laparoscopy with appendicectomy in pediatric population having chronic recurrent RLQ pain. The outcome was observed at 1 month and 2 years. Histologic abnormalities were found in 32 out of the 44 patients (72.7%). At 2 years follow-up, complete resolution of abdominal pain occurred in 25 (56.8%) patients, partial resolution in 6 patients (13.6%) and no response in 13 patients (29.6%). 15 patients (34%) had other abnormalities found during laparoscopy. Hence, they concluded that appendectomy performed during exploratory laparoscopy is a useful treatment for chronic recurrent RLQ pain and can also identify other diseases in the process.

Karim Shalan Al-Araji[10] et al. conducted appendicectomy in 58 patients complaining of RLQ pain between 3 months to 3 years' duration. 54 patients had gross changes of chronic inflammation in the appendix and surrounding tissues. Of the 17 specimens submitted for histopathology, 16 showed chronic inflammation. On follow-up, 56 patients were completely pain-free. All patients having chronic inflammation in the appendix were pain free.

In our study, 26 out of 30 patients (86.6%) had complete pain relief (Grade 3) after appendicectomy at 6 months' follow-up. The other 4 patients had some residual pain remaining (Grade 2). These results are comparable to other studies conducted, though they were not found to be statistically significant. (P = 0.1, not significant) The reason for this might our small sample size and restriction of our study to one institute only. To confirm our findings and to obtain clearer results, large, multi-centered trials need to be performed.

CONCLUSION

From our study, we conclude that laparoscopy is an invaluable tool in diagnosing conditions other than chronic appendicitis existing concurrently in patients with chronic right lower quadrant pain. There is no correlation between the relief of pain and histopathology of the appendix. Chronic right lower quadrant pain is thus relieved by performing laparoscopic appendicectomy.

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