



General surgery

A CLINICAL STUDY OF APPENDICITIS WITH RELATION TO INTRA OPERATIVE POSITION AND POST OPERATIVE OUTCOME

Dr. Sivakumar Vubbara

Post graduate, department of general surgery, Viswabarathi medical college, penchikalapadu, Kurnool.

Dr. Krishna Naik*

Professor and HOD, department of General surgery, Viswabarathi medical college, penchikalapadu, Kurnool. *Corresponding Author

Dr. Anusha

Assistant Professor

ABSTRACT **Background/ objectives** Clinical picture of appendicitis varies with position of appendix and is a subject of controversy with many questions. The objective is to study the various positions of appendix and relation of the position to clinical Presentation and postoperative outcome. **Methods:** All patients undergoing appendectomy in viswabarathi medical college, Kurnool between march 2021 to march 2022 are included in this study. **Results:** There were total 50 cases, commonest position of appendix is Retro-caecal (32.6%), Followed by post-ileal (26.6%), pelvic (21.3%), paracaecal (8%), sub caecal (5.3%), pre-ileal (4%). Certain positions like fixed retro-caecal, pelvic and post- ileal presented more often atypically. Only 3 of 29(10.3%) cases with typical presentation had complications whereas 11 of the 21 cases (52.4%) with atypical presentation had complications.

KEYWORDS :

INTRODUCTION

Appendicitis is a common, sometimes confusing, and treacherous cause of acute abdomen at all ages. The diagnosis of appendicitis can be difficult, occasionally taxing the skills of the most experienced clinician. The delays in the diagnosis arise from errors either from the patient or physicians

The most common position of the appendix is variously described by many authors Wakeley et-al as retrocaecal (65.3%)¹, Collins et-al as pelvic (78.5%)² and Pickens G et-al as postileal³. Guidry SP et have concluded that anatomic variations of the location of appendix are often responsible for delays in the diagnosis of appendicitis⁴. Pool GV has stated that the paucity of symptoms and signs, in patients with hidden appendix, is responsible for the delayed diagnosis of appendicitis before perforation⁵.

With the advent of laparoscopic appendectomy, there is a controversy as to which is the better approach, as most of the appendices can be removed with a small incision by the open approach. Karl A Zucker et-al have opined that the laparoscopic appendectomy would be preferred approach is longer with its associated morbidity, which can be reduced by laparoscopic approach, also other abdominal viscera can be evaluated (tubes and ovaries). Post operative laddes procedure for internal malrotation and situs invertus. Left sided appendicitis may be confusing and is better evaluated by laparoscopy⁶.

Varshney et-al have concluded that the retrocaecal position of the appendix is less prone to infection⁷, where as Collins et-al have described higher incidence of perforation and serious complications in acute appendicitis⁸. Other studies one prospective⁹ and two retrospective studies have established that the retrocaecal position of the appendix does not alter the clinical course of acute appendicitis^{10,11}

Appendicitis in different positions may mimic various other diseases, like in retro-colic = colitis, post-ileal=ureteric colic, pelvic= enteric ileal perforation, pelvic inflammatory disease, torsion of ovarion cyst, ruptured tubal gestation, sub-hepatic= hepatitis, biliary colic.

From the above information it is evident that there are lots of controversies regarding the various positions of appendix and also clinical presentation of appendicitis, in relation to different positions.

Hence there is a need for the study of the various positions of appendix in patients with appendicitis and also the clinical picture and complications in the various positions

Our study is performed in clinical cases of acute appendicitis, the relation between the various positions of the appendix, and the clinical presentation and complications and postoperative outcome is studied.

METHODOLOGY

Materials for this study were obtained from patients admitted to viswabarathi medical college and hospital, Kurnool. From 2021 march to 2022 march with a diagnosis of appendicitis. All cases were subjected to clinical assessment using signs, symptoms and laboratory criteria, and also the position of the appendix after surgery.

All patients were subjected to ultrasound examination by a qualified radiologist to exclude any other associated pathology and also to confirm the diagnosis in doubtful cases.

After admission to ward detailed history was taken regarding presenting complaints, their duration, severity, sequence of onset of symptoms, mode of onset, progression, change in the pattern at the time of presentation and any atypical symptoms, enquiry was made into family history suggestive of appendicitis, menstrual and obstetric history and past history of appendicitis.

A careful and detailed abdominal examination of each patient made including local temperature, guarding/ rigidity, site of maximum tenderness any swelling or mass formation, rebound tenderness, Rovsing's sign, psoas sign obturator sign, Baldwin's sign and also per rectal examination is made to look for pelvic tenderness or mass formation.

Surgery was done either under general anaesthesia or spinal anaesthesia. Abdomen was opened with Lanz or Mc Burneys, or right lower para median incision. At surgery the position of the appendix was first identified before disturbing the structures and the position of the appendix identified and recorded together with the length of the appendix and also whether it was fixed or freely mobile in the peritoneal cavity, periappendicular collection, presence of perforation or other complications of appendicitis. Also a note was made the status of surrounding organs.

RESULTS

The total numbers of cases studied were 50; among the 50 cases, two cases presented with generalized peritonitis. The position of appendix in these cases was post-ileal and para-caecal respectively. Two cases had previously presented with appendicular mass hence these were managed conservatively and subsequently underwent interval appendectomy. All the other cases presented as acute appendicitis, which were either operated on emergency basis or electively, depending upon the severity of inflammation. Totally 15 cases (30%) were operated on an emergency basis and the rest as elective cases (70%)

In our series appendicitis was more common during the 3rd decade (48%), followed by the 2nd decade (32%). Appendicitis is slightly more common in males, M:F ratio is 2.8:1 in our series.

All the patients with acute appendicitis had pain and most of the patients had pain in the right iliac fossa. Even though many of the patients presented with atypical symptoms 21 of the 50 cases (42%) the site of maximum pain was in the right iliac fossa in 41 of 50 cases. Only 9 cases had maximal pain at a site other than right iliac fossa. Anorexia was seen in 76% of the cases, while nausea is less constant is seen in 46% of the cases. Vomiting is rarely seen (28%) and is of usually few episodes.

Tenderness in the right iliac fossa is a constant feature in all the cases of appendicitis. The site of maximum tenderness was in the right iliac fossa in 40 of 50 cases even though few had tenderness at other sites leading to difficulty in the diagnosis. Only 10 cases had maximal tenderness at a site other than right iliac fossa.

Leucocytosis or neutrophilia was present in 36 of the 50 cases, with an accuracy of 72%. Of the 15 cases, which were operated on an emergency basis, 6 (40%) were complicated by perforation, abscess or gangrene, whereas among the 35 elective cases only 8 were complicated (22.8%) The position of the appendix at laparotomy was variable with the most common position being retro-caecal (36%) The position of the appendix influences the clinical presentation of the appendicitis with the retrocaecal position (44.4% of cases), post-ileal position (54.5% of cases), and the pelvic position (60% of cases) in all the other positions (9.09% of cases) presented with atypical symptoms.

In case of retro-caecal position 88.8% of the fixed retro-caecal cases, which had got fixed, either because of the adhesions or the extra-peritoneal fixation of the appendix during development presented atypically and none of the cases with mobile appendix presented atypically. these patients presented with flank pain & tenderness and also symptoms of the upper urinary tract infection.

In post-ileal position, the patients presented atypically in 7 cases (57.9% of post-ileal cases) of which 3 cases were having mobile appendix, forming 27.3% of the total post-ileal cases and all 4 cases of the fixed appendix, forming 30.6% of the total post-ileal cases.

The complications like gangrene, perforation, abscess or mass formation or generalized peritonitis are seen in 50% of patients with retro-caecal and post-ileal location of the appendix, who presented atypically, whereas in those with typical presentation only 20% of the patients had complications. In pelvic position none of the patients with typical presentation had any complications and 50% of the patients with atypical presentation had complications. in all of the other positions complications were not seen except in one case of paracaecal location of the appendix, which presented with atypical symptoms.

Two cases with abscess and two cases with generalized peritonitis had delayed recovery. one case with appendicular abscess developed faecal fistula, which subsided with conservative management in 1-week duration but had persistent purulent discharge from the wound for 2 weeks. The other case of abscess had persistent purulent discharge. In those with generalized peritonitis, the oral intake was delayed for 5 days, and one patient developed wound infection, the other had uneventful recovery.

Observation Tables

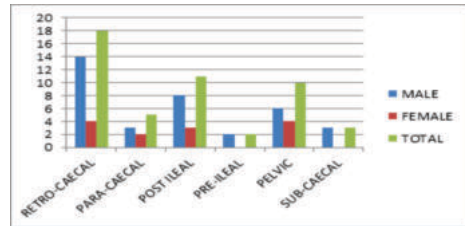
Age And Sex Distribution Of Cases

Age	Cases		
	males	Females	Total
0-9 years	-	-	-
10-19 years	10	06	16
20-29 years	18	06	24
30-39 years	04	01	05
40-49 years	04	-	04
50-59 years	01	-	01
60-69 years	-	-	-
Total	37	13	50

Incidence of various positions of the appendix in our study

Position	Cases		
	males	Females	Total
Retro-caecal	14	04	18
Para-caecal	03	02	05
Post-ileal	08	03	11

Pre-ileal	02	-	02
Pelvic	06	04	10
Sub-caecal	03	-	03
Sub-hepatic	01	-	01
Left-sided	-	-	-
Total	37	17	50



Age And Sex Distribution Of Cases



Most common position is Retrocaecal position.

Statistical comparison of position of appendix with clinical presentation & complications

Position	Typical presentation	Atypical	Total		
	Un-complicated	complicated	Complicated	Un-complicated	Complicated
Retro-caecal	8	2	4	12	6
Post-ileal	4	1	3	7	4
Pelvic	4	-	3	7	3
Para-caecal	4	-	1	4	1
Pre-ileal	2	-	-	2	-
Sub-caecal	3	-	-	3	-
Sub-hepatic	1	-	-	1	-
Total	26	3	11	36	14

The level of significance was calculated using ANOVA table (analysis of variance)

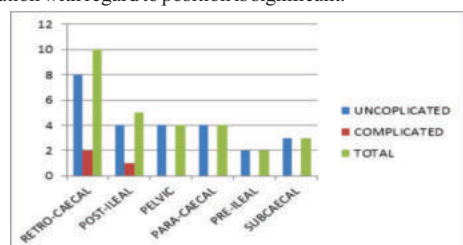
F1=6.21

F2=14.09

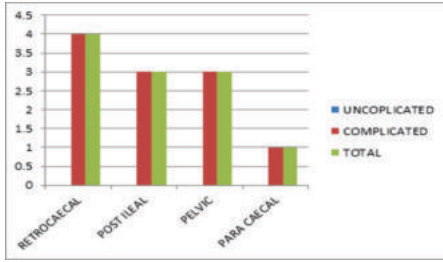
F table for (6,6) d.f=0.233

F table for (1,6) d.f=0.0043

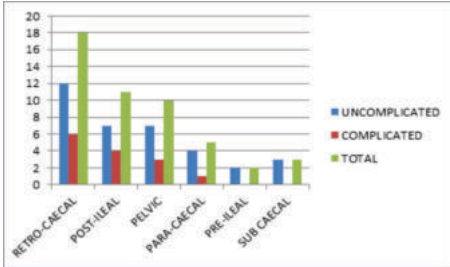
The value of F1 & F2 is greater than the F table value; hence the value is significant; hence the difference in the complications and clinical presentation with regard to position is significant.



Typical Presentation Of Appendicitis



Atypical Presentation Of Appendicitis



Total Presentations Of Appendicitis

Comparison of the various positions according to different authors

author	No. of specimens	Percentage occurrence of various positions of appendix.					
		Retro-caecal	pelvic	Post-ileal	Pre-ileal	Sub-caecal	Para-caecal
Wakeley,1933	10,000 autopsy	62	31	0.4	1	2	-
Shah&shah1942	591 autopsy&operative	51.4	16.6	15.6	11.7	4.7	-
solankeTF1970	125 autopsy	38.4	31.2	12	4	11.2	2.4
Varshney S 1996	600 operative	19	53	1	2	7	18
Golalipour MJ 2003	117 operative	32.4	33.3	2.6	18.8	12.8	-
Present study	50	38	20	22	4	6	10

Summary

This study was conducted from March 2021 to March 2022, for a period of 12 months in viswabarathi medical college and hospital, Kurnool. there were 50 cases included in this study.

Appendicitis is commonest during the 3rd decade (48%) followed by the 2nd decade (32%) Appendicitis is slightly more common in males than females (2.8:1) Most common position of appendix found in our study is retro caecal position.

The position of appendix influences the clinical presentation of the appendix even though most of the patients experience pain and tenderness in the right iliac fossa, depending on the position of the appendix patients may experience additional symptoms and signs, which frequently results in delayed diagnosis In retro-caecal appendicitis the patient may experience flank pain and tenderness and symptoms akin to upper urinary tract infections because of proximity of the appendix to the ureters.

In pelvic appendicitis patients will present with supra pubic pain and other symptoms and may occasionally have bowel disturbances.

Tenderness on digital rectal examination is constant feature.

In post ileal position patients will have subtle signs and symptoms and may occasionally have bowel disturbances.

In patients with fixed retro-caecal, post –ileal and pelvic position of appendix, diagnosis was delayed because of atypical clinical presentation, leading to increased incidence of complications.

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