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# Laparoscopic study of 25 cases of right iliac fossa pain for false positivity of clinically diagnosed cases of appendicitis

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**Abstract**

Patients of right iliac fossa pain are always a dilemma for the treating physician or a surgeon. A number of studies have been carried out in devising the modalities of a final diagnosis of acute appendicitis but no matter how much we explore the avenue of right iliac fossa pain, we are always left wanting in arriving at the right diagnosis. Ever since the advent of laparoscopic surgery, the incidence of wrong diagnosis coupled with a comorbid condition has increased many fold. Its towards this problem that the present study was done in 25 cases presenting with right iliac fossa pain and diagnosed as acute appendicitis. All the 25 cases were clinically, biochemically and radiologically diagnosed as the cases of acute appendicitis and were subjected to laparoscopic surgery with a view to confirm the diagnosis and find the rate of false positivity. To our surprise, even with the best of the tools available for making a diagnosis of acute appendicitis , the false positivity rate was significant and alarming , not to say that our study is a paradigm shift in assessing the right iliac fossa pain but it does raise a few important questions.

**Keywords:** Laparoscopic study; Right iliac fossa pain; False positivity; Clinically diagnosed cases; Acute appendicitis

## Introduction

The appendix first becomes visible in eighth week of embryological development as a protuberance of the terminal portion of caecum,during both antenatal and postnatal development. The growth rate of caecum exceeds that of appendix, so that appendix is displaced medially towards the iliocaecal valve. The relationship of base of appendix to the caecum remains constant, whereas the tip can be found in a retrocecal, pelvic, subileal, preileal, or right pericolic positions. These anatomic considerations have significant clinical importance in the context of acute appendicitis. Acute appendicitis is the most common cause of an "acute abdomen'' in young adults and thus appendicectomy is the most frequently performed urgent abdominal operation.

## Aims and objectives:

1. To assess the effectiveness of radiological investigations in diagnosing acute appendicitis**.**
2. To assess the authenticity of clinical examination in diagnosing acute appendicitis in Right Iliac Fossa pain.
3. To assess the effectiveness of lab investigations as an aid in making a diagnosis of acute appendicitis.
4. To study the effectiveness of laparoscopy for the treatment of cases of acute appendicitis.
5. To study the comorbid conditions as seen on laparoscopy for treating the cases of acute appendicitis.

## Materials and Methods

The study was conducted after approval from institutional thesis and ethical committee and informed consent of the patient will be taken. All patients were admitted to the surgery wards of Guru Nanak Dev Hospital attached to Govt. Medical College, Amritsar, with signs and symptoms of appendicitis. This was a time bound prospective study in which patients enrolled presented with clinical suspicion of acute appendicitis.

### Inclusion criteria:

Only patients undergoing laparoscopic surgery were included.

### Exclusion criteria:

Patients admitted for interval appendicectomy following recurrent appendicitis, appendicular abscess, appendicular mass previously treated conservatively or any other lump in relation to caecum, terminal ileum or appendix.

## Observations

The present study was done on 25 cases of acute appendicitis, admitted in the department of surgery, Guru Nanak Dev Hospital attached to Government Medical College, Amritsar. The history and examination was recorded , necessary biochemical and radiological investigations were done, patient underwent laparoscopic appendectomy and after that, appendix samples were sent for histopathological examination. As a result following observations were made.

Majority of the patients 10 out of 25 were in the age group of < 20 years while 9 patients were in the age group of 21-40. We had 6 patients above the age of 40 while no patient was there in the seventh decade of life in our study.

Out of a total of 25 patients, majority (60%) were males while 40% were females in our study.

### Table I Showing symptoms of acute appendicitis

Among 25 cases of acute appendicitis, tenderness in right iliac fossa was present in 100% of cases, while pain was present in 88% of cases, fever in 40% cases, anorexia in 88% of cases, nausea/vomiting in 92% of cases. Rebound tenderness was present in 76% of cases and leucocytosis was present in 80% of cases, as shown in table no. I.

| Symptoms | Present | | Absent | |
|---|---|---|---|---|
| | No. of cases | %age | No. of cases | %age |
| Migratory right iliac fossa pain | 22 | 88.00 | 3 | 12.00 |
| Anorexia | 22 | 88.00 | 3 | 12.00 |
| Nausea/Vomiting | 23 | 92.00 | 2 | 8.00 |
| Tenderness in right iliac fossa | 25 | 100.00 | 0 | 00.00 |
| Rebound tenderness | 19 | 76.00 | 6 | 24.00 |
| Elevated temperature | 10 | 40.00 | 15 | 60.00 |
| Shift to left | 20 | 80.00 | 5 | 20.00 |
| Leucocytosis | 21 | 84 | 4 | 16.00 |

### Table II Showing ultrasonographic features in acute appendicitis:

On ultrasonography abdomen, in majority of cases (72%), appendix was found to be congested and edematous, while in 4% of cases, appendix was found to be perforated. In 24% of cases appendix was thickened and fibrotic and in 20% cases as shown in table no. II.

| **Ultrasonographic features of appendix** | **Number of cases** |
|---|---|
| Thickened, fibrotic | **6( 24%)** |
| Congested, edematous | 18 (72%) |
| Gangrenous | **0( 0%)** |
| Perforated | 1 (4%) |
| Normal appendix | 0(0%) |
| **Total** | 25 (100%) |

### Table III Showing per-operative condition of appendix

In this study, intraoperatively, 52% of patients had congested edematous appendix, while 4% had perforated appendix, 8% were gangrenous appendix and 20% had condition of appendix which could fit into mild hyperemia to normal looking appendix, as shown in table no.III.

| **Per-operative condition of appendix** | **No. of cases** | **Percentage** |
|---|---|---|
| Thickened, fibrotic | 4 | 16.00 |
| Congested, oedematous | 13 | 52.00 |
| Gangrenous | 2 | 8.00 |
| Perforated | 1 | 4.00 |
| **Others** | **5** | **20.00** |
| **Total** | **25** | **100.00** |

### Table IV Showing intraoperative conditions other than appendicitis

In our study there were 5 cases showing intraoperative conditions other than appendicitis: Typhilitis /ileitis, malignancy, mobile caecum, hydrosalpinx. Associated mild hyperemia of appendix was present in all the 5 cases hence as a precaution appendix was removed in all .

| **Condition** | **Number of cases** |
|---|---|
| **Typhilitis/**ileitis | **2** |
| **Malignancy** | **1** |
| **Mobile caecum** | **1** |
| **Hydrosalpinx** | **1** |

**Table V Showing outcome**

**In present study,** 24(96%) cases were treated accurately in a single surgery and in 1(4%) case reoperation was done as shown in table no. V. That case turned out to be malignant and was operated with right hemicolectomy for the same on a later date

| Outcome | No. of cases | Percentage |
|---|---|---|
| Treated in single surgery | 24 | 96.00 |
| Reoperation | 1 | 4.00 |
| **Total** | **25** | **100.00** |

**Table VI Showing no of cases having positive and negtive finding in acute appendicitis**

**I**t is evident that in our study , we were able to make a preoperative diagnosis of acute appendicitis in all the 25 cases which we subsequently opened while per operatively only 20 out of 25 (80%) cases were a book picture of acute appendicitis while 5 (20%) cases could be labelled as borderline to normal because of concomitant pathology which was the primary cause of patient`s symptoms, as shown in table no. VI.

| Clinical features | | Radiological | | Per-operative | |
|---|---|---|---|---|---|
| Positive | Negative | Positive | Negative | Positive | Negative |
| 25 (100%) | 0 (0%) | 25 (100%) | 0 (0%) | 20 (80%) | 5 (20%) |

## Discussion

Berengario da carpi (1524) gave the first written account of appendix. Fleming andreas Vesalius, professor of anatomy at pauda (1543) described and illustrated the normal appendix with its normal relations to various organs.[1]

Warbricht (1749) described the valve at the junction of caecum and appendix.[2]

First appendicectomy was performed by Claudius Amyand of London in (1736). He removed appendix along with a pin which it contained from a scrotal hernia sac and patient recovered.[3]

Gay (1850) first exposed a disease appendix at operation for intestinal obstruction.[4]

Parker (1867) described the complication of appendicitis like gangrene, perforation and abscess formation.[5]

McBurney (1889) gave the maximum information about the signs and symptoms and diagnosis of appendicitis in acute cases. He described the point of maximum tenderness called the Mcburney's point.[6]

In the present study maximum number of patients were in the age group of less than 20 years of age. Age distribution as reported by Lewis(1975) in study of 1000 cases was less than 10 years in 9.1%, 11-20 years in 31.9%, 21-30 years in 35.5%.[7] Pieper and Kager (1982) observed the presence of pain in 99.8% of cases.[8] In the present study pain was present in 88% of cases. Vomiting was present in 92% of total cases in present study. Cope (1970) reported the nausea and vomiting are the main symptoms of acute appendicitis and are directly proportional to the degree of distension. In present study number of male patients were more (60%) as compared to female patients (40%). Shephard and Dhawan observed that the incidence of acute appendicitis in males was slightly more than the females.[9]

40% cases in the present study had fever at the time of admission. Roy et al, Samsi et al were of the view that fever was not the presenting complaint.[1O] In the present study congestion and edema was seen in 52% cases, whereas Bhatnagar et al reported it in 46% of cases. In the present study two cases of gangrene were reported whereas Bhatnagar et al reported in 2% of cases. The incidence of perforation of appendix in the present study was 4% which is less than the findings of Bhatnagar et al(1978) to the tune of 11%.[11] The incidence of normal appendix in the present study was 20% which is much more higher than (3%), in the study of Bhatnagar et al (1978). [11] A raised white cell count and C reactive protein level reflect inflammation and raise the probability that a patient with right iliac fossa pain has appendicitis.[12]

Laproscopy is very effective and excellent modality for treating the cases of appendicitis as well as other comorbidities or atleast diagnosing the later by a thorough visceral examination. Other advantages of laparoscopic appendectomy are a reasonable operation time and short learning curve.[13]

Although laparoscopic appendectomy is associated with slight increase in intra operative bleeding and urinary tract infection it is a safe procedure and its wide spread use is due to its better therapeutic effect.[14]

In our study we did not find any comorbidity which needed immediate attention. One case was diagnosed as hydrosalphinx and pelvic inflammatory disease. The tube was punctured and aspirated and fluid sent for examination which turned out to be inflammatory. All (100%) patients recovered and discharged from the hospital without any complication. Patel et al (2010) concluded that the diagnosis of acute appendix is a combination of all the modalities i.e. clinical features, ultrasound, intra operative findings.[15] But the present study , 20% cases were found negative for acute appendicitis intraoperatively, which were positive clinically and radiologically.

## Summary and Conclusion

The present study was conducted on twenty five patients admitted in Guru Nanak Dev Hospital, Amritsar, to assess the authenticity of clinical diagnosis of Appendicitis in cases of Right iliac fossa pain. Special emphasis was made to assess other pathologies which mimic acute appendicitis like Typhlitis, hydrosalpinx, ileitis or any other pathology presenting with Right iliac fossa pain.

Following conclusions were drawn from the study:

Majority of cases were in the age group of less than 20 years. The ratio of male to female was 60:40.Abdominal pain was present in 88% of cases. Fever was present in 40% of cases while nausea and vomiting were present in 92% of cases and rebound tenderness in 76% of cases. Tenderness in right iliac fossa was present in 100% of cases.100% of patients showed Alvorado score of >8 (s/o clinically positive).In majority of cases position of appendix was retrocaecal (52%), while pelvic position was present in 16% of cases, and preileal in 16% of cases. Ultrasound abdomen diagnosed all cases of acute appendicitis or pathology in association with it. Per operatively, in 80% of cases appendix was diseased (either inflamed or perforated), while only in 20% of cases it did not adhere to the clinical diagnosis of appendicitis. On laparoscopy , 2 cases were diagnosed as Acute Typhlitis/Ileitis ,1 case was of Hydrosalpinx, one with a mobile ceacum and the last case was diagnosed as appendicular malignancy for which Right hemicolectomy was done on a later date. All cases were discharged from the hospital uneventfully. Laparoscopy is very effective and excellent modality for treating the cases of appendicitis as well as other comorbidities or atleast diagnosing the later by a thorough visceral examination. In our study we did not find any comorbidity which needed immediate attention.

Acute appendicitis is a clinical diagnosis and although the radiological, biochemical and pathological examination may point a finger towards its diagnosis , the chances of error still exist and as was clear from our study , the false

positivity rate was 20% (5 out of 25 cases). This clearly proves that there is no way in the world that a 100% accurate diagnosis of acute appendicitis can be made with absolute certainty.

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