ORIGINAL ARTICLE

Geriatric Inguinal Hernia and its Surgical Management – Findings From a Retrospective Study

Irfan Ullah[1], Amer Hayat Khan[1], M. S. Andee Dzulkarnaen Zakaria[2], Long Chiau Ming[3], Muhammad Shahid Iqbal[4]

[1]Department of Clinical Pharmacy, School of Pharmaceutical Sciences Universiti Sains Malaysia, 11800 Penang, Malaysia, [2]Department of Surgery, School of Medical Sciences, Universiti Sains Malaysia, Health Campus Kelantan, Malaysia, [3]Pengiran Anak Puteri Rashidah Sa'adatul Bolkiah, Institute of Health Sciences, Universiti Brunei Darussalam, Gadong BE1410, Brunei Darussalam, [4]Department of Clinical Pharmacy, College of Pharmacy, Prince Sattam bin Abdulaziz University, Al-Kharj, 11942, Saudi Arabia

Abstract

Objective: The objective of the study was to study the surgical management of inguinal hernia (groin hernia) among geriatric (elderly) patients. **Materials and Methods:** A retrospective study was conducted from December 2016 to August 2018 in the surgical ward of a university hospital in Malaysia. Geriatric patients operated for surgery during the study period were recruited in the study. A total of 116 cases operated for groin hernia with or without comorbidities and their influence on the overall results of surgical interventions were studied. **Results:** The mean age of the patients was 71.02 ± 3.1 years, of whom 94 (81%) were male and 22 (19%) were female. In 66 (56.9%) patients, the hernias were simple, while 21 (18.1%) had an obstructive inguinal hernia. In 17 (14.7%) patients, the hernia was incarcerated while 12 cases presented had strangulations. Comorbidities were present in 97 (83.6%) patients. No mortality was found either in elective or in emergency surgery. **Conclusion:** Comorbidities, type of surgery (elective or emergency), type of hernia (simple or complicated), and age of the patients can make surgery more challenging in the geriatric population.

Key words: Comorbidities, Geriatrics, Groin hernia, Inguinal hernia, Surgical management

INTRODUCTION

Increasing age is associated with decreasing various organ systems function and because of loss of strength of the abdominal wall and conditions associated with increased intra-abdominal pressure, inguinal hernias are common in the elderly.[1,2] Whereas, it is found that emergency hernia repair in patients more than 65 years of age is a serious problem and carries a high risk of complications in the presence of coexisting diseases.[3] Based on US, UK, Canadian, and Australian incidence statistics, which extrapolated using the population of the country, estimation of the incidence of inguinal hernia in Malaysia is about 0.18%.[4,5]

There is an increase in the geriatric patients undergoing various surgical procedures which then attribute to an overall increased life expectancy in the developed world because of improve in diagnostic tools.[6,7] In the developing world, there is an alarming incidence of peri-operative deaths among geriatric patients.[8] The development of predictive criteria for the assessment of pre-operative factors affecting morbidity and mortality in elderly surgical patients had been suggested to surgeons. The frequency of concomitant diseases in elderly patients will increase the risk of complications and death in surgery.[9-12]

Complications at some stage because of reluctance for operation and it has been pointed out in many studies that the mortality and morbidity increase many folds if such hernias are operated in an emergency in elderly patients.[13-17] Comorbidities with the presence of

Address for correspondence:
Muhammad Shahid Iqbal, Department of Clinical Pharmacy, College of Pharmacy, Prince Sattam bin Abdulaziz University, Al-Kharj, 11942, Saudi Arabia.
E-mail: drmmsiqbal@gmail.com

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complications and emergency surgery increase the risk.[18,19] The present study evaluates the clinical management of inguinal hernias (groin hernias) as surgical procedures in elderly patients of 65 years and above with an emphasis on post-operative morbidity and mortality.

MATERIALS AND METHODS

Settings and study design

This retrospective study was conducted among patients underwent for surgery for groin hernia in a university hospital in Malaysia. The hospital provides extensive healthcare services. Before the initiation of this study, all aspects of research approval, including access to and use of patient clinical information, were authorized by the concerned authorities and medical research and ethics committee.

Participants and data collection

Participants' data and relevant information were collected from December 2016 to August 2018 from patient's files from the surgical ward of the hospital. Patients above 65 years of age diagnosed with groin hernia were selected for the study. A total of consecutive 116 cases were selected based on the inclusion and exclusion criteria during the study period.

Common comorbidities and their influence on the overall results of surgical intervention in geriatric patients were studied. The outcome variables analyzed included operative time, time to return to normal activity, pain level, complications, and recurrence rate. Patients with incomplete data and those had other surgical procedures were excluded from this study.

A pre-validated data collection form, which was developed after an extensive literature review, was used to collect patients' data and clinical information. It was designed to collect information about the patients' demographic characteristics, which included age, gender, ethnicity, smoking status, and alcohol consumption.

Ethical approval

All ethical considerations were obtained from relevant authorities under research ethics number B453009.

Statistical analysis

Data were collected from patients' medical files and analyzed using Statistical Package for the Social Sciences (SPSS) version 24. All received information was coded into categorical variables. All cases were entered using the same serial number as used in the data collection form. Categorical data were presented as frequency and percentage, while continuous data were reported as mean ± standard deviation. Spearman's correlation coefficient test was used to determine the association among present chief complaints (signs and symptoms) and disease state among the studied patients. $P < 0.05$ was considered statistically significant.

RESULTS

Figure 1 presented the flow chart of the study. Patients' sociodemographic details are presented in Table 1. Malay race and ex-smoker were observed as dominant variables.

A detailed patients' clinical characteristics with comorbidities are presented in Table 2. Ninety-seven (83.6%) patients had comorbidities and hypertension was found as the most frequent condition encountered (27.6%). Several patients had more than one comorbidity.

Table 3 demonstrates the findings of the correlation analysis among the study participants regarding their chief complaints

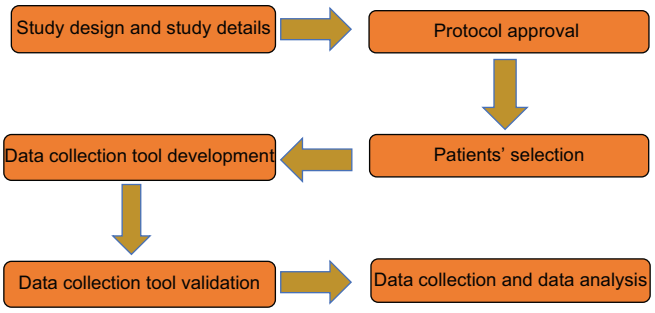

Figure 1: Flow chart of the study

Table 1: Sociodemographic variables of the patients

Variables	Frequency	Percentage
Age	71.02±3.1 years	
Gender		
Male	94	81.0
Female	22	19.0
Race		
Malay	83	71.6
Others	33	28.4
Smoking status		
Active smoker	11	9.5
Ex-smoker	69	59.5
Non-smoker	36	31.0
Alcohol consumption		
Yes	24	20.7
No	92	79.3

and disease state. Statistically, a significant association ($P > 0.05$) was observed for the gender variable, that is, male and the age of the patients (aging).

Figure 2 represents the total hospital stays of the studied patients. Out of total studied patients, 55 (47.4%) were discharged within a day and only 7 (6%) of the patients hospitalized for more than 3 days.

DISCUSSION

Surgery in the elderly has remained a challenge for surgeons because of many reasons. Avoidance in surgery to the elderly may cause some diseases to progress to a stage where surgical intervention may cause an increased risk of mortality. However, we need to consider the benefits and risks before procedures. Number of elderly that undergone surgery for hernia is increasing all over the world. In developing countries, cost is a common problem. The emergency hernia operation in the geriatric population carries a high mortality risk.[19-21] Some of the patients require emergency surgery because of complications such as obstruction or strangulation. This is the reason that inguinal hernia is better repaired electively in the elderly.[21,22] Unlike other symptoms of hernia such as intermittent indigestion, gas, flatulation, and abdominal pain, incarceration is a life-threatening complication which results in cutting off the blood flow and bulging the intestines and abdominal muscles. This results in severe and sudden abdominal pain and usually requires immediate medical attention as an emergency.[19-23]

Table 2: Clinical characteristics and comorbidities of the patients

Variables	Frequency	Percentage
Disease state		
Simple	66	56.9
Obstructed	21	18.1
Incarcerated	17	14.7
Strangulated	12	10.3
Comorbidity		
Ischemic heart disease	22	18.9
Hypertension	32	27.6
Diabetes mellitus	24	20.7
COPD	11	9.5
Others	8	6.9

COPD: Chronic obstructive pulmonary disease

Table 3: Statistical correlation between chief complaints and disease state

Chief complaints	*P*-value
Gender	0.034*
Age	0.047*
Family history	0.122
Cough	0.083
Others	0.279

*Statistical correlation is significant at 0.05 level (2-tailed)

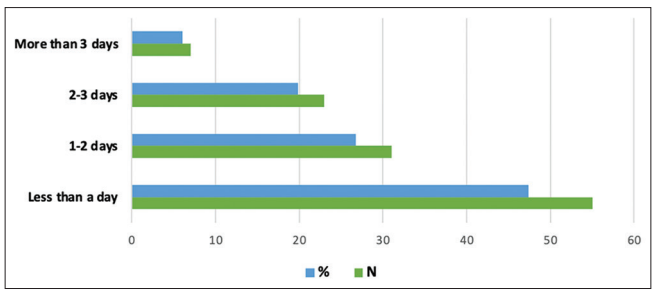

Figure 2: Hospital stays of the studied patients

One hundred and sixteen operations of inguinal hernias in elderly patients of 65 years and above were studied during the study period and the management outcome was evaluated. The mean age of the patients was 71.02 ± 3.1 years. The male to female ratio was 8:2, of whom 94 (81%) were male and 22 (19%) were female. These facts make gender an absolute indication for any type of hernia surgery. Elective hernia surgery shows to have a low rate of mortality being reported by many studies.[13,14] Comorbidity, type of surgery (elective or emergency), clinical type of hernia (simple or complicated), and outcome of surgery in the elderly subjects show a strong association among them. Early elective surgery is recommended in elderly patients to avoid morbidity and mortality.[12,13] Other than age and comorbidities, experience of surgeon, operating conditions, and sterilization of the instruments also play an important role.

Among 94 (81%) male patients, in 66 patients, the hernias were simple, while 21 patients had obstructed inguinal hernia and none presented with recurrence. In 17 male patients, the hernia was incarcerated while 12 were presented with life-threatening complications strangulation. Elective surgery was performed in most cases, while few cases were treated as an emergency. An additional factor leading to post-operative problems in emergency hernia repair is less time spent on the workup of the patients in emergency situations to avoid any further delay in surgery. Factors like delay in the referral, hours following obstruction or strangulation, the general state of the patients such as functional, nutritional, and psychological states and condition of organs will influence the mortality and morbidity rate in hernia repairs.[21,22] Considerations of the type of anesthetic agents and the surgical technique to be performed in the elderly are also important.[22,23] Further, the role of the drug selection such as antibiotics and/or compliance with long-term therapy to treat comorbid conditions is also important to secure ideal treatment outcomes.[21-24]

No seroma or recurrence was observed. Moreover, pain and

hospital stay were not different from those obtained by other repair techniques. No mortality was found either in elective or in emergency surgery. The role of the drugs, especially antibiotics, was given as per guideline and oral antidiabetic medicines were switched to insulin for better outcomes among diabetics. Open preperitoneal mesh repair is a safe procedure, whereas emergency hernia surgery carries a high mortality and complications.[21,22] An early elective repair is strongly recommended to improve the outcome of surgery in the elderly. The drug chosen, that is, anesthetic agents and its use also plays an important role in surgery, especially in patient with comorbidities.

Several risk factors also play an important role in the treatment and management of the groin hernia.[21,24] The major risk factors are gender (male), which are around eight to ten times more likely to develop groin hernia than females. Another major risk factor is aging, which also played a significant role in the management of the disease state. Among other notable risk factors, family history, chronic constipation, and respiratory disorders or diseases are also considered as significant contributors in developing groin hernia, especially among elderly patients.[23-25]

CONCLUSION

Our study highlights that age is not an absolute risk for surgical treatment in inguinal hernia. Other factors such as comorbidities, patients' conditions, and hernia status should also be considered. Coexisting medical problems make surgery still challenging in the geriatric population.

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