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# Spectrum of postoperative complications and histopathological findings of appendectomy in Rehman Medical Institute from 2017-2018

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## ABSTRACT

**Introduction:** Documentation of post-appendectomy complications along with histopathological findings help in clinical management of acute appendicitis.

**Objective:** To determine the postoperative complications occurring in appendectomy patients of a tertiary care hospital of Peshawar, Khyber Pakhtunkhwa, based on two-years archival data.

**Materials & Methods:** A descriptive study was conducted at Rehman Medical Institute, Peshawar, from January to February 2019 on 130 archival cases of appendectomies done from 2017-2018 to document postoperative complications and histopathological findings. Data were collected on a structured Performa consisted of demographic data, symptoms, complications, investigations performed, preoperative position of appendix, pathology and comorbidities. Descriptive data analysis was done with SPSS 25.0.

**Results:** The most common age group for acute appendicitis was 19 years (n=9, 6.9%) followed by 40 years (n=8, 6.2%); more patients were males (n=73, 56.15%) compared to females, (n=57, 43.85%). Patients presented with the common complaint of pain in right iliac fossa with nausea, (n=102, 78.5%), followed by generalized abdominal pain (n=20, 15.4%) and epigastric pain and vomiting (n=8, 6.2%). Retrocecal appendix was the most frequent site (75.4%); 52.3% of patients did not develop any postoperative complication.

**Conclusion:** Wound infection and pain were the commonest complications after surgery. Malignancy was rare.

**Keywords:** acute appendicitis, postoperative complications, histopathological finding, wound infection.

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## INTRODUCTION

Acute appendicitis is the utmost common surgical ailment, with an occurrence of about 100 per 100,000. The lifetime risk of developing appendicitis is approximately 9% in males and 7% in females.[1] Initial findings and quick operative interventions are keys to effective management of acute appendicitis.

Acute appendicitis is the most often assumed condition in patients presenting with acute abdominal pain, hence the most common indication for emergency abdominal surgery. Luminal obstructions due to fecoliths, hyperplasia of the lymphoid tissue, or foreign bodies are the most common causes of acute appendicitis. However, often the exact cause behind appendicitis remains unknown. The signs and symptoms are usually anorexia, periumbilical colic, nausea and vomiting, followed by moderate fever (38°C) and signs of peritoneal inflammation in the lower right quadrant of the abdomen. Changes consistent with acute inflammation (acute appendicitis, acute suppurative appendicitis, gangrenous appendicitis, and peri-appendicular abscess) were reported in 79.5% cases.

Complications such as perforation, peritonitis, appendicular mass and abscess, resulting from the acute inflammatory process are serious, making early surgery fundamental.[2] Post-appendectomy complications are peritonitis, wound infection, lack of intestinal peristalsis, surgical injuries to internal organs, bowel obstruction, gangrene of the bowel, and abscess. Perforation is the major reason of morbidity and mortality. Postoperative complications in appendectomy were 29% recorded from February 2004-January 2005 by Division of Gastrointestinal Surgery, Wolfson Digestive Disease Centre, Nottingham University Hospitals, Queen's Medical Centre, Nottingham, UK.[3] In a study it was recorded that 1.1% patients with non-complex acute appendicitis patients got infectious complications after receiving laparoscopic treatment compared to 1.6% of patients with gangrenous acute appendicitis. Studies conducted in China and Istanbul showed that there were 6.2% and 3% overall surgical site infections respectively, after appendectomy.[4,5]

Complications of acute appendicitis are so risky that surgical removal of appendix is usually preferred by surgeon. The fear of a perforated appendicitis has led the surgeons to accept the possibility of removal of an unaffected appendix so that even up to 30% negative appendectomies are acceptable.[6]

Laparoscopic appendectomy has been recognized as the preferred surgery in pediatric cases of acute appendicitis due to earlier discharge from the hospitals, getting back to normal appetite and lifestyle, along with reduced morbidity.[7,8] Reports have shown that intra-abdominal abscess occurs in 6.4-15% children who underwent laparoscopic appendectomy. Other reports show that about 2% cases of acute non-complex appendicitis have an incidence of intraabdominal abscess compared to 24-41% cases of perforated appendicitis.[8-12]

Some reports show that the actions of bacteria at the site of surgery related to the use of different instruments have led to different postoperative complications of appendicitis; local interstitial infection in the ileocecal area may cause intra-abdominal abscess as a result of mesothelial damage caused by burning effect of different instruments. Postoperative intra-abdominal abscess incidence is thrice as high in laparoscopic appendectomy compared to open appendectomy.[10,13,14] Infection being one of the complications of laparoscopic appendectomy presents with symptoms of pelvic, right lower quadrant, or diffuse abdominal pain, with variable severity of tenderness or frank peritonitis, hypotension, nausea, and fever.[15] In a research conducted at Bangladesh it was observed that port-site bleeding and infection were in 4.3% and 2.1%, respectively.[16] Port site incisional hernia is the complication of single incisional laparoscopic surgery that is 2.9% according to the study that was conducted at tertiary center in Bronx, New York.[17]

Histopathological examination of the appendix serves two purposes. First, it allows the diagnosis of acute appendicitis to be confirmed, especially where this is not evident intra-operatively. Second, histopathological examination may disclose additional pathologies that may not be evident on gross examination intra-operatively but may affect subsequent clinical management of the patient. Five pathological groups with consequential diagnoses may be encountered in appendices specimens: parasite infection, endometriosis, granulomatosis, benign neoplasm, and premalignant / malignant neoplasm. A retrospective study conducted in Department of Pathology of CHU Habib Bourguiba, Sfax, Tunisia, showed that perforated appendicitis were noted in 1,239 (6.3%) cases. Intraluminal *Enterobius vermicularis* were present in 1,599 (6.4%) cases; 693 (43.3%) of these were associated with acute inflammation of the appendicular wall; neoplastic lesions were present in 171 (0.6%) cases.[18]

The objective of the study was to determine the spectrum of postoperative complications and histopathological findings of appendectomy at a tertiary are hospital of Peshawar, Khyber Pakhtunkhwa, Pakistan, based on analysis of archival data.

## MATERIALS & METHODS

This descriptive case series was conducted in the Department of Surgery, Rehman Medical Institute, Peshawar, from January to February 2019 on archival data retrieved for the years 2017-2018.

All 130 cases of acute appendicitis in which appendectomy was performed in Rehman Medical Institute, Peshawar were included. Patients having dual pathologies, any malignancy, gynecological problem and renal abnormalities were excluded.

A structured Performa was used to collect relevant data about postoperative complications and histopathological findings of appendectomy; the Performa consisted of demographic data, symptoms, complications, investigations performed, preoperative position of appendix, pathology and comorbidities.

Data were analyzed for descriptive statistics using SPSS 25.0.

## RESULTS

Of 130 cases, there were 73(56.15%) males and 57(43.85%) females. The ages varied widely, with age 19 years being more common (06.9%), followed by age 40 years (06.2%). Presenting complaints of patients are shown in Figure 1.

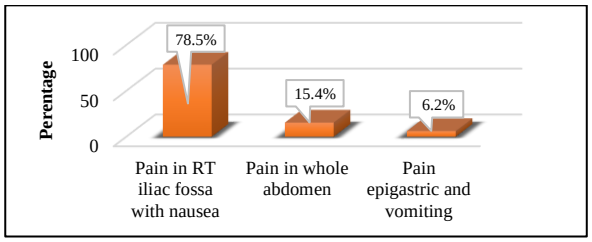


**Figure 1: Presenting complaints of patients undergoing appendectomy (n=130).**

Preoperative position of the appendix was retrocecal in most cases (75.4%) followed by Pelvic (15.4%); other positions were in minor percentages as shown in Figure 2.

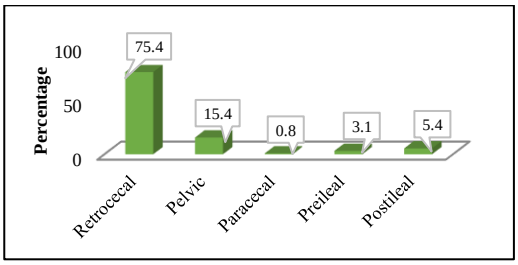


**Figure 2: Preoperative position of vermiform appendix in patients undergoing appendectomy (n=130).**

Regarding investigations, 95.4% patients had total leucocyte counts (TLC), ultrasound abdomen, and CT scans of abdomen and pelvis done, while 4.6% had only CT scans of abdomen and pelvis done (Figure 3).

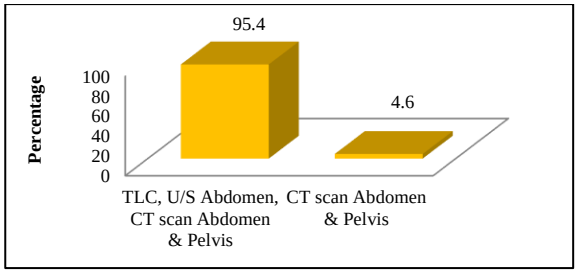


**Figure 3: Preoperative investigations done in patients undergoing Appendectomy (n=130).**

There were no postoperative complications in 52.3% of patients; the remaining patients had Wound Infection as the major complication (25.4%), followed by Peritonitis (06.2%), intra-abdominal collection (02.3%), and Generalized Sepsis (01.5%), as shown in Figure 4.

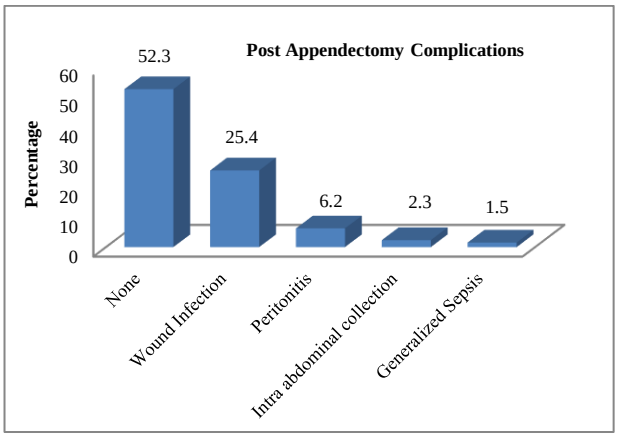


**Figure 4: Postoperative complications in patients undergoing appendectomy (n=130).**

Other non-septic complications are shown in Figure 5.

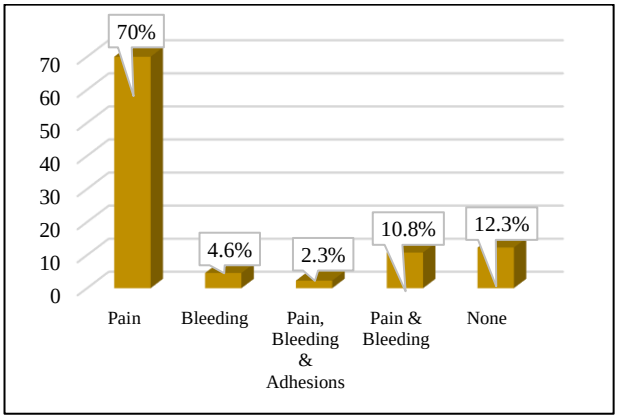


**Figure 5: Non Septic complications in patients undergoing appendectomy (n=130).**

## DISCUSSION

Acute appendicitis remains one of the most common surgical conditions leading to emergency operation.[19] The possibility of appendicitis must be considered in any patient presenting with an acute abdomen, and a certain preoperative diagnosis is still a challenge.[20] In our study the most common age group was 19 years (n=9) 6.9% followed by 40 years (n=8) 6.2%. This somehow matches the literature in which Appendicitis is most common between the ages of 10 and 20 years, but no age is exempt.[21]

In our study there was a preponderance of males having a percentage of 56.2% (n= 73/130) compared to the females having a percentage of 43.8% (n=57/130). Similar results were observed in another study conducted by Drake FT and Naderan M.[22,23] According to Naderan et al that one of the possible explanations for the preponderance of the males could be that the women were referred to a gynecologist due to a common complaint of pain in abdomen for many of their gynecological problems.

All the patients included in our study presented with the common complaint of pain in right iliac fossa with nausea, 78.5% (n= 102/130), followed by generalized abdominal pain that was 15.4% (n=20) and epigastric pain and vomiting with a percentage of 6.2% (n=8). This co-relates with a study conducted in year 2018, which showed that migrating pain in the abdomen (67.8%) was the most common symptom of patient with acute appendicitis in the non-perforated group and 80.5% in the perforated group.[2] Another study conducted by Ibrahim Salih Elkheir et al showed that right iliac fossa pain was found in all patients.[1] These results were similar to that done by Mike Hardin, in which right iliac fossa tenderness was found in 94.4%.[24] Other symptoms included were; anorexia, vomiting, fever,[1,2] and rebound tenderness.[24]

Appendix has many different anatomical sites, in our study we found that Retrocaecal appendix is the most frequent site 75.4%, which correlates with a study conducted in year 2016 that showed 73.9% of appendix were Retrocaecal.[1]

The most common laboratory finding in our study was total WBC count along with radiological intervention that included Ultrasound abdomen and CT scan abdomen and pelvis similar to a study conducted by Juma Obayashi et al.[25]

Complicated acute appendicitis was diagnosed in 94.3% and in those the most frequent was appendicular mass 45.2% which diagnosed either clinically or radiologically using ultrasound, or these incidences were much higher than reported in Nigeria.[1, 21]

In the current study, 52.3% of patients did not develop any post-operative complication while 47.7% developed complications including wound infection 25.4%, peritonitis 6.2%, generalized sepsis 5.4% and intra-abdominal collection 2.3% while histopathological studies showed that only 0.8% patients developed mucinous lesions. Other non-septic complications include pain (70%), pain and bleeding (10.8%) and adhesions (2.3%). As compared to another study, the most common post-operative complications were post site bleeding (4.3%) and wound infection (2.1%)[16] while one study showed no post-operative complications.[1]

## CONCLUSION

Acute Appendicitis was more in male patients presenting as pain in the right iliac fossa; raised total leucocyte count, Ultrasound abdomen and CT scan abdomen and pelvis were helpful diagnostic modalities. Retrocecal location of appendix was the mode, and wound infection and pain were the commonest complications after surgery.

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