



Research Article

Patterns of Emergency Surgical Diseases at a Secondary Care Teaching Hospital

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Abstract

Background: Despite effective recording practices, there are no published data on surgical emergencies at Sohar Hospital. Understanding this data will enable policymakers and surgeons to enhance the efficiency, cost-effectiveness, and quality of emergency services, ultimately improving patient care. This study aims to document the patterns of emergency surgical diseases at Sohar Hospital and the immediate outcomes of their management.

Methods: This is a descriptive, prospective study of patients admitted to Sohar's surgical emergency department between February 10 and March 10, 2023. Ethical approval was obtained, and data collection was performed using a form. Analysis was conducted using SPSS.

Results: The study involved 272 patients. Among them, 31 (11.4%) were trauma patients, while 241 (88.6%) were non-trauma patients. Most trauma patients (80%) were under the age of 42, and 71% experienced road traffic accidents. More than half of the non-trauma patients (53.5%) presented with an acute abdomen, of which 44% reported nonspecific abdominal pain. The most commonly diagnosed acute abdominal condition was appendicitis, followed by cholecystitis, intestinal obstruction, diverticulitis, and peptic perforations. Regarding the immediate outcomes, 46.7% of the patients were treated in the emergency department and discharged, 22.1% were admitted and operated on, 16.2% were admitted and treated conservatively, 7.4% discharged themselves against medical advice, and 5.5% were referred to other specialties. The mortality rate was 2.2%, primarily due to sepsis.

Conclusion: The study revealed the pattern of emergency surgical disease at Sohar Hospital, patient demographics, and treatment outcomes. This data is essential for effective resource allocation and improving patient care. Further research is necessary.

Keywords: pattern of surgical emergencies, trauma, acute abdomen, Sohar Hospital, Oman

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1. Introduction

Sohar Hospital is a tertiary referral hospital located in Sohar, the capital city of the North Al Batinah governorate in Oman. It is a 600-bed hospital offering a range of specialties and a busy emergency department (ED). Its catchment area has a population of over 800,000 people.

Despite having an effective computerized data collection system, there is no published data on the pattern of surgical emergencies at Sohar Hospital. This information would offer health workers, administrators, stakeholders, and policymakers valuable insights into the workload and types of surgical diseases encountered in the surgical ED. This, in turn, would have implications for surgical training and planning health services that are more efficient and cost-effective, resulting in improved patient care.

Reviewing literature on patterns of surgical emergencies around the world indicates certain trends, such as increasing trauma incidents and an older age distribution [1, 2]. However, these trends may not necessarily apply to Sohar Hospital or the healthcare system in Oman. Therefore, it is crucial to publish our data, as this will directly affect healthcare quality.

2. Methods

This descriptive prospective study was conducted at Sohar Hospital, North Al Batinah Governorate, from February 10 to March 10, 2023.

Over the course of one month, researchers visited the ED at Sohar Hospital. Data on adult patients aged 12 and older admitted to the ED were retrieved from the computer system (Al Shifa application program) and recorded on a form designed for data collection.

The data included demographic information about patients, such as age and gender, the reason for admission and diagnosis, the immediate outcome of treatment, and hospital mortality during the study period.

Nonsurgical emergencies and children under 12 years of age were excluded from the study.

Patients with emergency surgical conditions are received at the hospital's accident and emergency unit, where initial resuscitation is performed. Those with minor conditions requiring emergency surgical procedures are treated directly in the ED and may be discharged from the A&E unit. Others are admitted to the surgical wards for operative or nonoperative treatment before being discharged. After discharge, all patients are seen at the surgical outpatient clinic for follow-up care. Data on immediate outcomes were included in the study.

Data analysis was conducted using SPSS version 25 (SPSS Inc., Chicago, IL, USA). Frequencies and descriptive statistics were calculated.

3. Results

Over a one-month period, 272 patients were admitted to the emergency surgery department at Sohar Hospital. Among these, 31 were trauma cases (11.4%) compared to 241 non-trauma cases (88.6%). The age range of patients was from 13 to 92. The mean age of all patients was 41 ± 19.9 years, while the mean age of trauma patients was 32 ± 12.9 years.

There was a noticeable difference in the age distribution between trauma and non-trauma patients: 61% of trauma cases were aged 32 or younger, and 80% were aged 42 or younger, compared to 37% and 57% in non-trauma cases, respectively. Additionally, 72% of all admissions

were aged 52 or younger (Table 1). There were 144 males (53.94%) and 128 females (47.06%), resulting in a nearly 1:1 ratio.

In trauma patients, 22 (71%) were due to road traffic accidents (RTA). The remainder resulted from stab injuries and falls. No gunshot wounds were recorded during the study period.

Most non-trauma patients (47.3%) presented with an acute abdomen. Other presentations included skin lesions, renal issues, and anal or perianal diseases (Table 2).

Over half of non-trauma patients (53.5%) experienced acute abdomen, and among them, nearly half (44%) reported nonspecific abdominal pain. The most commonly diagnosed acute abdominal condition was appendicitis (28%), followed by cholecystitis (4.4%), intestinal obstruction (4.4%),

diverticulitis (2.6%), acute pancreatitis (1.8%), and peptic perforations (1.8%; Table 3).

The immediate outcome of those 272 patients was as follows (Table 4): 127 of them (46.7%) were treated in the ED and discharged; 60 patients (22.1%) were admitted for emergency surgical operations; 44 patients (16.2%) were admitted for nonoperative (conservative) treatment; 20 patients (7.4%) discharged themselves against medical advice, and 15 (5.5%) were referred to the care of other departments, such as orthopedics or medicine. Six patients passed away, resulting in a mortality rate of 2.2%; five out of the six died of non-trauma septicemia, three of whom were over the age of 85. Their ages were 34, 62, 86, 88, and 90. One patient, a 41-year-old male, died of severe head injury.

Table 1: Age distribution of trauma and non-trauma patients admitted to the Sohar surgical emergency over a period of one month.

Age group (yrs)	Trauma (% of all traumas)	Non-trauma (% of all non-trauma)	Total (% of total)
13–22	10 (32.3)	45 (18.7)	55 (20.22)
23–32	9 (29)	45 (18.7)	54 (19.85)
33–42	6 (19.4)	49 (20.3)	55 (20.22)
43–52	4 (12.9)	29 (12)	33 (12.13)
53–62	1 (3.2)	19 (7.9)	20 (7.35)
63–72	1 (3.2)	28 (11.6)	29 (10.66)
73–82	0	18 (7.5)	18 (6.62)
83–92	0	8 (3.3)	8 (2.94)
Total	31	241	272 (100)

Table 2: Non-trauma patients.

Surgical disease	No. of Patients	Percentage (%)
Acute abdomen	129	53.5
Skin/Subcutaneous abscess	36	14.9
Anal	21	8.7
Septicemia	9	3.7
Diabetic foot sepsis	9	3.7
Breast complications	5	2.1
Hernia complications	4	1.7
Surgical complications	4	1.7
Miscellaneous	24	10
Total	241	100

Table 3: Acute abdomen cases.

Acute abdomen	No. of patients	Percentage (%)
Non-specific abdominal pain	57	44
Appendicitis	32	24.8
Renal colic	15	11.6
Right iliac fossa pain	6	4.7
Cholecystitis	5	3.9
Intestinal obstruction	5	3.9
Diverticulitis	3	2.3
Pancreatitis	2	1.6
Perforation	2	1.6
Rectal bleeding	1	0.8
Peritonitis	1	0.8
Total	129	100

Table 4: The immediate outcome of 272 patients who presented to the Sohar emergency department during a one-month period.

Outcome	No. of patients	Percentage (%)
Treated and discharged	127	46.7
Admitted for surgery	60	22.1
Admitted for conservative treatment	20	7.4
Referred to other departments	15	5.5
Discharged themselves against medical advice	20	7.4
Mortality	6	2.2

4. Discussion

Our study showed that non-trauma presentations were eight times more frequent than trauma cases. This contrasts with other observations of increasing trauma in EDs [1–3]. More data is required to determine whether this is a seasonal variation or the direct result of stricter motor legislation in the city.

More than half of non-trauma cases involved acute abdomen, which is central to surgical services and the education of undergraduate and postgraduate surgery. However, the majority (44%) of acute abdomen cases remained undiagnosed and were labeled as nonspecific abdominal pain. Other authors reported similar diagnoses of non-specific abdominal pain, ranging from 20.2% to 31.5% [4, 5]. It appears that there will always be cases of nonspecific abdominal pain caused by

viral infections, drug allergies, hypersensitivity, and seasonal factors. This relatively high percentage should encourage a more thorough work-up to enhance diagnosis. It should also emphasize the importance of offering a period of observation and close monitoring of patients in the ED before discharging them, along with strict instructions to return to the hospital if pain recurs. Additionally, it emphasizes the importance of having a skilled team of surgeons and radiologists in the ED, improving surgical training, and performing timely investigations, particularly CT scans.

Our study found that at Sohar Hospital, appendicitis was the most common cause of acute abdomen, and appendectomy was the most frequent emergency surgical procedure. This pattern is observed globally and has persisted over the years [6–12]. Aside from appendiceal and biliary

conditions, significant non-appendiceal, non-biliary acute abdominal conditions remain consistent in our study and worldwide [13]. The diverticulitis rate in our study was 2.3% compared to 11% in a British study. It is worth noting that diverticulitis is increasingly being diagnosed in developing countries due to the westernization of diet [14].

The second most common non-trauma surgical admissions to the ED were soft tissue infections and abscesses. These conditions accounted for 15% of the patients. Skin and subcutaneous abscesses comprise a significant portion of the emergency surgical workload [15]. Reports indicate a global trend of increasing hospital admissions and primary care treatment for skin and subcutaneous tissue abscesses [15–19].

Additionally, there are instances of diabetic foot sepsis. In our study, diabetic septic feet accounted for approximately 4% of the cases. The prevalence of diabetes mellitus in Oman is high, amounting to 15.7% diabetics and 11.8% prediabetics [20]. This prevalence has risen over the past two decades and is expected to increase by 174% by 2050 [21]. It is essential to focus on primary and secondary prevention of diabetes by safeguarding healthy individuals and ensuring early detection, respectively. Furthermore, health authorities should prioritize control and treatment strategies [21].

In terms of immediate outcomes, our study revealed that nearly half (47%) of patients with surgical emergencies in the ED were treated and discharged, while an additional 7.4% were admitted for conservative management. This highlights the considerable strain on the surgical emergency staff. Our findings indicated that 22% of these patients required emergency surgery, a rate similar to the 25% reported by Ramsay et al. in the United Kingdom [4].

Our immediate mortality rate was 2.2%. This is significantly lower than the rate reported in the UK; however, the difference may be attributed to the UK's much older population.

Thus, the surgical ED at Sohar Hospital treats a high volume of patients and maintains a relatively high operating volume. Despite this, it achieves a high success rate. Most mortalities occur in the elderly due to septic complications.

An interesting observation is the 7.4% rate of discharge against medical advice (DAMA). The global rate ranges from 0.07% to 20% [22]. DAMA is an ongoing global issue that continues to affect the quality of patient care and has detrimental effects on patient outcomes [23, 24]. Several studies have identified reasons for DAMA [22–28]. DAMA is more commonly observed in developing countries than developed ones [25, 27, 28].

Although consent to treatment is entirely the patient's choice, DAMA may lead to an increased rate of readmission, readmission in worse condition, or even death [29, 30]. Therefore, it is crucial to investigate this issue further to identify its cause or causes.

The main limitation of this study is its short duration, which was one month. A more extended period would enhance sampling. Nevertheless, one month in a busy ED sheds significant light on essential data related to the pattern of surgical emergencies and the workload in the ED. It also highlights crucial aspects of research for future studies. This information guides tutors on key issues to teach undergraduate students who will soon be responsible for managing patients presenting to the ED. The data would benefit hospital directors and healthcare decision-makers, both local and regional, in planning and enhancing patient care and health services.

5. Conclusion

The pattern of surgical emergency diseases at the ED of Sohar Hospital has been identified. Despite the high volume of work and significant diversity, the immediate patient outcomes are positive. The study highlighted areas for future research.

Declarations

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Ethical Considerations

Ethical approval was obtained from: (i) the Ethics and Biosafety Committee (EBC) at the College of Medicine and Health Sciences (COMHS) of the National University (NU) (Registration no. NU/COMHS/EBC0050/2022) and (ii) the Research and Ethical Review and Approval Committee, North Batinah Governorate (RERAC-NBG) of the Ministry of Health (MOH) (RERAC 01/2023). Permission was also obtained from the director of Sohar Hospital.

Competing Interests

None declared.

Availability of Data and Material

Datasets utilized and/or analyzed in this study can be obtained from the corresponding author upon a reasonable request.

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The study was self-funded.

Abbreviations and Symbols

ED: Emergency department

RTA: Road traffic accident

MVC: Motor vehicle collision

DAMA: Discharge against medical advice

CT scan: Computerized axial tomography scan

SPSS: Statistical package for social sciences

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