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Research Article

CORRELATION OF SYMPTOMATOLOGY, INVESTIGATIONS AND OPERATIVE MEASURES TAKEN IN THE MANAGEMENT OF RECURRENT RIGHT ILIAC FOSSA PAIN

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A B S T R A C T

Appendicectomy is one of the most common surgery performed in general surgery. Our study aims to find out corelation of clinical symptoms, diagnosis and operative intervention taken to evaluate patients. Our study showed that appendicitis is common in both sex with retroceacal being most common position and non vegeterian diet being predisposing factor.

INTRODUCTION

Recurrent or chronic pain in right iliac fossa constitutes a common problem in all branches of medical practice. The correct management of the disorder depends upon careful clinical evaluation and mistakes are easy to make. One common mistake is the tendency among many people to rush into much abused diagnosis of a "chronic appendix" or as the only alternative to treat the patient as "neurotic". Either of these assumptions may lead to disasters consequences and to avoid such obvious pitfalls it is our practice to approach the diagnosis by seeking the answers to three questions .[1]

- Is there any organic cause for the pain apart from the appendix? If not,
- Is the appendix genuinely at fault? Or
- Is the pain of functional origin?.

This order of questioning has been chosen deliberately, because it often happens that the appendix is removed, when some other cause for pain is present, and because it too often happens that the appendix is removed without reasonable evidence that it is diseased. Soon after acute appendicitis was described in 1886 by fitz[2], chronic appendicitis evolved as a label for patients with a variety of abdominal complaints. Overuse of appendectomy without improvement in symptoms gradually discredited the idea of chronic or recurrent appendicitis[2].

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Although once controversial[3,4], recurrent and chronic appendiceal disease is now well documented in medical literature[5-11], some authors have proposed the following criteria for chronic appendicitis: persistence of symptoms for more than two weeks, confirmation of chronic appendiceal inflammation on pathologic exam and relief of symptoms following appendectomy[5,7].Clinical signs of chronic appendicitis are similar to those of acute appendicitis but have a more prolonged duration[12]. Recurrent sub-acute appendicitis and recurrent appendicular colic may be considered two types of chronic appendicitis.[1] Histopathologic findings of chronic appendicitis include an inflammatory infiltrate consisting of lymphocytes, histiocytes, and eosinophils besides associated fibrosis of the appendiceal wall[13]. In this study we evaluated a group of 100 patients who were suffering from recurrent/chronic attacks of pain and discomfort in the right iliac fossa over a period of 2 years.

Aims and Objectives of Study

1. To correlate the symptomatology, investigations in diagnosis and operative measures taken in the management of recurrent right iliac fossa pain.
2. To determine the risk factors such as age, sex, diet, addictions if any.
3. The varied presentations of this condition and complications

MATERIALS AND METHODS

Patients

Inclusion criteria

A total of 100 patients, age between 18-70 years who presented in a tertiary care centre from November 2011 to November 2013 were included in this prospective study. -Both males and females were included. -Patients who presented with recurrent right iliac fossa pain and had more than one similar episode in the past.-Consented to be included in the study. Basic epidemiological information was collected from every patient. Patients were recruited from a tertiary care hospital of urban India. They were picked up from all the daily general surgery outpatient services and from Emergency Surgery Services with prior permission from all surgical units and after ethical clearance.

Exclusion criteria

1. Patients below 18 years and above 70 years were excluded from this study. 2. Female patients with pregnancy were excluded. 3. Patients with first episode of acute appendicitis were excluded. 4. Patients having clinical suspicion of appendicitis but on investigations (Roentgenogram, Ultrasonography, Computed Tomography scan) proved to have a different pathology.

***Statistical analysis*:** The data was entered using Microsoft Excel for Windows and Statistical package for the Social Sciences software for Windows (SPSS Inc., Chicago, Illinois, USA) version 17.0 was used for data analysis. Statistical tests according to nature and distribution of data, Pearson's chi square test was applied to assess the significance of the study findings. Statistically significant was considered at $p < 0.05$. Data distribution was studied with the help of …- Descriptive statistics using mean, standard deviation and proportions.- Inferential statistics using Pearson's chi square test.

Outcome analysis

The following observations were made after analysing the collected data.

- Correlation of symptomatology, investigations and management of patient with recurrent right iliac fossa pain.
- Risk factors and epidemiological factors tested.
- Patients followed up and inference drawn on the outcome with different protocols of management followed.
- Correlation between different variables tested.
- Various studies found out and outcomes compared with our results.

Variables tested

Relationship of Recurrent/Chronic Appendicitis with symptoms and signs like Pain, Anorexia, Nausea, Tenderness, Rebound tenderness, Lump, Elevated temperature, Dyspepsia. Laboratory criteria like leukocytosis with Radiological variables like X-ray Abdomen, USG, Ba-meal follow through study, CT scan were tested. Also relationship of recurrent or chronic appendicitis with history of colitis, stone/UTI/ hematuria, PID/leucorrhoea, diarrhoea, dyspepsia, constipation, worm infestation, URTI were tested.

Withdrawal criteria and end points

Patients were withdrawn from the study, if they wished to discontinue the study, or they lost to follow up.

OBSERVATIONS AND RESULTS

The study was carried out in 100 patients with a clinical diagnosis of recurrent right iliac fossa pain and admitted under the department of surgery in all surgical units between October 2011 and October 2013. All required ethical approval was taken .The patients signed an Informed consent form (ICF) in a language understood by them. They were investigated in detail regarding their age of presentation, gender, their presenting complaints, addictions like smoking and alcoholism, diet whether pure vegetarian or mixed diet, duration and character of symptoms, vital parameters and accordingly subjected to various investigations as required and depending upon history, clinical examination and investigations, modality of management was decided.

Accordingly, data was calculated and observations and results were interpreted. In our study, we started off with basic parameters of presentation like age, sex of the patient.

Table 3

AGE			
SEX	Mean	N	Std. Deviation
Male	36.52	50	9.865
Female	32.12	50	10.709
Total	34.32	100	10.479

So the mean age of presentation in both the genders combined was 34.32 years. The male to female ratio in our study was 1:1. Table

		Count	Column N %
Age	<=30 years	42	42.0%
	31-50 years	52	52.0%
	>=51 years	6	6.0%
	Total	100	100.0%

In present study it was observed that incidence of recurrent/chronic appendicitis was maximum in the middle age group of 31- 50 years (52%) as compared to the older population > 50 years (6%), and infact the trend is seen to decrease as the age grows. Mean age of presentation in our study was 34.32 years.

Next variable we interpreted was the sex of the patient. Amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations… Table.4

		Count	Column N %
SEX	Male	50	50.0%
	Female	50	50.0%
	Total	100	100.0%

In present study it was observed that incidence of recurrent right iliac fossa pain was equal in both sexes.

Next variable we interpreted was nature and character of pain. Amongst 100 patient of recurrent right iliac fossa pain who presented to us, the following were the observations

Table Nature and character of recurrent right iliac fossa pain compared.

		Count	Column n %
Rec. Intermittent RIF pain	Yes	68	68.0%
	No	32	32.0%
	Total	100	100.0%
Rec. Continous RIF pain	Yes	32	32.0%
	No	68	68.0%
	Total	100	100.0%
Shifting of pain	Yes	13	13.0%

	No	87	87.0%
	Total	100	100.0%

In present study it was observed that incidence of intermittent right iliac fossa pain was 68 % as compared to the continuous recurrent right iliac fossa pain which was 32%. Shifting of pain, the classic feature of acute appendicitis was present only in 13% of cases.

Next variables we interpreted were the nausea/vomiting, fever and anorexia. Amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table Nausea/Vomiting, Fever and Anorexia compared in our study. Results are

Nausea/Vx	Yes	79	79.0%
	No	21	21.0%
	Total	100	100.0%
Fever	Yes	27	27.0%
	No	73	73.0%
	Total	100	100.0%
Anorexia	Yes	28	28.0%
	No	72	72.0%
	Total	100	100.0%

In present study it was observed that nausea/vomiting was present in 79 % cases of recurrent right iliac fossa pain, fever was present in 29 % of cases of recurrent right iliac fossa pain whereas anorexia was present in 28 % of cases of recurrent right iliac fossa pain.

Table: Nature and character of pain with symptoms in Recurrent RIF Pain

	Rec. Intermittent RIF pain	Rec. Continuous RIF pain	Shifting of pain	Nausea/vx	Fever	Anorexia	Total
Male	35	15	5	44	14	13	50
Female	33	17	8	35	13	15	50
Total	68	32	13	79	27	28	100

Next variable we interpreted was the history of colitis/IBD, UTI/Stone, PID/Leucorrhoea amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table: History of Colitis/IBD, UTI/Stone, PID/Leucorrhoea compared in our study. Results are

		Count	Column n %
H/o Colitis/IBD	Yes	13	13.0%
	No	87	87.0%
	Total	100	100.0%
H/o UTI/Stone	Yes	15	15.0%
	No	85	85.0%
	Total	100	100.0%
H/o PID/Leucorrhoea	Yes	11	24.4%
	No	34	75.6%
	Total	45	100.0%

In present study it was observed that incidence of history of colitis/inflammatory bowel disease was 13% cases of recurrent right iliac fossa pain, history of urinary tract infection was 15% cases of recurrent right iliac fossa pain while history of pelvic inflammatory disease/leucorrhoea was 11% cases of recurrent right iliac fossa pain.

Next variable we interpreted was the history of diarrhoea, dyspepsia, constipation, worm infestation, upper respiratory tract infection amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table: History of Diarrhoea, Dyspepsia, Constipation, Worm infestation and URTI were compared in our study. Results are

H/o Diarrhoea	Yes	13	13.0%
	No	87	87.0%
	Total	100	100.0%
H/o Dyspepsia	Yes	36	36.0%
	No	64	64.0%
	Total	100	100.0%
H/o Constipation	Yes	15	15.0%
	No	85	85.0%
	Total	100	100.0%
H/o Worm infest.	Yes	5	5.0%
	No	95	95.0%
	Total	100	100.0%
H/o URTI	Yes	5	5.0%
	No	95	95.0%
	Total	100	100.0%

In present study it was observed that incidence of diarrhoea was 13%, dyspepsia was 36%, constipation was 15%, worm infestation was 05% and upper respiratory tract infection was 05% of all cases of recurrent right iliac fossa pain.

Next variable we interpreted was the personal history of the patient. Amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table: Personal history studied. Results are

		Count	Column N %
Smoking	Yes	7	7.0%
	No	93	93.0%
	Total	100	100.0%
Tobbaco	Yes	6	6.0%
	No	94	94.0%
	Total	100	100.0%
Diet (Veg/Mixed)	Mixed	82	82.0%
	Veg	18	18.0%
	Total	100	100.0%
Alcohol	Yes	16	16.0%
	No	84	84.0%
	Total	100	100.0%

In present study it was observed that incidence of smoking was 7% in cases of recurrent right iliac fossa pain, tobacco chewing present in 6 % cases of recurrent right iliac fossa pain, 82 % cases of recurrent right iliac fossa pain were taking mixed diet,16% cases of recurrent right iliac fossa pain were consuming alcohol.

Next variables we interpreted were clinical findings of tenderness in right iliac fossa, rebound tenderness in right iliac fossa, lump in right iliac fossa amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table: Clinical findings studied. Results are

		Count	Column n %
RIF tenderness	Yes	95	95.0%
	No	5	5.0%
	Total	100	100.0%
Rebound tenderness	Yes	25	25.0%
	No	75	75.0%
	Total	100	100.0%
Lump in RIF	Yes	13	13.0%
	No	87	87.0%
	Total	100	100.0%

In present study it was observed that right iliac fossa tenderness was present in 95% of cases of recurrent right iliac fossa pain. Rebound tenderness is present in 25% cases of recurrent right iliac fossa pain. Lump in abdomen was present in 13 % of cases of recurrent right iliac fossa pain.

Next variables we interpreted were haemoglobin and complete blood count of the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table: Laboratory findings are studied. Results are

	HB %	CBC
N	18	5
Mean	10.00	12000.00
Median	10.00	12000.00
Mode	10	11500[a]
Std. Deviation	.899	612.372
Minimum	8	11500
Maximum	12	13000

a. Multiple modes exist. The smallest value is shown.

In present study the different causes of recurrent right iliac fossa pain are found to be as follows..

Table: Final diagnosis of all 100 cases of Recurrent RIF Pain in our study

		Male		Female	
		Count	Column N %	Count	Column N %
Final diagnosis	Pelvic Inflammatory Disease	2	4.0%	2	4.0%
	Amoebic Colitis	2	4.0%	0	.0%
	Appendicular mass	1	2.0%	1	2.0%
	Inflammatory Bowel Disease	5	10.0%	3	6.0%
	Mesenteric Adenitis	1	2.0%	3	6.0%
	Recurrent Appendicitis	33	66.0%	35	70.0%
	Right Ovarian Cyst	1	2.0%	1	2.0%
	Tubercular Enteritis	3	6.0%	3	6.0%
	Ureteric Calculi	2	4.0%	2	4.0%
	Total	50	100.0%	50	100.0%

Out of 100 cases of recurrent right iliac fossa pain 68 patients were of recurrent/chronic appendicitis, 08 patients were of inflammatory bowel disease, 06 of tubercular enteritis, 04 each were of pelvic inflammatory disease, non-specific mesenteric adenitis and right ureteric calculi, two each of appendicular mass, amoebic colitis and right ovarian cyst.

Next variable we interpreted was the ba study of the patient. Out of the 100 patients of recurrent right iliac fossa pain who presented to us, ba-meal follow through study was done in 91 patients, following were the observations…

Table: Ba study in the management of Recurrent RIF Pain in our study

		Count	Column N %
Ba-Meal (Appendix)	Fecoliths	37	40.66%
	Not Visualised	12	13.19%
	S/o IBD	3	3.30%
	S/o tubercular. enteritis	4	4.40%
	Visualised	35	38.46%
	Total	91	100.00%

In present study it was observed that fecoliths were present in 37 (40.66%) cases of recurrent right iliac fossa pain, appendix was not visualised in 12 (13.19%) cases of recurrent right iliac fossa pain, appendix was visualised in 35 (38.46%) cases of recurrent right iliac fossa pain, ba-meal follow through study was suggestive of tubercular enteritis in 04 (04.40%) cases of recurrent right iliac fossa pain, was suggestive of inflammatory bowel disease in 03 (03.03%) cases of recurrent right iliac fossa pain.

Next variable we interpreted was the ultrasonography findings in patient of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table : USG in the management of Recurrent RIF Pain in our study

		Count	Column N %
USG	Ileal wall thickning	3	3.0%
	Mesenteric LNs	1	1.0%
	N	72	72.0%
	Probe tenderness	3	3.0%
	Right ovarian cyst	4	4.0%
	S/o appendicitis	11	11.0%
	S/o Chronic Appendicitis	2	2.0%
	s/o Rif mass	4	4.0%
	Total	100	100.0%

In present study it was observed that ultra-sonography was normal in 72 (72%) cases of recurrent right iliac fossa pain, suggestive of appendicitis in 13 patients, suggestive of right iliac fossa mass in 04 cases of recurrent right iliac fossa pain, right ovarian cyst was present in 04 patients of recurrent right iliac fossa pain, suggestive of ileal wall thickening in 03 cases of recurrent right iliac fossa pain, enlarged lymph nodes were present in 01 patient of recurrent right iliac fossa pain, probe tenderness was present in 01 patient of recurrent right iliac fossa pain.

Next variables we interpreted was the computed tomography findings in selected patients of recurrent right iliac fossa pain, following were the observations…

Table: CT in the management of Recurrent RIF Pain in our study

CT	Count	Column N %
S/o Chronic Appendicitis	12	41.38%
S/o Tubercular Enteritis	3	10.34%
S/o PID	3	10.34%
S/o IBD	2	6.90%
S/o Appendicular mass	1	3.45%
Tubo-ovarian mass	1	3.45%
Enlarged Abdo LNs	1	3.45%
Large Bowel Thickening	1	3.45%
Mesenteric LNPathy	1	3.45%
Multiple appendicoliths	1	3.45%
Rt Ovarian Cyst	1	3.45%
S/o crohns disease	1	3.45%
S/o mesenteric adenitis	1	3.45%

Table: Management of Recurrent Right iliac fossa pain in our study.

		SURGERY/CONSER			
		Conservative		Operative	
		Count	Column N %	Count	Column N %
FINAL DIAGNOSIS	Pelvic Inflammatory Disease	4	12.1%	0	.0%
	Amoebic Colitis	2	6.1%	0	.0%
	Appendicular mass	2	6.1%	0	.0%
	Inflammatory Bowel Disease	8	24.2%	0	.0%
	Mesenteric Adenitis	4	12.1%	0	.0%
	Recurrent Appendicitis	1	3.0%	67	100.0%
	Right Ovarian Cyst	2	6.1%	0	.0%
	Tubercular Enteritis	6	18.2%	0	.0%

	Ureteric Calculi	4	12.1%	0	.0%
	Total	33	100.0%	67	100.0%

In present study out of 100 cases of recurrent right iliac fossa pain 33 (33%) cases were managed conservatively while remaining 67 (67%) diagnosed cases of recurrent right iliac fossa pain were managed with appendicectomy.

Table: Management of Recurrent RIF Pain in our study

		Count	Column n %
Management	Appendicectomy	67	67.0%
	Conservative	33	33.0%
	Total	100	100.0%

Table: Management of Recurrent/Chronic Appendicitis in our study

		Count	Column N %
OPEN/ LAPAROSCOPIC	LAPAROSCOPIC	13	19.44%
	OPEN	54	80.56%
	Total	67	100.0%

In present study 33 cases of recurrent right iliac fossa pain were managed conservatively whereas 67 cases were managed with operative intervention. Out of the 67 operated cases 54 cases were managed by open appendectomy whereas 13 cases were managed by laparoscopic appendectomy.

Next variable we interpreted was the position of appendix amongst the 100 patients of recurrent right iliac fossa pain who presented to us, the following were the observations…

Table: The various positions of appendix were found out in our study…

		Count	Column N %
Position of Appendix	Paracaecal	7	10.4%
	Pelvic	12	17.9%
	Postileal	1	1.5%
	Preileal	3	4.5%
	Retrocaecal	44	65.7%
	Total	67	100.0%

So in our study, the most common position of appendix was found to be retrocaecal appendix in 44 cases of recurrent right iliac fossa pain (65.70%) and the least common was post-ileal found in 01 case of recurrent right iliac fossa pain with an incidence of 1.5 %.

Next variable we interpreted was the histo-pathological examination of the specimen

Table: Histopathological examination of specimen in our study

		Count	Column N %
Histopathology	Not S/o appendicitis	11	16.42%
	S/o appendicitis	56	83.58%
	Total	67	100.0%

Of the 67 cases which got operated, results of histopathology examination of the specimen were as follows….

Chronic appendicitis - 39 cases (58.21)
Acute appendicitis - 17 cases (25.37)
Normal appendix - 11 cases (16.42)

So on histopathology majority turned out to be Recurrent/chronic appendicitis i.e. 56% and 11% turned out to be normal appendix so in our study the overall rate of negative appendectomy was 11%.

Next variable we interpreted was mortality in our study.

Table Mortality in our study

		Count	Column N %
Postoperative Complications	Nil	67	100.0%
	Total	67	100.0%

In our study there was no mortality on follow up of patients at 3 months.

Next variable we interpreted was the result of our study.
Table: Result of our study

		Surgery/Conser			
		Conservative		Operative	
		Count	Column N %	Count	Column N %
RESULT	Cured	12	36.4%	61	92.4%
	Followed up	15	45.5%	4	6.1%
	Improved	6	18.2%	1	1.5%
	Total	33	100.0%	66	100.0%

In present study it was observed that 73 (73%) cases of recurrent right iliac fossa pain were cured , 19 (19%) cases were followed up for persistent of some complains while 07 cases were slightly improved in their complains.

Pearson Chi-Square Tests		
		SURGERY/CONSER
RESULT	Chi-square	35.809
	df	2
	Sig.	.0001

DISCUSSION

In the present study of 100 patients admitted to a tertiary medical centre with recurrent right iliac fossa pain over a year 2011-2013, it was observed that incidence of recurrent right iliac fossa pain was maximum in the middle age group of 31-50 years (52 %) and was low in the older population > 50 years(06%). Mean age of presentation presentation in our study was 34.32 years. Addiss DG [14] *et al* found that appendicitis is most frequently seen in patients in their second through fourth decades of life, with a mean age of 31.3 years and a median age of 22 years, this was consistent with our study. Safaee etal[24a] found out that demographic analyses of recurrent appendicitis showed a significantly higher relative prevalence in women (62.5%) and also in the age group of older than 25 years (50%). As is evident, our result regarding age group is consistent with study, and is contrary to acute appendicitis, which is said to predominantly affect men [3,20], particularly within the second and third decades of life[3]. Flum *et al* [15] found that the incidence was highest in males aged 10-14 years (27.6 per 10,000 population per year) and in females aged 15-19 years (20.5 per 10,000 population per year). In persons aged 45 years or more, appendicitis rates remained relatively constant at approximately six per 10,000 for males and four per 10,000 for females. The median age for both males and females with primary positive appendectomy was 21 years; 69 percent of persons with appendicitis were less than 30 years old. The male to female ratio in our study was 1:1 which is not consistent to the study demonstrated by Addiss DG *et al* [14] wherein he found out the ratio to be 1.4:1. Diet also seems to play a role in the etio-pathogenesis of appendicitis. Obstruction to the appendicular lumen due to faecolith is a recognized risk factor for appendicitis. In our study, we found that out of 100 patients of recurrent right iliac fossa pain 82 % were consuming mixed diet and 18% had a vegetarian diet. Two recent papers arising from the Oxford Vegetarian Study, a prospective study of the health of 6,000 vegetarians and 5,000 meat-eating controls, provided evidence

of the health benefits of the vegetarian diet over mixed diet. Morris and Barker *et al* [17] in their study in the United Kingdom and Ireland concluded that in Britain and Ireland appendicitis has a higher incidence in communities with high consumption of potatoes, sugar, and cereals, and a lower incidence in communities with high consumption of non-potato vegetables, in particular green vegetables and tomatoes, and of fruit. . A lot of controversy heralds the relationship of smoking with appendicitis. Many different studies have tried to find out the association, all over the world. In present study, out of 68 cases of appendicitis, 50 were males and remaining 50 were females. Smokers were all males. So around14 % of the male patients were smokers.

According to our study, after analysing statistically [using Fischer's exact test and odds ratio], there appears no positive relation between smoking and having appendicitis and subsequent appendectomy, though clinically it appears that less smokers than non smokers seem to have appendicitis and subsequent appendectomy. Oldmeadow and Wood [18] conducted a trial in Australia and postulated that there is a evidence for an association between active tobacco usage and onset of appendectomy. The analysis accounted for gender, year of birth and the difference between the age of exposure to smoking initiation and the age onset of appendectomy. The findings indicated that smoking is a risk for appendectomy, especially in those who are currently smoking, irrespective of the intensity or duration of their habit. Sensitivity analysis revealed indifference to definitions of non smokers. The evidence suggests that cessation of smoking relates to a decrease in risk of the disease of 15% per year since quitting. Montgomery [19] suggested that smoking is a cofactor which increases the risk of having appendicitis, in the light of the unadjusted odds ratio which he found to be 2.34 (95%-CI 1.52-3.59) for appendectomy associated with cigarette smoking. In our setting the unadjusted odds ratio was ? which falls? in the range which Montogomery suggested. In one of the interesting study done by Ergul *et al* [20], he found that smoking less than 5 years does not affect the risk of having appendicitis. On the contrary, he found that smoking over 15 years and being a former smoker decreased the incidence of having acute appendicitis ($p=0.003$, $p<0.001$ respectively). Also, according to him, smoking decreased the risk of having acute appendicitis in women (OR: 0.81 [95%-CI 0.58-1.13]). Moreover, smoking had a statistically significant protecting effect against acute appendicitis in men (OR: 0.64 [95%-CI 0.46-0.89]).

In our study, 16 % of the total patients were alcoholics but also there appears no positive correlation between being an alcoholic and the incidence of operative management required. The most common position of appendix in the present study was found to be retro-caecal appendix with 65.7 % incidence and the least common was sub-hepatic with an incidence of 1.5 % which is in accordance to the landmark study done by Sir Wakeley[22]who studied anatomy and positions of appendix in 10,000 patients. A study performed in 2005 in the Netherlands found that approximately 15% of the patients underwent a negative appendectomy, a number similar to another large Swedish study done by Andersson, Hugander *et al* [23]. The negative appendectomy rate was 13% in another large North American study done by Hale and Molley[24]. Chichcom *et al*.(2011): state that removal of the appendix cures the pain in a majority of cases of recurrent appendicitis(87%)[16]. Amongst the 11 cases wherein the appendix was normal on histopathology 5 were symptomatically cured, 1 patient had mesenteric lymphadenitis which was conservatively managed and one patient had right ovarian cyst for which Gynaecology reference was taken intra-operatively and patient transferred and followed up regularly, the remaining 4 patient were not cured from their symptoms and advised to follow up. So we concluded that in patients with uncertain diagnosis, especially in females, it is advisable to investigate the patient further (CT scan and Pelvic USG) and consider differential diagnosis to rule out other pathologies so that the negative appendectomy rate (which was around 11% overall and in females? 33.33%) will be reduced and unnecessary appendectomies will be avoided, at the same time more vigilance will be kept on other pathologies which form the differential diagnoses of appendicitis. There was no mortality in our study. According to Cooperman [25], the mortality from appendicitis has steadily decreased from a rate of 9.9 per 100,000 in 1939 to 0.2 per 100,000 today (study done in United States). Among the factors responsible are advances in anaesthesia, antibiotics, IV fluids, and blood products. Principal factors influencing mortality are associated co-morbidities and the age of the patient. Death is usually attributable to uncontrolled sepsis-peritonitis, intra-abdominal abscesses, or gram-negative septicaemia. Pulmonary embolism continues to account for some deaths.

SUMMARY AND CONCLUSION

Thus, at the end of our observations and discussion of 100 patients of recurrent right iliac fossa pain, we summarized the study on the whole and concluded that....

- Recurrent appendicitis is a commonly encountered surgical entity and should be managed with appendectomy.
- Mean age of presentation in our study was 34.32 years. The male to female ratio in our study was 1:1.
- Non vegetarian and mixed diet seems to contribute to the higher incidences of recurrent appendicitis and it's complications, as compared to vegetarian diet.
- Role of smoking is controversial in contributing to the aetiology of appendicitis.
- The most common position of appendix in the present study was found to be retro-caecal appendix (65.7 %) and the least common was post-ileal (1.5 %)
- Post operative follow up should be mandatory and any complications if suspected, should be picked up at the earliest.
- The negative appendectomy rate in our study was 11%.
- There was no mortality in our study.

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