

# Safety of Elective Inguinal Hernia Repair in the Geriatric Population: A Retrospective Analysis

## Geriatrik Popülasyonda Elektif İnguinal Herni Onarımının Güvenliği: Retrospektif Analiz

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### Abstract

**Background:** Inguinal hernia (IH) repair is generally considered safe with low morbidity and mortality; however, the risk increases in geriatric patients due to the prevalence of comorbid conditions. This study aims to compare the outcomes of elective versus emergency IH repair in elderly patients.

**Materials and Methods:** Patients aged 65 years and older who underwent surgery for IH at Balıklıgöl State Hospital and Akçakale State Hospital between 01.12.2022 and 01.02.2024 were retrospectively reviewed. The patients were divided into two groups as emergency (G-EM) and elective (G-EL) surgery. Age, gender, comorbidities, type of operation, length of hospitalization and postoperative complications were recorded. Postoperative complications were recorded as wound infection, seroma and ileus.

**Results:** The study included 72 patients. Sixty-one (84.7%) patients were in the G-EL group and 11 (15.3%) were in the G-EM group. The G-EL group was composed entirely of males, with a mean age of 70.9 years (range: 65-86), while the G-EM group included 6 males (54.5%) and 5 females (45.5%), with a mean age of 71.2 years (range: 65-89). The length of hospitalization was significantly shorter in the G-EL group ( $1.39 \pm 0.62$  days) compared to the G-EM group ( $4.50 \pm 2.51$  days,  $p < 0.001$ ). Postoperative complications were occurred in 5 (45.6%) patients in the G-EM group and in 7 (11.5%) patients in the G-EL group, a significant difference was found ( $p=0.015$ ). No mortality was observed in both groups.

**Conclusions:** Although IH repair in the geriatric population is a concern due to comorbidities, we recommend elective mesh hernia repair for patients diagnosed with inguinal hernia to avoid the high complication rate after emergency repair as seen in our study and in the literature.

**Keywords:** Geriatrics, Inguinal Hernia, Complications, Surgery

### Öz

**Amaç:** Kasık fıtığı (İH) onarımı genellikle düşük morbidite ve mortalite ile güvenli kabul edilir; ancak, komorbid durumların yaygınlığı nedeniyle geriatrik hastalarda risk artar. Bu çalışmanın amacı yaşlı hastalarda elektif ve acil İH onarımının sonuçlarını karşılaştırmaktır.

**Materyal ve Metod:** 01.12.2022 ile 01.02.2024 tarihleri arasında Balıklıgöl Devlet Hastanesi ve Akçakale Devlet Hastanesi'nde İH nedeniyle ameliyat edilen 65 yaş ve üzeri hastalar retrospektif olarak incelendi. Hastalar acil (G-EM) ve elektif (G-EL) cerrahi olmak üzere iki gruba ayrıldı. Yaş, cinsiyet, eşlik eden hastalıklar, ameliyat türü, hastanede yatış süresi ve ameliyat sonrası komplikasyonlar kaydedildi. Ameliyat sonrası komplikasyonlar yara enfeksiyonu, seroma ve ileus olarak kaydedildi.

**Bulgular:** Çalışmaya 72 hasta dahil edilmiştir. Altmış bir (%84,7) hasta G-EL grubunda ve 11 (%15,3) hasta G-EM grubundaydı. G-EL grubu ortalama 70,9 yaş (dağılım: 65-86) ile tamamen erkeklerden oluşurken, G-EM grubu ortalama 71,2 yaş (dağılım: 65-89) ile 6 erkek (%54,5) ve 5 kadın (%45,5) içermekteydi. Hastanede yatış süresi G-EL grubunda ( $1.39 \pm 0.62$  gün) G-EM grubuna ( $4.50 \pm 2.51$  gün,  $p < 0.001$ ) kıyasla anlamlı olarak daha kısaydı. Ameliyat sonrası komplikasyonlar G-EM grubunda 5 (%45,6) hastada görülürken, G-EL grubunda 7 (%11,5) hastada görülmüştür ve anlamlı bir fark bulunmuştur ( $p=0,015$ ). Her iki grupta da mortalite gözlenmedi.

**Sonuç:** Geriatrik popülasyonda İH onarımı komorbiditeler nedeniyle endişe verici olsa da, çalışmamızda ve literatürde görüldüğü gibi acil onarım sonrası yüksek komplikasyon oranından kaçınmak için inguinal herni tanısı alan hastalara elektif mesh herni onarımını öneriyoruz.

**Anahtar Kelimeler:** Geriatri, İnguinal Herni, Komplikasyon, Cerrahi

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## Introduction

Inguinal hernia (IH) is a disease seen in all age groups and requires more than 20 million operations annually worldwide (1). As an age group, it is common in childhood and advanced ages (2). Increased intra-abdominal pressure and abdominal wall weakness are effective in its formation (3). Inguinal hernia has a high prevalence in the elderly population ( $\geq 65$  years) due to abdominal wall weakness, benign prostatic hyperplasia, chronic cough and chronic constipation (4).

Physical examination is usually sufficient for the diagnosis of inguinal hernia. Ultrasound (USG) and magnetic resonance imaging (MRI) can be used as additional methods for diagnosis in suspicious cases or in female patients (5).

Surgery is the only curative treatment for inguinal hernia and patients with symptoms should always be advised to undergo surgery. A 2020 international guideline recommended a “watchful waiting” strategy for asymptomatic or minimally symptomatic inguinal hernia (IH) patients, especially for male patients at low risk of developing into an emergency. However, it has been reported that most patients will need surgery in time (6).

In surgical techniques, open repair without mesh and Lichtenstein tension-free mesh, or laparoscopic or robotic methods such as Total Extra Peritoneal (TEP) and Trans Abdominal Pre-Peritoneal (TAPP) can be used (7).

In addition, morbidity and mortality rates related to surgery and anesthesia increase in patients aged 65 years and older (8). Therefore, surgical treatment tends to be postponed in asymptomatic or mildly symptomatic patients aged 65 years and older with a diagnosis of inguinal hernia (8). When urgent inguinal hernia repair is needed, morbidity and mortality rates also increase (9).

In this study, we aimed to compare the results of elective and emergency IH repair in geriatric patients.

## Materials and Methods

Patients aged 65 years and older who underwent surgery for IH between 01.12.2022 and 01.02.2024 at Balıklıgöl

State Hospital and Akçakale State Hospital were retrospectively reviewed. Patients were operated with open technique Lichtenstein tension-free mesh repair. The patients were divided into two groups as emergency (G-EM) and elective (G-EL) surgery group. Age, gender, comorbidities, type of operation, length of hospitalization and postoperative complications were recorded. Postoperative complications that developed during hospitalization or within 30 days after discharge were recorded as wound infection, seroma and ileus. Patients whose information was not clearly available were excluded from the study.

The operations were performed by 2 general surgeons with 5 years of experience in inguinal hernia surgery.

## Statistical Analysis

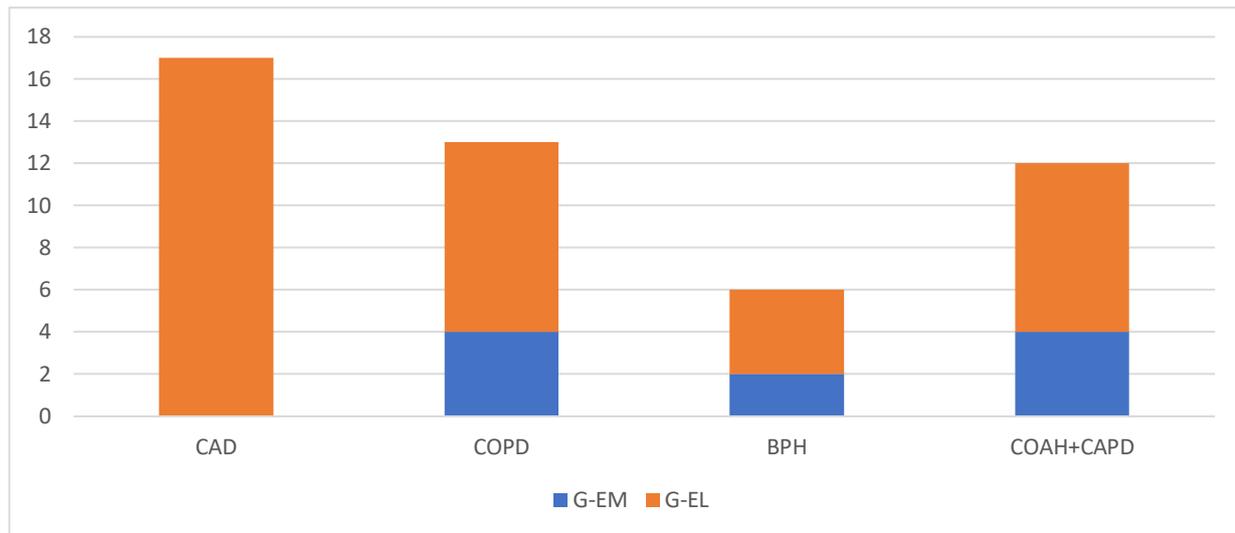
Statistical analysis of our study was performed with SPSS 18 program. Kolmogorov-Smirnov test was used to determine the distribution of numerical data. Independent-samples t-test was used for comparison in groups with normal distribution and Chi-square test was used for comparison of non-numerical data. P values  $< 0.05$  were considered statistically significant.

## Results

The study included 72 patients. Of the patients, 61 (84.7%) were in the G-EL group and 11 (15.3%) were in the G-EM group. All patients in the elective group were male and the mean age was 70.9 years (65-86). In the emergency group, 6 (54.5%) were male, 5 (45.5%) were female and the mean age was 71.2 (65-89) years (Table-1). All patients in the G-EL group had inguinal hernia while 27.3% (n=3) patients in the G-EM group had femoral hernia. In the G-EL group, 42.6% had Coronary Artery Disease (CAD), 27.9% had Chronic Obstructive Pulmonary Disease (COPD) and 8.2% had Benign Prostatic Hypertrophy (BPH). In the G-EM group, 81.8% had CAD, 45.5% had COPD and 27.3% had BPH as comorbidities (Figure 1). The rate of comorbidity was higher in the emergency group compared to the elective group.

**Table 1.** Comparison of groups according to results

	G-EL	G-EM
Men	61	6
Women	0	5
Age (mean)	70.9	71.2
Hernia Type		
• Inguinal	61	8
• Femoral	0	3
Bowel Resection	0	3
Hospitalization	1.4 gün	4.5 gün
Postoperative Complications	7	5
• Seroma	5	3
• İleus	1	2
• Wound infection	1	0



**Figure 1.** Distribution groups according to comorbid diseases

Both groups were operated under spinal anesthesia. All patients in the G-EL group and 8 (72.7%) patients in the G-EM group underwent mesh hernia repair. Small bowel resection operation was performed in 3 (27.3%) patients in the G-EM group. The duration of hospitalization was  $1.39 \pm 0.62$  days in the G-EL group and  $4.5 \pm 2.51$  days in the G-EM group, which was statistically significant ( $p < 0.001$ ). There was no difference between the gender of the patients and the development of complications ( $p = 0.191$ ). Postoperative complications were observed in 5 (45.6%) patients in the G-EM group and in 7 (11.5%) patients in the G-EL group, a significant difference was found ( $p = 0.015$ ). No mortality was observed in both groups.

## Discussion

The risk factors for inguinal hernia (IH) include male gender, advanced age, low body mass index, pre-existing abdominal wall muscle weakness, and increased intra-abdominal pressure (10). In our study, the majority of patients were male.

The development of inguinal hernia is more common in elderly patients compared to the general population due to a weakened abdominal wall and comorbid conditions that increase intra-abdominal pressure, such as chronic obstructive pulmonary disease (COPD), benign prostatic hyperplasia (BPH), and chronic constipation (11). In elderly patients, the incidence of emergency hernia repair increases due to prolonged life expectancy and delayed surgeries, which may lead to fatal outcomes.

Although morbidity and mortality rates in surgical repair of inguinal hernia are generally low, decision-making by surgeons becomes more challenging in geriatric patients due to the coexistence of comorbid diseases. In our study, the high rate of comorbidities in patients operated on under emergency conditions supports the possibility that some

surgeries may have been postponed by surgeons due to concerns about postoperative complications.

Işıl et al. found that 21% of patients who underwent emergency surgery for IH required bowel resection, which was deemed statistically significant (12). In our study, the rate of small bowel resection in three (27.3%) patients in the emergency group was consistent with the literature. The difference between the groups was statistically significant, as reported in previous studies that showed increased postoperative complications and prolonged hospitalizations in patients who underwent emergency IH repair (9, 13).

While general anesthesia is typically preferred in emergency situations, local or regional anesthesia is the preferred option for elective hernia repair, particularly in elderly patients with significant comorbidities (14). General anesthesia has been associated with increased morbidity and mortality rates in the geriatric population (15). Meta-analyses have reported the complication rate following inguinal hernia (IH) surgery in elderly patients as ranging from 21.9% to 28.9%, with mortality rates ranging from 1.2% to 6%. In our study, the complication rate was found to be statistically significantly higher in the emergency group, with no mortality observed among our patients (16).

A limitation of our study is its retrospective design and the relatively small sample size. Multicenter, prospective studies with larger patient populations would provide more robust and comprehensive data, offering clearer and more valuable insights into the management of inguinal hernia in the geriatric population.

## Conclusion

While inguinal hernia (IH) repair in the geriatric population poses challenges due to the presence of comorbidities, we recommend elective mesh hernia repair for patients diagnosed with inguinal hernia. This approach is suggested to

mitigate the high complication rates associated with emergency repairs, as observed in our study and supported by the existing literature.

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**Ethical Approval:** Ethics committee approval was obtained from the Harran University Clinical Research Ethics Committee on October 21, 2024, with decision number HRU/24.16.54.

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**Author Contributions:**

*Concept:* F.T., M.G.

*Literature Review:* F.T., M.G.

*Design :* F.T., M.G.

*Data acquisition:* F.T., M.G.

*Analysis and interpretation:* F.T., M.G.

*Writing manuscript:* F.T., M.G.

*Critical revision of manuscript:* F.T., M.G.

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