

Impact of migration due to the Syrian civil war on emergency surgical care for foreign patients

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ABSTRACT

Aim: In the modern era, a substantial proportion of individuals live abroad for various reasons. Accessing healthcare systems in foreign countries can pose significant challenges due to obstacles such as language barriers, unfamiliarity with the healthcare framework, and a lack of confidence in obtaining modern and appropriate medical treatment. To shed light on this critical issue, we analyzed the outcomes of 298 foreign patients treated at our institution.

Methods: This study included patients with foreign identification numbers who underwent emergency surgery at the Department of General Surgery, Umranıye Training and Research Hospital, between January 2012 and June 2023. Patients were categorized into two groups based on their admission dates (before and after 2019). Data collection and evaluation focused on demographics (age, ethnicity), length of hospital stay (LoHS), surgical procedures, perioperative complications, and mortality rates.

Results: The overall mean LoHS was 2 days (range: 1-28), with no statistically significant difference between the two groups ($p>0.05$). Emergent appendectomy was performed in 185 patients (62.1%), while 20 patients (6.7%) underwent cholecystectomy. Laparoscopic surgery rates for appendicitis cases were significantly higher in Group 2 ($p<0.05$); however, no significant differences were observed in cholecystitis cases ($p>0.05$). Additionally, the rates of complicated appendicitis were similar between the two groups ($p>0.05$).

Conclusion: Despite the numerous challenges foreign patients may face within a healthcare system abroad, our findings indicate that these patients received appropriate and modern emergency surgical care at our institution. This study underscores the capability of healthcare systems to deliver equitable and high-quality treatment to diverse populations.

Keywords: emergency surgery, perioperative complications, delayed hospital admission, foreign patients, laparoscopic surgery, healthcare access barriers

Introduction

The 21st century has been marked by numerous internal and external conflicts, economic crises, political instability, and widespread oppression,

leading to significant mass migration (1). In 2019, due to the impact of the Syrian Civil War, a significant wave of migration from the Middle East to Turkey took place. Currently,

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more than 5 million individuals from foreign nations, primarily Syria, reside in Türkiye (2). This migration has considerably influenced the country's demographic structure and the demand for healthcare services. While a substantial portion of migrants seek improved working conditions and living standards, a considerable number are refugees fleeing turmoil in their home countries. For the latter group, ensuring access to adequate healthcare becomes crucial, as they often encounter challenges such as language barriers and unfamiliarity with the healthcare system (3). Ethically and professionally, a civilized nation has a responsibility to provide equitable, modern, and comprehensive healthcare to all individuals, including asylum seekers, without discrimination (4). To evaluate this commitment, we present the outcomes of 298 foreign patients who received emergent surgical treatment in our General Surgery Department.

Materials and Methods

Patients without Turkish citizenship who were admitted to the University of Health Sciences Umranıye Training and Research Hospital and subsequently underwent emergency surgery performed by the General Surgery Department between January 2012 and June 2023 were included in this study. Ethical approval was obtained from the hospital's ethics committee. Patients were categorized into two groups based on their admission date (before and after 2019) and were evaluated according to demographics (age, ethnicity), length of hospital stay (LoHS), surgical procedures, perioperative complications, and mortality rates.

In the study, SPSS (Statistical Package for Social Sciences) Windows 21.0 was used for data transformation and analysis of raw data obtained for both groups. Demographic data (age, gender), length of hospital stay (LoHS), surgical procedures, perioperative complications, and mortality rates. Descriptive statistics (frequency [f], percentage [%], arithmetic

mean [x], standard deviation [SD]) were used to evaluate the data. The normal distribution of variables was determined using visual (histograms and probability plots) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk). Non-parametric or parametric tests were chosen based on the suitability. Categorical variables were compared using the χ^2 test or Fisher's exact test when any of the values were less than 5. Continuous variables were presented as mean and standard deviation, and compared using independent t-tests (or Mann-Whitney U tests when appropriate). A p-value less than 0.05 was considered statistically significant.

Results

A total of 298 patients were evaluated in the study. Of these, 143 patients who underwent surgery before 2019 were categorized as Group 1, and the remaining 155 patients as Group 2.

The mean age of the patients was 30.5 ± 11.8 years (Table 1). Male patients had a mean age of 28.6 ± 10.2 years, while female patients had a mean age of 35.9 ± 14.4 years, a statistically significant difference ($p < 0.05$). Subgroup analysis revealed that this age difference between genders was also significant within Group 1 and Group 2 ($p < 0.05$). The mean age of patients in Group 1 was 29.0 ± 11.6 years, while in Group 2 it was 31.9 ± 11.9 years, a statistically significant difference ($p < 0.05$).

Male patients comprised 75% of the study population, with a higher proportion in Group 1 (81.8%) compared to Group 2 (67.3%). The gender distribution between the two groups was also statistically significant ($p < 0.05$). Afghan and Syrian patients represented the majority (74.5%) across both groups.

The overall mean length of hospital stay (LoHS) was 2 days (range: 1–28), with no statistically significant difference between Group 1 (median: 2 days, range: 1–28) and Group 2 (median: 2 days, range: 1–23) ($p > 0.05$).

Table 1. Demographics and Clinical Characteristics of the Patients at Baseline

Variables	Total (n=298)	Before 2019 (n=143)	After 2019 (n=155)	P
Age (year)	30.5 ± 11.8	29.0 ± 11.6	31.9 ± 11.9	0.008
Male	28.6 ± 10.2	27.7 ± 10.2	29.8 ± 10.1	0.042
Female	35.9 ± 14.4	34.8 ± 15.1	36.4 ± 14.2	0.546
p	<0.001	0.011	0.006	
Ethnicity				0.013
Afghanistan	69 (23.2%)	43 (30.1%)	26 (16.8%)	
Syria	153 (51.3%)	72 (50.3%)	81 (52.3%)	
Turkic States	52 (17.4%)	17 (11.9%)	35 (22.6%)	
Others	24 (8.1%)	11 (7.7%)	13 (8.4%)	
Duration of Hospital Stay (day)	2 (1-28)	2 (1-28)	2 (1-23)	0.824
Male	2 (1-8)	2 (1-28)	2 (1-23)	0.932
Female	2 (1-23)	2 (1-23)	2 (1-12)	0.970

Data are presented as mean ± SD, median (min-max) or n (%)

Table 2. Surgical Procedures

Variables	Total (n=298)	Before 2019 (n=143)	After 2019 (n=155)	P
Appendectomy	185 (62.1%)	89 (62.2%)	96 (61.9%)	
Laparoscopic	148 (80%)	58 (65.2%)	87 (90.6%)	
Open	27 (14.6%)	27 (30.3%)	3 (3.1%)	
Conversion	10 (5.4%)	4 (4.5%)	6 (6.3%)	<0.001
Cholecystectomy	20 (6.7%)	8 (5.6%)	12 (7.7%)	
Laparoscopic	17 (85%)	6 (75%)	11 (91.7%)	
Conversion	3 (15%)	2 (25%)	1 (8.3%)	0.537
Peptic Ulcus Perforation	25 (8.4%)	8 (5.6%)	17 (11%)	
Trauma Related Surgeries	26 (8.7%)	17 (11.9%)	9 (5.8%)	
Penetrating Wounds	18 (69.2%)	12 (70.6%)	6 (66.7%)	
In-Vehicle Car Accidents	2 (7.7%)	1 (5.9%)	1 (11.1%)	
Pedestrian Accidents	4 (15.4%)	3 (17.6%)	1 (11.1%)	
Fall from Heights	2 (7.7%)	1 (5.9%)	1 (11.1%)	0.898
Obstetric Anal Sphincter Injury Related Surgeries	3 (1%)	1 (0.7%)	2 (1.3%)	
Emergent Colorectal Surgeries	10 (3.4%)	8 (5.6%)	2 (1.3%)	
Others	29 (9.7%)	12 (8.4%)	17 (11%)	0.085

Data are presented as n (%)

Types of Surgery

In terms of surgical procedures, 185 patients (62.1%) underwent appendectomy, 20 patients (6.7%) underwent cholecystectomy, 25 patients (8.4%) had surgery for peptic ulcer perforation,

and 26 patients (8.7%) underwent trauma-related procedures. Other surgeries included colorectal surgery in 10 patients (3.4%) and anal sphincter repair due to obstetric trauma in 3 patients (1%) (Table 2).

Among appendectomy cases, 58 patients (65.2%) in Group 1 underwent laparoscopic appendectomy, compared to 87 patients (90.6%) in Group 2—a statistically significant increase in laparoscopic surgery rates over time ($p < 0.05$). Similarly, laparoscopic cholecystectomy was performed in 6 patients (75%) in Group 1 and 12 patients (91.7%) in Group 2, though this difference was not statistically significant ($p > 0.05$).

Perioperative Findings

Perioperative findings in appendicitis cases included local peritonitis in 10 patients (5.4%), fecal peritonitis in 2 patients (1.1%), and disseminated purulent peritonitis in 9

patients (4.9%) (Table 3). In Group 1, local peritonitis, fecal peritonitis, and disseminated purulent peritonitis were observed in 3 patients (3.4%), 1 patient (1.1%), and 4 patients (4.5%), respectively. In Group 2, these findings were noted in 7 patients (7.3%), 1 patient (1.1%), and 5 patients (5.2%), respectively. The differences in peritonitis findings between groups were statistically insignificant ($p > 0.05$).

Trauma Cases and Mortality

A total of 26 patients were admitted due to trauma. Affected abdominal organs and corresponding surgical procedures are detailed in Table 4 and Table 5. Emergent colorectal procedures are outlined in Table 6.

Table 3. Appendectomy Related Findings

Variables	Total (n=185)	Before 2019 (n=89)	After 2019 (n=96)	P
Local Peritonitis	10 (5.4%)	3 (3.4%)	7 (7.3%)	0.759
Fecal Peritonitis	2 (1.1%)	1 (1.1%)	1 (1.1%)	
Disseminated Purulent Peritonitis	9 (4.9%)	4 (4.5%)	5 (5.2%)	

Data are presented as n (%)

Table 4. Affected Organs in Patients with Trauma

Organ	Before 2019 (n=17)	After 2019 (n=9)
Diaphragm	4 (23.5%)	2 (22.2%)
Small Bowel	3 (17.6%)	3 (33.3%)
Colon	2 (11.7%)	2 (22.2%)
Liver	1 (5.8%)	1 (11.1%)
Spleen	1 (5.8%)	0 (0%)
Anal Sphincter	1 (5.8%)	3 (33.3%)

Table 5. Surgical Procedures in Patients with Trauma

Procedure	Before 2019 (n=17)	After 2019 (n=9)
Primary Diaphragm Repair	4 (23.5%)	2 (22.2%)
Partial Small Bowel Resection and Anastomosis	3 (17.6%)	2 (22.2%)
Partial Small Bowel Resection and End Ileostomy	0 (0%)	1 (11.1%)
Abdominal/Pelvic Packing	1 (5.8%)	1 (11.1%)
Primary Colon Repair	0 (0%)	1 (11.1%)
Ileocecal Resection	0 (0%)	1 (11.1%)
Splenectomy	1 (5.8%)	0 (0%)
Anal Sphincter Repair	2 (11.7%)	3 (33.3%)
Tube Thoracostomy	3 (17.6%)	1 (11.1%)

Table 6. Emergent Colorectal Surgeries

Procedure	Before 2019 (n=8)	After 2019 (n=2)
Colorectal Resection and Anastomosis	3 (37.5%)	1 (50%)
Colorectal Resection and End Colostomy	2 (25%)	1 (50%)
Fournier’s Gangrene Debridement	2 (25%)	0 (0%)
Perianal Abscess Drainage	1 (12.5%)	0 (0%)

Overall, five patients (1.7%) died during the study period. In Group 1, three patients (2.1%) died due to duodenal ulcer perforation, Grade V liver injury, and hemorrhagic liver mass leading to exsanguination, respectively. In Group 2, two patients (1.3%) died due to disseminated splenic abscess and duodenal ulcer perforation, respectively. The mortality difference between the groups was not statistically significant ($p > 0.05$).

Discussion

Even indigenous populations may encounter challenges when seeking medical treatment. Factors such as unfamiliarity with the healthcare system, language barriers, and a lack of confidence in obtaining equitable and adequate medical care contribute to delayed hospital admissions, even in emergency cases. These obstacles are particularly pronounced among individuals with foreign identities. To address and better understand this issue, we evaluated our institutional experience and outcomes in this study.

Our study population predominantly comprised adult male patients. While the observed male predominance, age distribution, and ethnic backgrounds were noted, an in-depth evaluation of these demographic factors is beyond the scope of this article. The mean length of hospital stay (LoHS) was 2 days in both groups, a figure consistent with current literature, especially given the predominance of appendectomy cases (5,6). This suggests that most patients sought timely medical attention, particularly in cases of acute appendicitis.

Acute appendicitis accounted for more than 60% of surgeries in both groups, aligning with existing literature (7). Notably, the laparoscopic appendectomy rate was significantly higher in Group 2, reflecting the increased adoption of laparoscopic techniques over time. Contemporary studies report a conversion rate from laparoscopic to open appendectomy ranging between 2% and 4.5% (8,9). While our conversion rate was slightly higher, the proportional difference was minimal and unlikely attributable to delayed hospital admissions. In Group 2, the majority of appendicitis cases were successfully managed laparoscopically, indicating that patients generally presented to the emergency department in a timely manner.

We utilized the complicated appendicitis classification system developed by Mariage et al., with findings summarized in Table 3 (10). Both groups demonstrated significantly lower rates of complicated appendicitis compared to the literature, where rates can reach up to 40% (11). Furthermore, the difference in complicated appendicitis rates between groups was statistically insignificant.

Acute cholecystitis cases in our clinic are operated on under strict criteria, including symptom onset within four days, alanine and aspartate aminotransferase levels below 400 U/L, and normal bilirubin levels. Literature suggests conversion rates for acute cholecystitis surgeries can reach up to 25% (12,13). In Group 1, a conversion rate of 25% was observed, although the small sample size ($n=8$) may have influenced this outcome. Group 2, however, demonstrated a lower conversion rate, and both groups remained within the range reported in

the literature. These findings suggest that most acute cholecystitis cases in our population did not present too late for surgical intervention.

Peptic ulcer cases, including their prevalence and associated mortality, were consistent with the literature (14). As expected, trauma-related surgeries were more frequent than colorectal emergencies in this relatively young population, reflecting typical surgical trends for this age group.

This study has several limitations. First, as a retrospective analysis, it lacks randomization and is subject to selection bias. Second, a significant number of patients in Group 2 were treated during the COVID-19 pandemic, which may have influenced statistical comparisons between groups despite overall outcomes aligning with existing literature.

Conclusion

Despite these limitations, this study provides reliable data indicating that patients with foreign identities do not hesitate to seek emergency surgical care and are able to receive appropriate and modern treatment. Nonetheless, there is a pressing need to further improve their access to and experience within healthcare systems. Future studies, particularly those including outpatient clinic admissions, are necessary to evaluate additional aspects of their healthcare experiences and identify areas for improvement.

Ethical approval

The study was approved by İstanbul Health Sciences University Umraniye Training and Research Hospital Clinical Research Ethics Committee (date: 05.10.2023, number: 355).

Author contribution

The authors confirm contribution to the paper as follows: Study conception and design: MKY; data collection: EFK, MIP; analysis

and interpretation of results: HSUG; draft manuscript preparation: MKY; critical review and final approval: FB, HKT. All authors reviewed the results and approved the final version of the manuscript.

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Conflict of interest

The authors declare that there is no conflict of interest.

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