

**ACUTE APPENDICITIS AND ASSOCIATED  
PATHOLOGIES IN FEMALES****Ali Hameed Kadhem<sup>@</sup>, A'amena Abdul-Ameer Muhsin\* & Wisam Hamza Al-Sewadi<sup>#</sup>**

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**Abstract**

In females with right lower quadrant acute abdominal pain, gynecological & obstetric pathologies are the main disorders that should be eliminated from the diagnosis of acute appendicitis. This study included pathologic findings in 120 appendectomies in Al-Sadr Teaching Hospital in which exploration was performed as emergency acute appendectomies in 52 cases, while other pathologic processes related to gynecological diseases are distanced from appendicitis intraoperatively.

There is a high percentage of coexistence with ovarian cyst in all its types whether twisted, ruptured, hemorrhagic or corpus luteal cyst. Other conditions included: ectopic pregnancy, uterine fibroid, Pelvic Inflammatory Disease (PID), Tubo-Ovarian Abscess (TOA), benign cyst adenoma & endometriosis. Also rarely, meckel's diverticulum that was either incidental finding or discovered by imaging techniques.

*Keywords: Surgery, Associated pathologies, Abdomen, Acute appendicitis, Females*

**Introduction**

Anatomically, vermiform appendix is located at the base of the cecum, near the ileocecal valve where the taenea coli converge on the cecum, it is approximately 8-10 cm long in adult. Normal anatomical variations included; retrocaecal/retrocolic (75%), subcaecal and pelvic (20%) and preileal and postileal (5%)<sup>1,2</sup>.

Acute appendicitis, inflammation of the vestigial vermiform appendix, is the most common cause of acute abdomen in young adolescents<sup>3-5</sup>. It is a common cause of acute abdominal pain in women of reproductive age, and appendectomy represent the most common of all emergency surgeries carried out in those patients<sup>6</sup>. Because the appendix is situated in close proximity to the uterus, right ovary and right fallopian tube, inflammation of female reproductive organs mimicks acute appendicitis<sup>7</sup>. Therefore, especially in women, other causes of abdominal pain should be searched for if the appendix appears

normal during surgery. The use of diagnostic laparoscopy followed by appendectomy if necessary in fertile female patients was found to reduce the rate of negative appendectomy several folds<sup>8,9</sup>.

In female patient in which acute abdominal pain is predominant in right lower quadrant, acute appendicitis and gynecological pathologies are the main disorders to be eliminated (twisted ovarian cyst as an example) and even gynecological pathology can simulate acute appendicitis and vice versa. Other gynecological causes of acute abdomen include<sup>11</sup>: ovarian cyst (complicated, twisted, ruptured), pelvic inflammatory diseases (PID), tubo-ovarian Abscess (TOA), ruptured ectopic pregnancy and septic abortion

**Patients and methods**

This prospective study was conducted in the surgical and pathological departments in Al-Sadr Teaching Hospital from

February 2018 to January 2020 and it included 120 female patients of different age (15-70) year old who were presented to emergency unit with a history of abdominal pain, mainly at right iliac fossa (RIF). The patients were admitted to the surgical ward, routine investigations were done for all including ultrasound study, other tests like ECG and pregnancy test for selected cases.

After the decision for surgery was taken, all operations were done under GA by one resident doctor, all surgically removed appendices and coincidental pathologies were submitted for histopathological examination in the department of pathology.

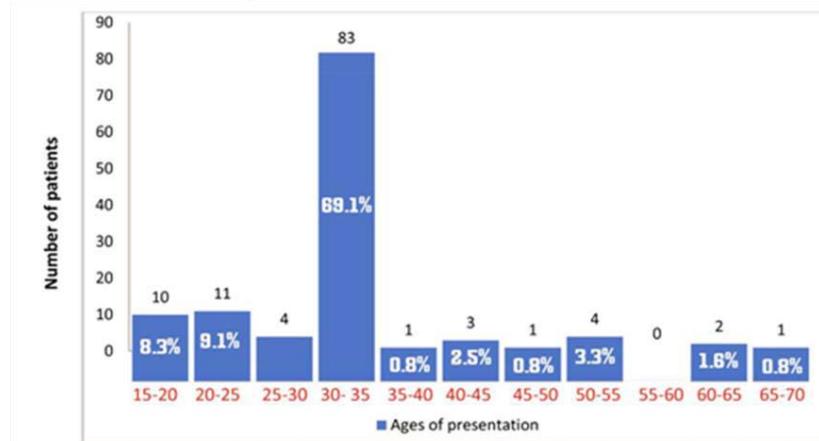
All patients were discharged well within two days without any postoperative complication.

Data analysis includes; age, marital status, fertility, history of previous surgery, gynecological history and histopathological examination of the surgical specimens.

**Results**

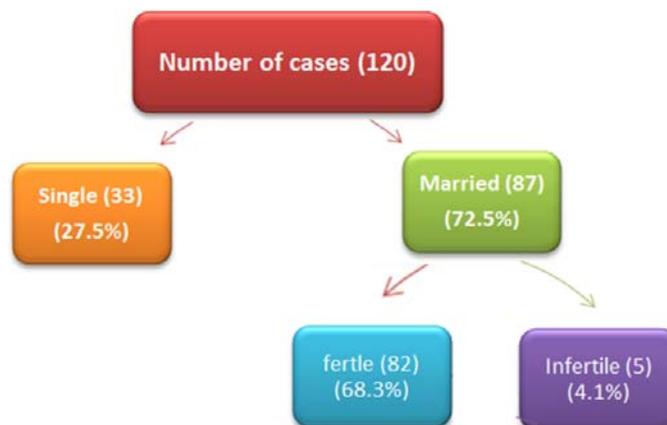
Mean age of female with acute appendicitis was 43 years. The peak age interval of a cute appendicitis occurs at the age group between 30 to 35 years, as shown in figure 1.

**Figure 1: Age distribution of the patients.**



There were 87 (72.5%) cases who are married, 82 (68.3%) out of 87 were fertile and 5 (4.1%) were infertile, and 33 (27.5%) cases were single as shown in figure 2.

**Figure 2: Marital and fertility state of patients.**



A total of 120 specimens were received in the histopathology department, 52 (43.3%) cases were found to have appendicitis proven by histopathological examination. Other pathologies were

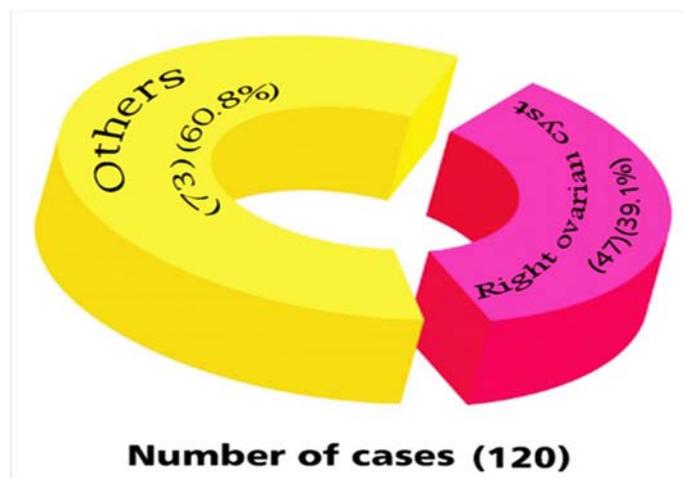
Meckel’s diverticulitis, endometriosis, benign cystadenoma of right ovary and bilateral chocolate cyst were found as one case for each as shown in table I.

**Table I: Histopathological diagnosis.**

Diagnoses	No of cases
Periappendicitis	52
Corpus luteal cyst	24
Appendicolith	10
Hemorrhagic cyst with peri appendicitis	9
Rupture right ovarian cyst	7
Twisted ovarian cyst	6
Tubo ovarian abscess (TOA)	3
Ectopic pregnancy	3
Uterine fibroid	2
Mrckel’s diverticulitis	1
Endometriosis	1
Benign cystadenoma of right ovary	1
Bilateral chocolate cyst	1
<b>Total</b>	<b>120</b>

Forty seven (39.1%) of cases subjected to histopathological examination was right ovarian cyst as show in figure 3.

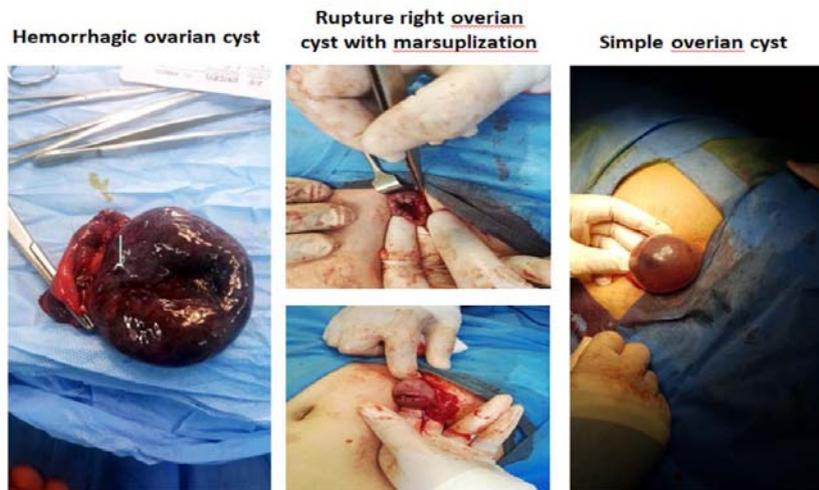
**Figure 3: Incidence of ovarian cyst among appendectomy**



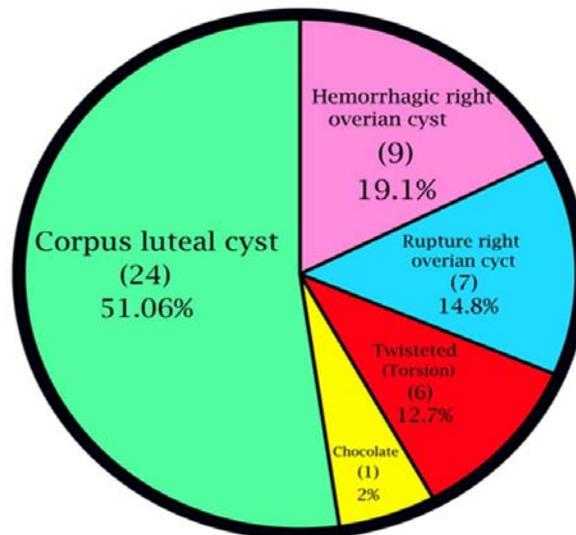
Most common type of ovarian cyst observed was Corpus luteal cyst in 24 (51%) while other types like hemorrhagic right ovarian cyst in 9 (19.1%) cases,

rupture right ovarian cyst in 7 (14.8) cases, twisted (torsion) ovarian cyst in 6 (12.7%) cases and chocolate cyst in 1 (2%), as shown in figures 4 & 5.

**Figure 4: Types of ovarian cyst discovered during appendectomy.**



**Figure 5: Percentage of ovarian cyst discovered during appendectomy.**



Meckle's diverticulum (figure 6) was found only in one case(0.8%).

**Figure 6: The one case of Meckle's diverticulum.**  
Meckle's diverticulum



## Discussion

Acute appendicitis is the most common surgical emergency that has been encountered in emergency departments<sup>12</sup>, many diseases resemble its symptoms and signs so thorough history and physical examination included gynecological examination is the key to determine the etiology of abdominal pain.

In this study, 120 female patients were included, age range from 15 to 70 year, and this is similar to study performed at Diyarbakir Education and Research Hospital, Turkey in which females with ages ranging from 15 to 84 years (Median, 32.2±15.1 years), and it was found that age incidence of acute appendicitis was nearly 70% at 30-35

years. This mean, its peak of incidence at third decade of life in concordance with various studies, that shown higher incidence of appendicitis in the second and third decades (80% below 40 years of age)<sup>13-15</sup>.

The highest associated gynecological pathology was ovarian cyst which was found in 47 (39%) of cases in which corpus luteal cyst was in the top 51.06% while chocolate cyst was the minimum 2%.

Meckle's diverticulum (figure 6) was presented only in one case (0.8%) in contrast to other study in which its prevalence was zero<sup>15</sup>.

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