

## A Retrospective Study on Acute Abdominal Pain in Fertile Women: Right Iliac Fossa Localization

Rahul Ranjan<sup>1</sup>, Priyanka Kumari<sup>2</sup>, Rakesh Kumar<sup>3</sup>

<sup>1</sup>Senior Resident, Department of General Surgery, Jawaharlal Nehru Medical College & Hospital, Bhagalpur, Bihar, India

<sup>2</sup>Senior Resident, Department of Obstetrics & Gynaecology, Jawaharlal Nehru Medical College & Hospital, Bhagalpur, Bihar, India

<sup>3</sup>Professor & HOD, Department of Surgery, Jawaharlal Nehru Medical College & Hospital, Bhagalpur, Bihar, India

Received: 25-12-2023 / Revised: 20-01-2024 / Accepted: 10-02-2024

Corresponding Author: Dr. Rakesh Kumar

Conflict of interest: Nil

### Abstract:

**Background:** Acute abdominal pain in fertile women, particularly when localized to the right iliac fossa, presents a diagnostic challenge due to diverse potential etiologies spanning gynecological, gastrointestinal, and urinary origins. Prompt and accurate diagnosis is critical to ensure timely intervention and favorable patient outcomes.

**Methods:** The retrospective study analyzed 132 cases of acute abdominal pain in fertile women, focusing on those with pain localized in the right iliac fossa. Participants aged 18 to 45 years were included, with data collected from medical records.

**Results:** The mean age of participants was 32.5 years ( $\pm 6.2$ ), with the majority (65%) falling within the 25-35 years age group. Abdominal pain was the predominant presenting symptom (100%), with 78% reporting localization in the right iliac fossa. Acute appendicitis was the most frequent diagnosis (42%), followed by ovarian cyst torsion (18%) and pelvic inflammatory disease (12%). Surgical intervention was common for acute appendicitis (89%) and ectopic pregnancies (100%), while conservative management was predominant for PID & UTI. Most patients (86%) experienced symptom resolution without complications.

**Conclusion:** Acute abdominal pain in fertile women, particularly when localized to the right iliac fossa, encompasses various diagnostic possibilities. Prompt diagnosis and appropriate management, involving a multidisciplinary approach, are crucial for optimal patient care and outcomes.

**Recommendations:** Given the complexity of acute abdomen in fertile women, healthcare providers should maintain a high index of suspicion for diverse etiologies and prioritize timely diagnostic evaluation. Collaboration between emergency physicians, gynecologists, and surgeons is essential for comprehensive management. Further research into diagnostic algorithms and interventions tailored to this population is warranted.

**Keywords:** Acute Abdomen, Fertile Women, Right Iliac Fossa, Diagnosis, Management.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

### Introduction

Acute abdomen in fertile women, particularly when pain is localized to the right iliac fossa, presents a diagnostic challenge due to the broad differential diagnosis that spans gynecological, gastrointestinal, and urinary etiologies. The right iliac fossa, situated in the lower right quadrant of the abdomen, is a critical anatomical area where symptoms may indicate conditions ranging from appendicitis to ectopic pregnancy, ovarian torsion, or even renal pathologies. Understanding the nuances of acute abdominal pain in this demographic is crucial for timely and accurate diagnosis, which directly impacts patient outcomes.

Appendicitis is the most frequent surgical emergency globally and a leading cause of acute abdominal pain in the right iliac fossa. It typically presents with pain that migrates from the periumbilical region to the right iliac fossa, accompanied by symptoms such as fever, nausea, and vomiting [1]. However, the clinical presentation can vary, making diagnosis challenging.

Ectopic pregnancy, a condition where a fertilized egg implants outside the uterine cavity, predominantly in the fallopian tube, is a critical differential diagnosis in fertile women presenting with acute abdominal pain and should be

considered, especially when the pain is unilateral [2]. Prompt diagnosis is essential to prevent life-threatening complications, such as tubal rupture.

Ovarian torsion, another gynecological emergency, involves the rotation of the ovary on its ligamentous supports, potentially leading to ischemia. It presents with sudden onset of severe, unilateral pelvic pain and can be associated with nausea and vomiting. Ovarian torsion requires swift surgical intervention to save the ovary [3].

Furthermore, urinary tract infections (UTIs) and renal & ureteric stones can also manifest with pain in the right iliac fossa, often accompanied by urinary symptoms such as dysuria, frequency, and urgency [4].

Given the wide range of potential diagnoses, a thorough history, physical examination, and appropriate diagnostic tests, including ultrasound and computed tomography (CT), are indispensable tools in the evaluation of acute abdomen in fertile women [5]. Laboratory tests, including complete blood count, serum beta-human chorionic gonadotropin ( $\beta$ -hCG), and urinalysis, are also critical in guiding the differential diagnosis.

Acute abdomen in fertile females with pain localized to the right iliac fossa requires a multidisciplinary approach for diagnosis, involving emergency physicians, gynecologists, and surgeons. Early and precise diagnosis is paramount to ensure appropriate management and to minimize morbidity and mortality associated with these conditions.

The aim of the study is to examine cases of acute abdominal pain in fertile women, specifically focusing on those presenting with pain localized in the right iliac fossa. Through comprehensive data analysis, the study seeks to identify common etiologies, diagnostic patterns, and treatment outcomes associated with this clinical presentation.

## Methodology

**Study Design:** A retrospective design

**Study Setting:** The study was conducted at Jawaharlal Nehru Medical College & Hospital, Bihar, between February 2022 to June 2023.

**Participants:** A total of 132 fertile women presenting with acute abdominal pain were included in the study.

## Inclusion Criteria

1. Fertile women aged 18 to 45 years.
2. Presentation with acute abdominal pain.
3. Availability of medical records for retrospective analysis.

## Exclusion Criteria

1. Pregnant women.
2. Women with a history of abdominal surgery within the last six months.
3. Patients with incomplete medical records.

**Bias:** Efforts were made to minimize bias by ensuring consistent criteria for participant inclusion and exclusion. Additionally, blinding of data analysts to patient outcomes were implemented to reduce bias during data analysis.

**Variables:** Variables included demographic information (age), medical history, presenting symptoms, diagnosis of acute abdominal condition, localization of pain (right iliac fossa or other), and treatment outcomes.

**Data Collection:** Medical records of eligible participants were reviewed retrospectively. Data pertaining to demographic information, medical history, presenting symptoms, diagnostic tests, treatment administered, and outcomes were extracted.

**Statistical Analysis:** Inferential statistics, such as chi-square tests or logistic regression, were employed to assess associations between variables and outcomes. Statistical significance was set at  $p < 0.05$ .

**Ethical Considerations:** The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

## Result

Out of the 132 fertile females included, the mean age was 32.5 years ( $\pm 6.2$ ). The majority of participants (65%) fell within the age range of 25-35 years. The most common presenting symptom was abdominal pain (100%), followed by nausea (68%), vomiting (52%), and fever (30%). Among those with abdominal pain, 78% reported localization in the right iliac fossa.

**Table 1: Demographic and clinical characteristics of the study population**

Demographic Characteristics	Frequency (%)
Age (years), Mean $\pm$ SD	32.5 $\pm$ 6.2
Age Group	
- 18-24 years	20 (15.2)
- 25-35 years	86 (65.2)
- 36-45 years	26 (19.7)

Localization of Pain	
- Right Iliac Fossa	103 (78)
- Other	29 (22)
Presenting Symptoms	
- Abdominal Pain	132 (100)
- Nausea	90 (68.2)
- Vomiting	69 (52.3)
- Fever	40 (30.3)
Diagnosis	
- Acute Appendicitis	55 (41.7)
- Ovarian Cyst Torsion	24 (18.2)
- Pelvic Inflammatory Disease	16 (12.1)
- Ectopic Pregnancy	11 (8.3)
- Urinary Tract Infection	8 (6.1)
- Gastroenteritis	5 (3.8)

Upon diagnostic evaluation, the most frequent diagnoses were acute appendicitis (42%), followed by PID & UTI (18%). Other less common diagnoses included ectopic pregnancy (8%), and gastroenteritis (4%).

The majority of patients with acute appendicitis underwent surgical intervention (appendectomy) (89%), resulting in a significant reduction in pain and resolution of symptoms. Patients diagnosed with PID & UTI received conservative management with analgesics and close monitoring (72%), while a minority underwent surgical intervention (28%). Ectopic pregnancies were managed surgically (100%), usually via laparoscopy.

Overall, the majority of patients (86%) experienced resolution of symptoms and were discharged without complications. However, there were a few cases of postoperative complications, including surgical site infections (4%) and abscess formation (2%). No mortalities were recorded during the study period.

Chi-square tests were conducted to explore associations between presenting symptoms and diagnostic outcomes. Significant associations were found between the presence of fever and acute appendicitis ( $p < 0.05$ ), as well as between nausea and pelvic inflammatory disease ( $p < 0.05$ ).

### Discussion

The study comprised 132 fertile women with a mean age of 32.5 years (SD = 6.2), predominantly within the 25-35 years age group (65%). Abdominal pain was the predominant presenting symptom (100%), with 78% localized in the right iliac fossa, followed by nausea (68%), vomiting (52%), and fever (30%). Upon diagnostic evaluation, acute appendicitis was the most frequent diagnosis (42%), followed by ovarian cyst torsion (18%), and pelvic inflammatory disease (12%).

Treatment modalities varied depending on diagnosis, with most acute appendicitis cases undergoing surgical intervention (89%). Overall, 86% of patients experienced symptom resolution without complications, although postoperative complications occurred in a few cases (surgical site infections 4%, abscess formation 2%). Significant associations were found between fever and acute appendicitis ( $p < 0.05$ ), and between nausea and pelvic inflammatory disease ( $p < 0.05$ ) via chi-square tests.

The evaluation and management of acute pelvic pain in fertile women have been extensively studied, highlighting various diagnostic and therapeutic approaches. A study on the evaluation of acute pelvic pain emphasizes the importance of considering a broad differential diagnosis based on age, pregnancy status, and etiology [6]. Another review focuses on the imaging findings of common and uncommon gynecological causes of acute pelvic pain, underscoring the role of different imaging techniques in the emergency department [7]. A case report of ovarian vein thrombosis with acute pelvic inflammatory disease (PID) discusses diagnostic and therapeutic options, indicating the complexity of such conditions [8].

The laparoscopic approach is advocated for the diagnosis and management of acute abdomen in fertile females, suggesting its effectiveness in identifying gynecologic disorders [9]. The spectrum of causes of acute pelvic pain from infancy to teen years is reviewed, with an emphasis on imaging approaches and age-related characteristics [10]. A study on PID provides insights into multi-modality imaging with clinical-pathologic correlation, highlighting the importance of recognizing specific CT findings for accurate diagnosis [11].

Another estimation of acute pelvic pain in females stresses the high prevalence and variable presentation of PID, advocating for a high index of suspicion [12]. Ultrasonographic outcomes in

people with acute right iliac fossa pain reveal that ovarian cysts and lower ureteric stones are common etiologies, emphasizing the necessity of pelvic ultrasonography before surgery [13]. These studies collectively contribute to a deeper understanding of the diagnostic challenges and treatment strategies for acute pelvic pain in fertile females, offering valuable insights for clinicians and researchers alike.

### Conclusion

In summary, acute abdominal pain in fertile women commonly presents with symptoms localized to the right iliac fossa. Timely diagnosis and appropriate management are crucial in achieving favorable outcomes and minimizing complications. Further research is warranted to explore additional factors influencing diagnostic outcomes in this patient population.

**Limitations:** The study was limited by its retrospective design, which relied on available medical records. Additionally, the study was conducted in a single center, which may limit the generalizability of the findings.

**Recommendation:** Given the complexity of acute abdomen in fertile women, healthcare providers should maintain a high index of suspicion for diverse etiologies and prioritize timely diagnostic evaluation. Collaboration between emergency physicians, gynecologists, and surgeons is essential for comprehensive management. Further research into diagnostic algorithms and interventions tailored to this population is warranted.

**Acknowledgement:** We are thankful to the patients; without them the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in patient care of the study group.

**Source of funding:** No funding received.

### References

1. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendectomy in the United States. *Am J Epidemiol.* 1990;132(5):910-925.
2. Barnhart KT. Ectopic pregnancy. *N Engl J Med.* 2009;361(4):379-387.
3. Cobben LP, Groot I, Haans L, Blickman JG, Puylaert J. MRI for clinically suspected appendicitis during pregnancy. *AJR Am J Roentgenol.* 2004;183(3):671-675.
4. Houry D, Abbott JT. Ovarian torsion: a fifteen-year review. *Ann Emerg Med.* 2001;38(2):156-159.
5. Stapleton A. Urinary tract infections in patients with diabetes. *Am J Med.* 1998;105(1):1-8.
6. Frasca DJ, Jarrio CE, Perdue J. Evaluation of Acute Pelvic Pain in Women. *Am Fam Physician.* 2023;108(2):175-180.
7. Franco PN, García-Baizán A, Aymerich M, et al. Gynaecological Causes of Acute Pelvic Pain: Common and Not-So-Common Imaging Findings. *Life (Basel).* 2023;13(10):2025.
8. Huh JS, Lee YS, Jeon YE, Cho S, Lee BS. A case of ovarian vein thrombosis with acute pelvic inflammatory disease. *Korean J Obstet Gynecol.* 2011 Nov 1;54(11):717-720.
9. Ivanov I, Andonov D. Laparoscopic Approach for Diagnosis and Treatment of Acute Abdomen in Fertile Women. *Scripta Scientifica Medica.* 2016; 48:91.
10. Naffaa L, Deshmukh T, Tumu S, Johnson C, Boyd KP, Meyers AB. Imaging of Acute Pelvic Pain in Girls: Ovarian Torsion and Beyond. *Curr Probl Diagn Radiol.* 2017;46(4):317-329.
11. Revzin MV, Mathur M, Dave HB, Macer ML, Spektor M. Pelvic Inflammatory Disease: Multimodality Imaging Approach with Clinical-Pathologic Correlation. *Radiographics.* 2016; 36(5):1579-1596.
12. Kruszka PS, Kruszka SJ. Evaluation of acute pelvic pain in women. *Am Fam Physician.* 2010;82(2):141-147.
13. Burai M, Gameraddin MB, Suliman A, Gareeballah A, Alagab F, Elzaki M. Pelvic ultrasonographic findings in patients with acute right iliac fossa pain. *Int J Health Allied Sci* 2019; 8:33-7