

Republic of Iraq

**Ministry of Higher Education and
scientific Research**

**University of Diyala College of
medicine**



**A scientific dissertation Submitted to the College of Medicine- Diyala
University in partial fulfillment of the requirement of M.B.Ch.B**

The epidemiology and risk factors for hernia

Presented By: Huda Hazim Alwan

Supervised by: Assistant professor Dr Ahmed Modher Khalaf

M.B.ch.B/ F.I.C.S/ FACS GENERAL SURGERY

Department Of Surgery

2023

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{ يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ }

صدق الله العظيم

Acknowledgement

I would to express my special thanks and gratitude to **(professor Dr.Ahmed Modher Khalaf)** my teacher and supervisor for guiding me in the article by correcting the mistakes and giving her valuable opinions in many aspect in both scientific facts and literature ones. I hope all the best and successes for him in his future career.

My great many thanks to the great people and my best friends who helped and supported me to complete this project.

ABSTRACT

Background/Abdominal wall hernias are a very common surgical condition affecting all ages and both sexes. The main risk factors of hernias include pregnancy, weight lifting, constipation, and weight gain.

Objective/The aim of this study was to determine the risk factors of abdominal hernias.

Results/ The age group >45 years scored highest percentage (40.0%) Patients have 25-30 BMI scored highest percentage (50.00%) Patients with para umbilical hernia scored highest percentage (32.5%) Patients with hernia suffering from chronic constipation, chronic cough, diabetic mellitus, previous abdominal surgery, and previous abdominal trauma with percentages (52.5%, 45.0%, 27.5%, 25.0%, and 40.0%) respectively .Multipara show (66.6%) of affected female, (32.5%) of patients with hernia have smoking.

Conclusions/Abdominal wall hernias are a common clinical presentation in Diyala/ Iraq. there is an obvious relationship between obesity, chronic constipation, chronic cough, smoking, recurrent pregnancy, family history , previous surgery and hernias.

Early diagnosis, easily accessible health facilities and health education are important to prevent complications..

Aim of study

To identify epidemiology and risk factors for hernia

Introduction

A hernia is a protrusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity. The external abdominal hernia is the commonest form. The parts of hernia are sac, neck and contents. Most commonly it contains fat and the intestine. Abdominal hernias are a very common operative condition that affects all ages and both sexes.

Hernia can be found during daily physical exam. They are not necessarily symptom-causing. However The most common symptoms of a hernia include a swelling in the groin, heavy feeling in the abdomen, and discomfort in the abdomen regions, especially when coughing, lifting or bending over. However, symptoms may not appear in some people and they will only realize that they have this condition during medical checkups. The hernia can also be characterized as a rupture in smooth tissue through which an organ protrudes or pushes through. It is mainly common in the abdomen, groin regions, navel area and upper thigh. The patient should seek medical attention if there is a painful or noticeable bulge on the abdomen, pubic bone or in the groin, or if there are other symptoms of hernia.

The patient can feel the bulge by touching the affected area or notice it when standing upright. It may be possible to push a hernia back into the abdomen, however, this is only possible according to the type of the hernia and the size of the hernia sac content.

Composition of a hernia

- 1.The sac.
- 2.The coverings of the sac.
- 3..The contents of the sac.

Contents of the sac these can be

Omentum = omentocele (syn. epiplocele)

Intestine = enterocele. More commonly small bowel, but may be large intestine or appendix

portion of the circumference of the intestine Richter's hernia

A portion of the bladder (or a diverticulum) may constitute part of or be the sole contents of a direct inguinal, a sliding inguinal or a femoral hernia.

Ovary with or without the corresponding fallopian tube

Meckel's diverticulum = a Littre's hernia

Fluid as part of ascites or as a residuum thereof

Types of hernia according to site

External abdominal Hernias

- 1.inguinal
- 2.femoral
3. umbilical & paraumbilical
4. incisional
- 5.epigastric

Internal abdominal Hernia

- 1.diaphragmatic
2. paraduodenal
- 3.paracaecal
4. iatrogenic internal

Irrespective of site, a hernia can be classified into five types Classification of hernias

- 1.Reducible
- 2.Irreducible
- 3.Obstructed
- 4.Strangulated (complication of irreducible hernias) .

Method and Material

Subjects

This cross-sectional study was carried out in Department of General Surgery at Baquba Teaching Hospital between october 2022 to february 2022 among 80 patients in study place.

The study population originally included all patients residents aged twenty years and more.

Data collection

History taking was the first part of data collection and included patient demographics (gender, age , type of hernia) and whether a primary or recurrent hernia, family history of hernia,

The examining physician was informed of the replies. The examination procedure was the one described by Bailey (1942). The examining physician reported whether, in each groin, there was a visible and clearly palpable hernia; a palpable impulse; or an operation scar. The examination was conducted with the subject standing in a good light. After inspection, any visible lump was palpated to determine whether it was possible to ‘get above it’ with the thumb and index finger.

The questionnaire has been translated into Arabic. It consisted of two parts; the first part gathered the sociodemographic data (including gender, age, type of hernia). The second part addressed knowledge of hernia risk factors and had eight domains discussing multiple risk factors (cough, lifting heavy weight, constipation, smoking, pregnancy, diabetes, previous surgeries, and, previous trauma). The answers to the second part of the questionnaire reflected the knowledge of participants, with “Yes,” “No,”

Statistical analysis

Data of present study describes as frequency and percentage, and the differences among percentages calculated by chi-square test a SPSS version 25 and Excel 2013 programs were used to carry out present data . p-value ≤ 0.05 was considered significant.

Results

Data of present study showed there is significant differences ($P < 0.05$) among percentages of all risk factors of hernia except lifting that showed no significant differences ($P > 0.05$).

The age group 36-45 and >45 years scored highest percentage (30.0% and 40.0%) than <25 age group that scored lowest percentage (11.3%).

Patients have 25-30 BMI scored highest percentage (50.0%) than >30 that scored lowest percentage (17.5%).

Patients with para umbilical hernia scored highest percentage (32.5%) than patients with umbilical that scored lowest percentage (21.3%).

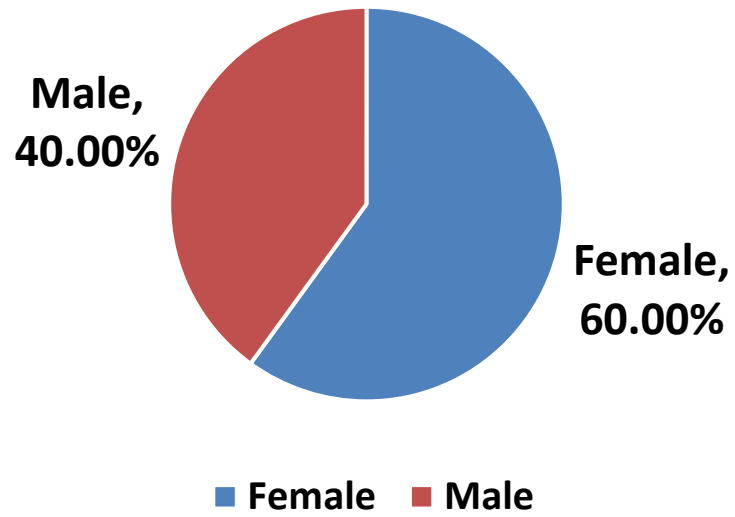
Patients with hernia suffering from chronic constipation, chronic cough, diabetic mellitus, previous abdominal surgery, and previous abdominal trauma with percentages (52.5%, 45.0%, 27.5%, 25.0%, and 40.0%) respectively . multipara and recurrent pregnancy also show (66.6%) of affected female, Finally (32.5%) of patients with hernia have smoking (table 1 and figure 1,2,3).

Table 1; frequency and percentage of hernia risk factors.

		Count	Percent	P value
Gender	Female	48	60.0%	<i>P</i> <0.05
	Male	32	40.0%	
Age groups	<25	9	11.3%	<i>P</i> <0.001***
	25-35	15	18.8%	
	36-45	24	30.0%	
	>45	32	40.0%	
BMI	<25	26	32.5%	<i>P</i> <0.001***
	25-30	40	50.0%	
	>30	14	17.5%	
Type of hernia	Para	26	32.5%	<i>P</i> <0.05*
	Umbilical			
	Umbilical	17	21.3%	
	hernia			
	Incisional	19	23.8%	
Inguinal	18	22.5%		
Chronic constipation	No	38	47.5%	<i>P</i> <0.001***
	Yes	42	52.5%	
Chronic cough	No	44	55.0%	<i>P</i> <0.001***
	Yes	36	45.0%	

Smoking	No	54	67.5%	<i>P</i> <0.001***
	Yes	26	32.5%	
Diabetic mellitus	No	58	72.5%	<i>P</i> <0.001***
	Yes	22	27.5%	
Lifting or pushing heavy objects	No	43	53.8%	<i>P</i> >0.05
	Yes	37	46.3%	
Multipara/recurrent pregnancy	No	16	33.3%	<i>P</i> <0.05***
	Yes	32	66.6%	
Previous abdominal surgery	No	60	75.0%	<i>P</i> <0.001***
	Yes	20	25.0%	
Previous abdominal trauma	No	48	60.0%	<i>P</i> <0.001***
	Yes	32	40.0%	

Gender



AGE GROUPS

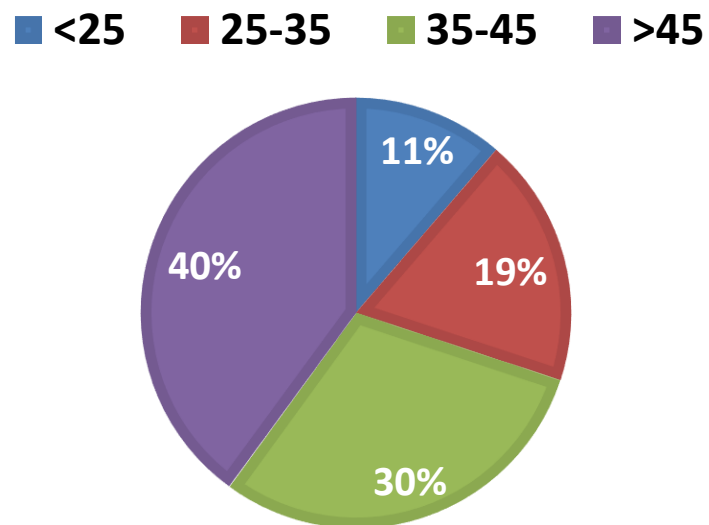
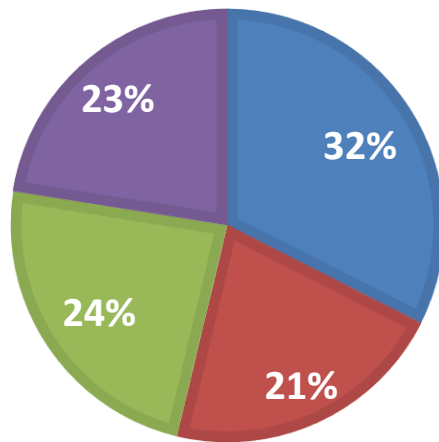


Figure 1; gender and age

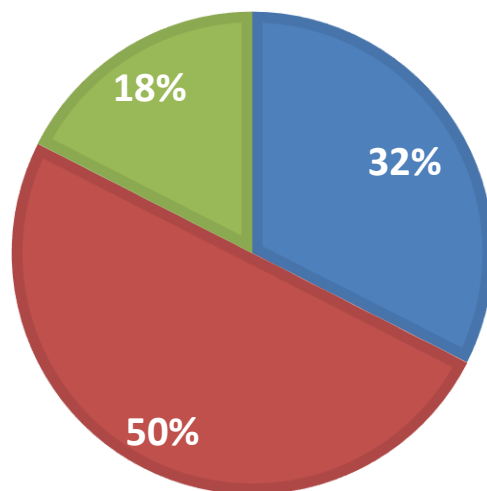
TYPE OF HERNIA

■ Para Umbilical Hernia ■ umbilical Herna
■ Incisional Hernia ■ Inguinal



BMI

■ <25 ■ 25-30 ■ >30



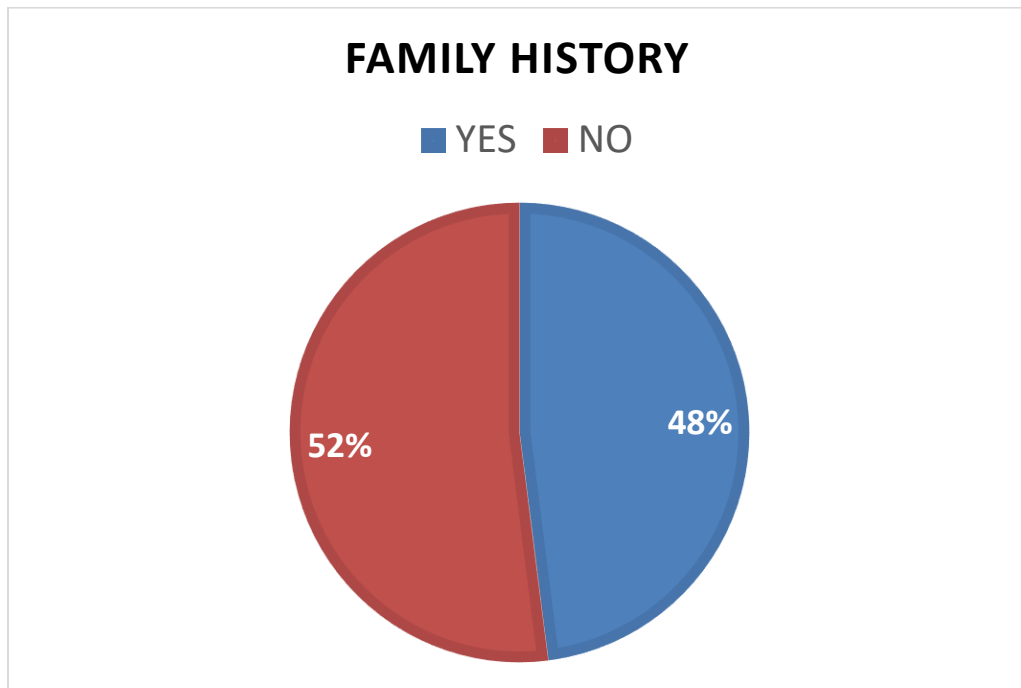


Figure 2; Types of hernia, BMI, and Family History

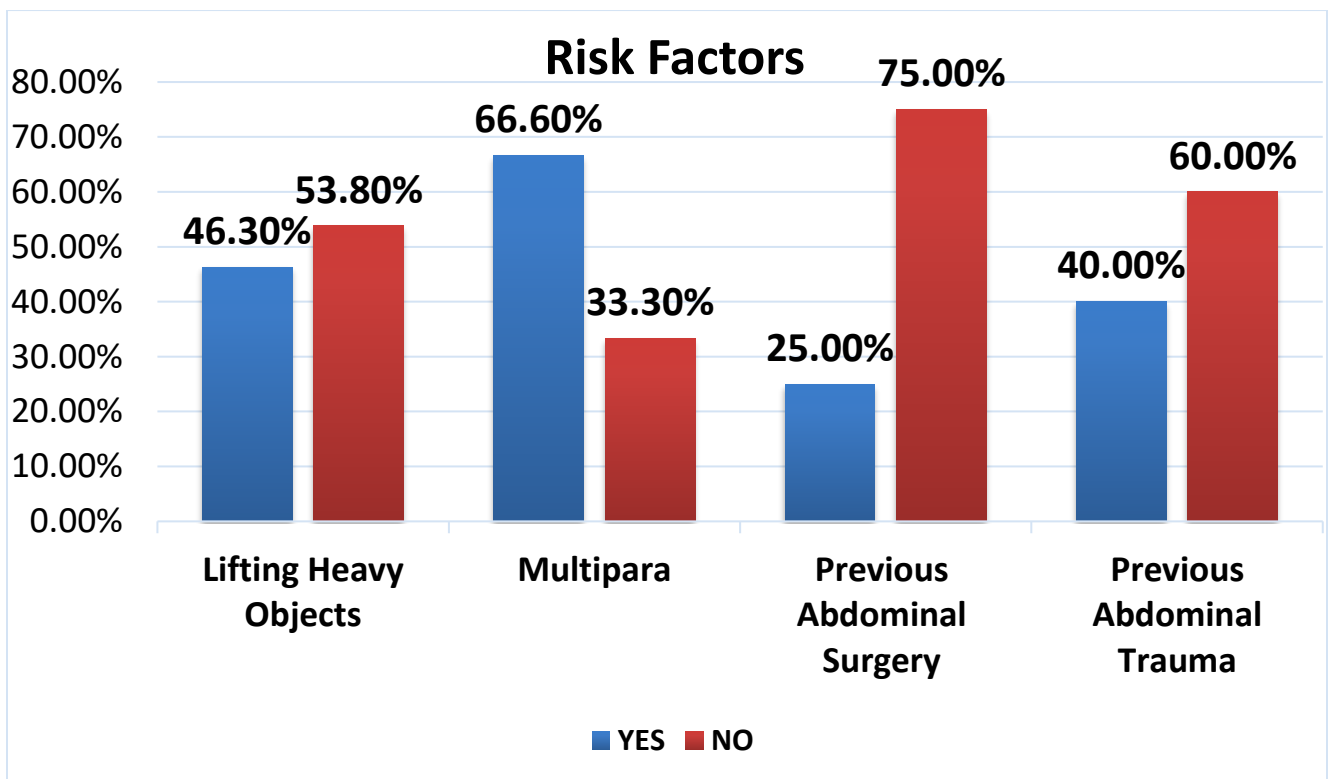
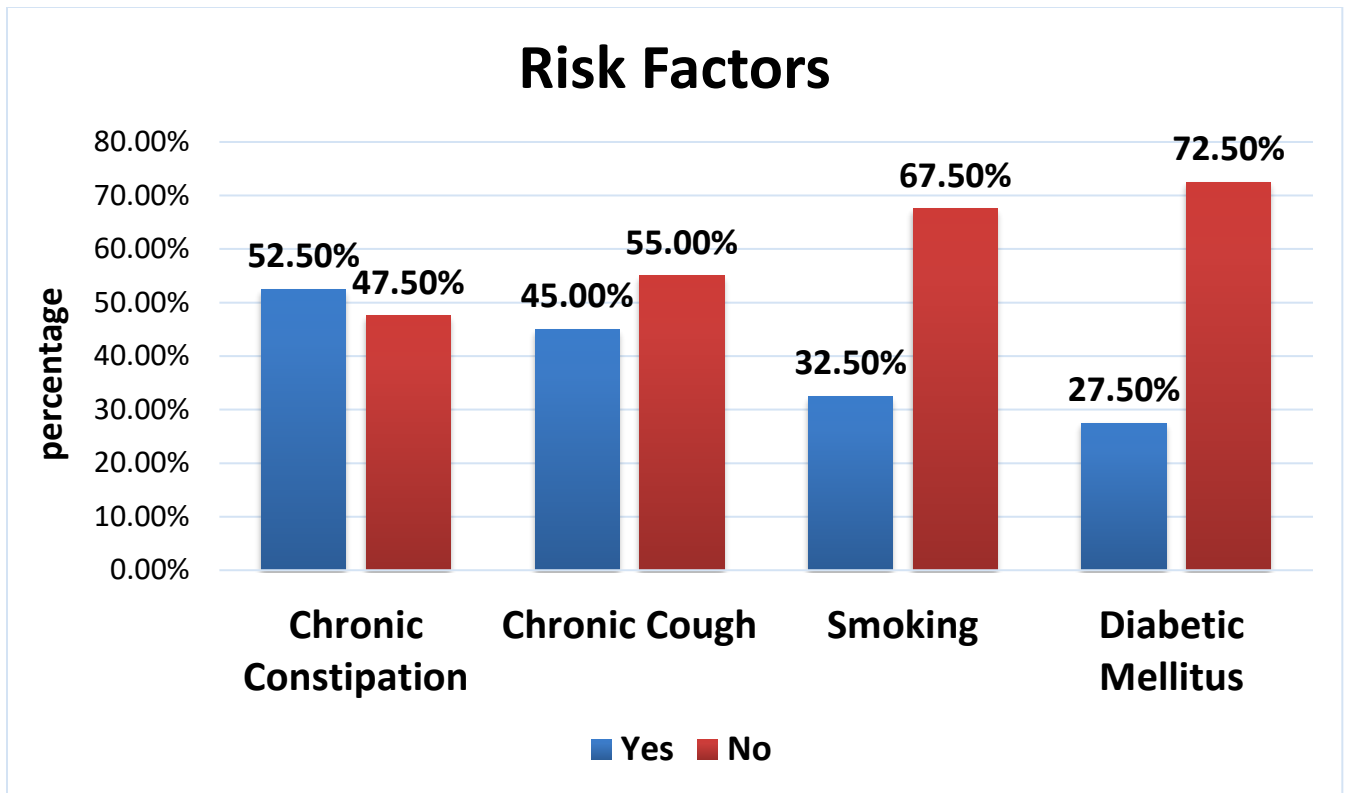


Figure 3 ; risk factors of hernia

Discussion

Abdominal hernia is a common disorder, particularly the umbilical and para-umbilical hernia, among both genders. However, information about the prevalence and risk factors of abdominal hernia is still limited in Diyala/ Iraq, that is why this study aimed to find out the prevalence and risk factors of abdominal hernia among the Diyala/ Iraq population.

This study showed that 60% were females and 40% were males, and the age of the majority of our participants was between 36-45 and >45 years, and these results matched with results Mahfouz and Al-Juaid,(2021) that occurred in Saudi Arabia .

Present outcomes are comparable to those found in Arar (Northern Saudi Arabia) (AhmedAlenazi et al., 2017) which concluded that most of the cases were between 18-50 and opposed to the outcomes that were found in Russia (Sazhin et al., 2019) which concluded that in most cases the age was more than 60 years old.

Inguinal hernia is more frequent in elderly than in younger patients because of loss of strength of the abdominal wall and conditions which increase intraabdominal pressure. Also the ageing population is increasing, with a corresponding increasing demand for surgical services (Guan et al., 2021).

The prevalence of hernia depends on gender, it showed that females had a higher prevalence compared to males. A similar result was found among the Russian population where the men who had hernia more than women (Sazhin et al., 2019). We believe that adipose tissue deposition varies between genders, and this can lead to gender differences in hernia formation (Mahfouz and Al-Juaid, 2021).

Present study showed the patients with para umbilical hernia scored highest percentage (32.5%) than patients with umbilical that scored lowest percentage (21.3%), and these results nearly compatible to results AhmedAlenazi et al., (2017) that showed patients with para umbilical hernia scored highest percentage (35%) than patients with umbilical that scored lowest percentage (19%). The differences in percentages may be due to sample size.

Present study showed the prevalence of abdominal hernia depends on the Body Mass Index (BMI), it was found that participants with BMI >25 (Overweight and Obese) had a comparatively higher prevalence than others. This confirms the previous two studies which showed that hernia more in obese people (Kh et al., 2022).

Obesity increases the risk for developing abdominal wall hernias. Being obese also increases the strain and pressure on the abdominal muscles and makes them weaker and more prone to developing hernias (Maia et al., 2019).

There was also significant association seen in prevalence of abdominal hernia with presence of history of previous abdominal surgery, history of abdominal trauma, family history, chronic cough and smoking. These outcomes were similar to a previous study which reported the prevalence of hernia more in those who have a history of previous abdominal surgery, history of abdominal trauma, family history and less in the presence of congenital anomaly (AhmedAlenazi et al., 2017).

On the other hand the study done among adult male Nigerians showed that prevalence of hernia was more in those with a family history and less in the presence of smoking, chronic cough (Ashindoitiang et al., 2012).

Smokers develop hernias at a higher rate than nonsmokers. Smoking causes a decreased rate of collagen formation. This is due to the effect of nicotine, which weakens the abdominal wall. Patients who smoke are four times more likely to develop a recurrent hernia as a result of the effect smoking has on wound healing (Park et al., 2021).

Constipation means not having a proper bowel movement. In order to have a proper bowel movement, many people do excessive straining in the toilet which can result in a hernia. It's not just constipation, any activity that puts pressure on your abdominal wall can cause a hernia (Idiz and Cakir, 2020).

Patients with diabetes have problems with healing. After an abdominal or pelvic surgery, if the diabetes is poorly controlled, then the closure of the muscle and fascia layers will not heal well, resulting in an incisional hernia (Nofal et al., 2020).

Not only can poor lifting of a heavy load lead to back problems but it can also cause a hernia. If exert sudden strain or force when moving something heavy, then may end up with a hernia. This could happen when moving a piece of furniture, carrying heavy gardening waste or equipment, or weight lifting (Patel et al., 2022).

Pregnancy is associated with an increased risk of abdominal hernia recurrence after adjusting for confounding factors. The magnitude of this association is likely underestimated, given that the risk of recurrence was defined as reoperation, which captures only the most clinically significant group of recurrences. This information will facilitate counseling for reproductive-aged women planning elective ventral or incisional hernia repair. The risk of recurrence and subsequent reoperation should be balanced against the risk of incarceration and emergent surgery during pregnancy. As such, the desire for future pregnancy and/or contraception should be considered when planning asymptomatic hernia repair for women of reproductive age (Oma et al., 2019).

Conclusions

Abdominal wall hernias are a common clinical presentation in Diyala/ Iraq. Abdominal hernias are more common in women than in men, there is an obvious relationship between obesity, chronic constipation, chronic cough, smoking, recurrent pregnancy, family history , previous surgery and hernias.

Early diagnosis, easily accessible health facilities and health education are important to prevent complications. New modality of treatment should be adopted as the standard choice of care to prevent recurrence.

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