



A CLINICOPATHOLOGICAL STUDY IN PATIENTS OF ACUTE APENDICITIS AND CORRELATION OF SYMPTOMS WITH DIFFERENT POSITIONS SEEN INTRAOPERATIVELY

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ABSTRACT

INTRODUCTION: The appendix, another named vermiform appendix (from the Latin word-appendix means "dangling" + "vermis" + "form" i.e.-dangling worm-shaped thing) is a diverticulum of caecum and marks the beginning of the colon in the confluence of taenias. The appendix is posteromedially attached to the caecum, about 2cm below the ileocecal junction. Taking into account that often the appendix is a mobile structure, the medical importance of its relative position has been questioned by some authors.⁹ In general, however some authors describe a significant relationship between its location and sign and symptoms of acute appendicitis.

OBJECTIVES: 1. To study the commonest position of appendix seen intraoperatively among the patients with acute appendicitis present in Emergency and OPD of Burdwan Medical College.

2. To identify the commonest position responsible for of gangrenous appendix and appendicular perforation.

3. To identify various signs and symptoms according to their different anatomical position and correlation with intraoperative findings

MATERIALS AND METHODS: This is a Prospective Observational Study in Burdwan Medical college and hospital, May 2019 to July 2020 on 100 patients. All willing patients in Emergency and OPD of BMCH with acute and recurrent appendicitis who underwent surgery are included in this study.

RESULTS: Appendicitis is commonest during 3rd decade (43%) followed by 4th decade (36%). Appendicitis is slightly commoner in females with male: female ratio 1:2.4..The most common position of appendix in our study is pelvic position.

KEYWORDS : Vermiform Appendix, Appendicitis, Ileocecal Junction

INTRODUCTION

The appendix, another named vermiform appendix (from the Latin word-appendix means "dangling" + "vermis" + "form" i.e.-dangling worm-shaped thing) is a diverticulum of caecum and marks the beginning of the colon in the confluence of taenias.

- The appendix is posteromedially attached to the caecum, about 2cm below the ileocecal junction.^{1,2,3,4,5,6}

The position of the appendix is extremely variable more than any other organ-and if it is too long, the appendix may extend to any part of abdomen.^{1,3,7,8} Thus as stated by MAINGOT, "The appendix is only part in body that has no fixed anatomy."

Although now a days this traditional principle is being questioned, it has its value, by emphasizing the fact that often, the appendix is one of the most mobile viscera, although its lack of normal position in itself so extraordinary.

Taking into account that often the appendix is a mobile structure, the medical importance of its relative position has been questioned by some authors.⁹ In general, however some authors describe a significant relationship between its location and sign and symptoms of acute appendicitis.^{10,11}

Signs and symptoms may show varying degree of discrepancy with the expected symptomatology, depending upon the position of appendix.

Appendicitis is the inflammation of appendix; it is a disease of Youngs with 40% of cases occurring between age 10 to 29 years. The associated mortality rate of appendicitis to be at least 67% without surgical treatment.

Acute appendicitis is the most common cause of surgical abdomen. There is no doubt that early diagnosis with prompt surgical intervention is the goal. In a general hospital most common abdominal operation is appendicectomy. This constitute about 25% of emergency abdominal surgeries in many hospitals.

Despite technological advances the diagnosis of acute appendicitis is predominantly a clinical one. Many patients present with a typical history and examination findings. The cause of acute appendicitis is unknown but is probably multifactorial- luminal obstruction, familial, dietary factors have been suggested. Prompt diagnosis and surgical referral may reduce the complications.

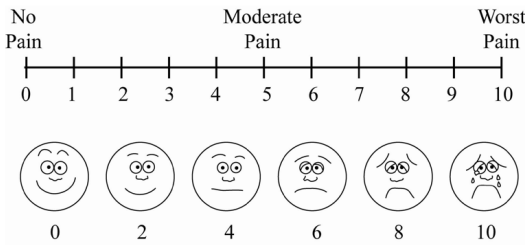
OBJECTIVES OF MY STUDY

- To study the commonest position of appendix seen intraoperatively among the patients with acute appendicitis present in Emergency and OPD of Burdwan Medical College.
- To identify the commonest position responsible for of gangrenous appendix and appendicular perforation.
- To identify various signs and symptoms according to their different anatomical position and correlation with intraoperative findings.

MATERIALS AND METHODS

This is a Prospective Observational Study in Burdwan Medical college and hospital, May 2019 to July 2020 on 100 patients. All willing patients in Emergency and OPD of BMCH with acute and recurrent appendicitis who underwent surgery are included in this study. All patients with appendicitis are admitted and operated during admission data related to sign and symptoms are collected. During operation position of the

appendix are carefully observed and noted, common positions causing gangrenous appendix is noted intraoperatively.



Visual analogue scale

RESULT AND ANALYSIS

Total number of cases in my study is 104. Among them 4 cases presented with appendicular lump and they were managed conservatively and were not included in this study. So result analysis and discussion and conclusion is based on 100 reported cases.

In our series appendicitis was found to be more common in female (71%) than male (29%), presenting in a ratio of 2.4:1(female: male).

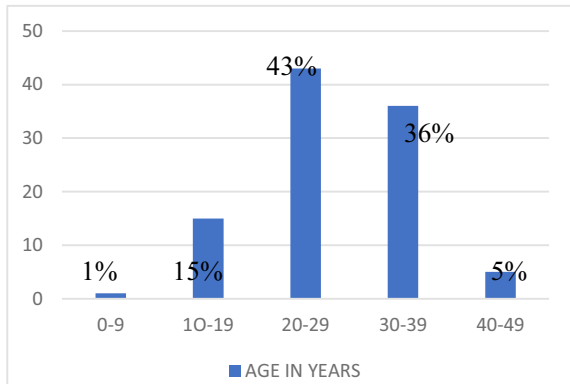
All the patients with acute appendicitis had pain and most of them had pain in the right iliac fossa. Even though many of the patients presented with atypical symptoms like, pain in lumbar region, history of UTI, history of diarrhoea or constipation. The site of maximum pain was typically in right iliac fossa, seen in 72 cases out of 100 patients. Other 28 cases had maximum pain at a site other than right iliac fossa.

Among 100 cases 18 cases were complicated in the form of gangrene, perforation or abscess formation as an intraoperative finding.

The position of appendix during laparotomy was found to be variable with the most common being pelvic (44%), followed by retrocecal (43%) position. As depicted in most of literatures retrocecal is found to be the most common position. But in my study pelvic position is encountered slightly more in number than other positions.

TABLE 1. Age and sex distribution of cases

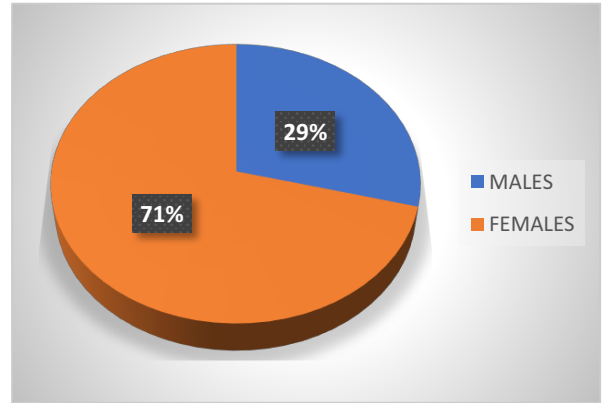
AGE(YEARS)	MALES	FEMALES	TOTAL	PERCENTAGE
0-9	0	1	1	1%
10-19	3	12	15	15%
20-29	14	29	43	43%
30-39	11	25	36	36%
40-49	1	4	5	5%
50-59	0	0	0	0%
60-69	0	0	0	0%
70-79	0	0	0	0%
TOTAL	29	71	100	



GRAPH 1. Showing age distribution

1. In LEVIS et al. series of 100 cases most common age group of acute appendicitis is of 20- 30 years in both males and females. According to BAILEY acute appendicitis is peak in teens and early 20s. the incidence is equal in males and females before puberty. In young adults male to female ration increases at age of 25 years. In my series maximum incidence is found in age group 10-39 years accounting to 94%. With maximum between 20-29 years accounting to 43% and incidence reduced after age of 40 years

2. SEX DISTRIBUTION



GRAPH 2. Showing gender distribution

Acute appendicitis is more common in females than in males. In LEVIS et al. series male to female ratio is 3:2. In my series male to female ratio 1:2.4.

3. DISTRIBUTION OF TYPE OF PAIN ON CLINICAL AND USG BASIS

TABLE 2. Showing distribution of type of pain in present study.

TYPE OF PAIN	NO. OF PATIENTS	PERCENTAGE
RIF	52	52%
RIF WITH UMBILICAL	37	37%
RIF WITH EPIGASTRIC	4	4%
RIF WITH LUMBAR	5	5%
UMBILICAL	2	2%
SHIFTING PAIN		
NEGATIVE	62	62%
POSITIVE	38	38%
CHARACTER		
COLICKY	66	66%
DULL ACHING	18	18%
DRAGGING	12	12%
PRICKING	4	4%

Abdominal pain is the major symptom of acute appendicitis. Variation in the anatomic position of appendix accounts for many of variations in the locus of somatic pain.

In my study 37% patients presented with pain around umbilicus which later shifted to right iliac fossa. Majority of the patients had colicky type of pain which was seen in 66% of patients.

TABLE 3. Distribution of USG findings of patients studied

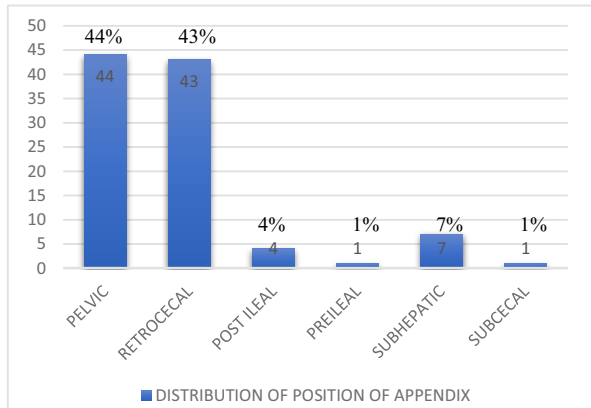
USG FINDINGS	NO. OF PATIENTS
NORMAL STUDY	21
PROBE TENDERNESS	14
INFLAMMATION	45
PERFORATION	6
FREE FLUID	2
SLUGGISH BOWEL MOVEMENT	1
COLITIS	1
USG NOT DONE	12

In my study 88 patients had done pre-operative USG. 12

patients had not done USG. Out of these acute appendicitis, inflamed cases were 45, perforation was suggested in 6 cases, and so on. This has a sensitivity of 78.4%. This also helps to rule out other causes of pain like PID, UTI, Bulky ovarian swelling.

TABLE 4. Distribution of position of appendix of patients studied.

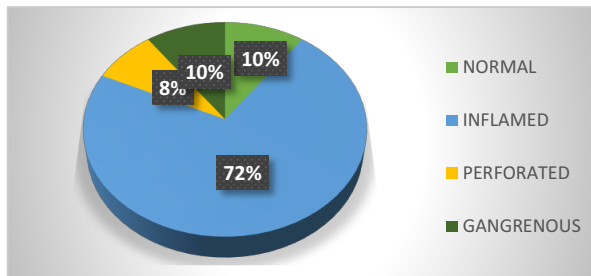
POSITION OF APPENDIX	NO. OF PATIENTS (n=100)	PERCENTAGE
PELVIC	44	44%
RETROCECAL	43	43%
POSTILEAL	4	4%
PREILEAL	1	1%
SUBHEPATIC	7	7%
SUBCECAL	1	1%
TOTAL	100	



GRAPH 3. Showing distribution of position of appendix of patients studied.

TABLE 5. Distribution of the intra operative conditions of the appendix.

CONDITION OF APPENDIX	NUMBER OF PATIENTS	%
NORMAL	10	10
INFLAMED	72	72
PERFORATED	8	8
GANGRENOUS	10	10

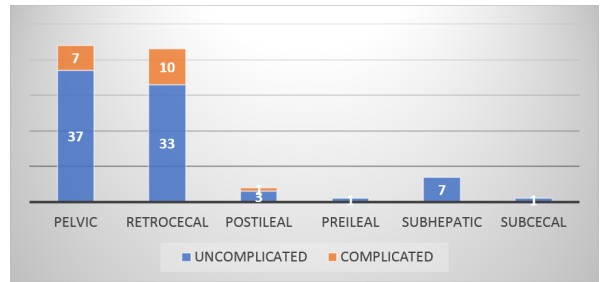


GRAPH 5- Distribution of intraoperative findings of appendix

In my study, inflamed appendix was seen in 72 cases, perforated appendix was seen in 8 cases and gangrenous appendix was seen in 10 cases.

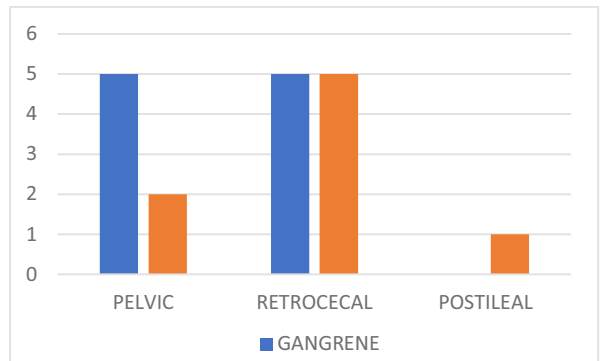
TABLE 6. Distribution of complications (Perforation, Gangrene) according to position of appendix.

POSITION OF APPENDIX	ACUTE CASES	GANGRENOUS CASES	PERFORATED CASES	% OF COMPLICATED CASES
PELVIC	37	5	2	15.9
RETROCECAL	33	5	5	23.2
POSTILEAL	3	0	1	25
PREILEAL	1	0	0	0
SUBHEPATIC	7	0	0	0
SUBCECAL	1	0	0	0



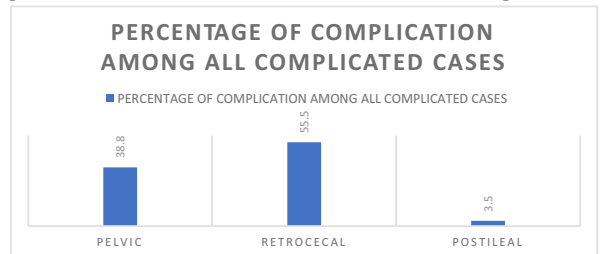
GRAPH 5. Distribution of complicated (perforation, gangrene) cases and uncomplicated cases according to position of appendix.

In my study, among 44 pelvic positions, 7 cases were found to be complicated (Gangrene, perforation). Among 43 cases, 10 cases were found to be complicated in retrocecal position.



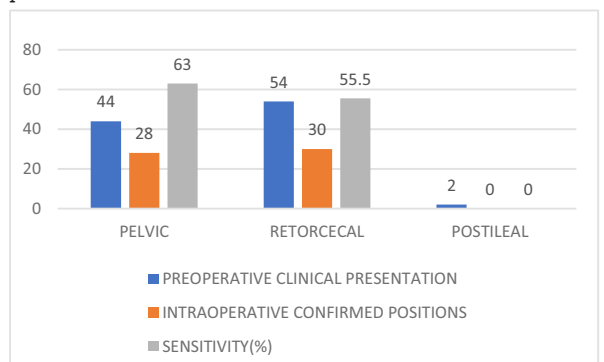
GRAPH 6. Distribution of number of individual complications according to individual position of the appendix among patients studied.

In my study, both gangrene and perforated cases in retrocecal position were found to be more in number than other positions.



GRAPH 7. Showing percentage of complications among all complicated cases according to position.

In my study total 18 cases were found to be complicated. Among them approximately 55.5% were seen in retrocecal position.



GRAPH 8. Showing correlation between position of appendix based on preoperative clinical presentation with intraoperative position.

TABLE 7. Distribution of position of appendix according to clinical presentation (pre operatively) with intra operative confirmation of pre operatively diagnosed position.

Position Of Appendix	Preoperative Clinical Presentation	Intraoperative Confirmed Positions	Sensitivity (%)
PELVIC	44	28	63%
RETROCECAL	54	30	55.5%
POSTILEAL	2	0	0%

DISCUSSION

The discussion is based on the observations and analysis of results from my study of 100 cases with respect to incidence, age, sex, symptoms, operative findings.

AGE INCIDENCE : In our study the common age group was 20-29 years (43%)

Author	Age Group	Percentage
Bailey And Love	Teens and early twenty	
Gallendo Gallego et al ⁵³	20-30 years	52%
Hamilton Bailey's Emergency Surgery	10-20 years	
Present Study	20-29 years	43%

SEX INCIDENCE

Several authors established that male sex predominates over female in the incidence of acute appendicitis.

Out of 100 cases 29 male patients (29%) and 71 female patients(71%) encountered in this study.

PAIN

Pain was a complaint in all cases. The initial location of pain in most of the cases presented with pain around umbilicus followed by pain in the right iliac fossa, which adds a diagnostic point in acute appendicitis.

Authors	Pain Around Umbilicus	Pain In The Right Iliac Fossa
Bailey And Love	50%	100%
Schwartz SI	50%	100%
Gallendo Gallego et. al ⁵³	49%	96.4%
Present Study	39%	98%

USG SENSITIVITY IN DIAGNOSIS OF ACUTE APPENDICITIS

In present study USG finding showed 78.4% sensitivity in diagnosing acute appendicitis.

TABLE 11. Sensitivity of USG in diagnosing acute appendicitis

AUTHORS	SENSITIVITY
DOUGLAS et. al ⁵⁶	94.7%
LEE JH et. al ⁵⁷	76-96%
ADAMS et. al ⁵⁸	86%
PRESENT STUDY	78.4%

POSITION OF APPENDIX

The position of appendix and its relation to clinical presentation and course of acute appendicitis has been a subject of controversy with various authors giving various conclusions.

VARSHNEY et. al concluded that retrocecal position is less prone to infection by comparing the incidence of retrocecal appendix in operated cases with previous autopsy studies. He hypothesised that retrocecal position of appendix is advantageous because, gravity aided drainage of appendicular lumen, that reduces the episodes of luminal obstruction and acute appendicitis.

SHEN GK et. al and WILLIAMSON WA et. al has established

that retrocecal position does not alter the clinical course of appendicitis.

PETERSON et. al described pelvic position to be the most common.

The theory of VARSHNEY et. al is not acceptable, as many of autopsy studies do not conclude that retrocecal position, as the most common position.

In my study there is an increased incidence in the complications in those with typical presentation. Pelvic position is the most common position (44%) in my study group.

In present study, retrocecal position is associated with more complications (55.5%). Acute retrocecal appendicitis is largely responsible for the atypical signs and symptoms in cases of acute appendicitis that causes a delay in diagnosis and cause many deaths.⁶¹

VARSHNEY et. al had described that advance appendicitis (perforation and gangrene) is more common in those with retrocecal appendicitis. They have given explanation that some early cases may be misdiagnosed as UTI, leading to delay in diagnosis and causing increased incidence in complications.⁶²

CONCLUSIONS

This study was conducted from May 2019 to July 2020, for a period of 1 year 2 months at Burdwan Medical College, West Bengal for the clinical groups diagnosed clinically and radiologically as acute appendicitis.

The following conclusions are drawn-

- Appendicitis is commonest in 3rd decade.
- Appendicitis is slightly more common in females, with a male: female ratio of 1: 2.4.
- Pain occurred in all patients. Typical pain is more common than atypical pain, site of pain varies with different position of appendix. In pelvic appendix presented with suprapubic pain, retrocecal appendix presented with pain in right lumbar region or right flank, subhepatic appendix presented with pain in right hypochondriac region.
- Patients with post ileal and pelvic had some extent of constipation or diarrhoea. Retrocecal appendix had a symptom of UTI due to the irritation of adjacent ureter. Pelvic appendix had symptoms of lower UTI due to the irritation of bladder.

There is increased risk of complications in those with atypical presentation than those with typical presentation. Most of the complicated cases were seen in retrocecal position.

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