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# A PROSPECTIVE STUDY ON PREVALENCE, RISK FACTORS, AND RECOMMENDATIONS ON POST-OPERATIVE ACTIVITIES OF HERNIA.

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## Abstract

### Objectives

A hernia occurs when fat, tissue, or part of an organ pushes through a weak spot or hole in the abdominal muscle. The aim of this study is to find out the prevalence and risk factors of hernia and recommendations for postoperative activities after hernia surgery.

### Methods

The present study was carried out among 60 patients who had come to the surgical department at the government-aided tertiary care hospital, in Chennai. Data was collected by a validated self-designed questionnaire with demographical details, questions related to pain and discomfort, and post-operative questions. The data collected in the patient profile forms were entered into Microsoft Excel version 2017 and exported to the SPSS version.

### Results

In the present study, the overall prevalence of hernia was between 40-50 years (40.0%) in which males (51.7%) are more prevalent in hernia than females (48.3%). Construction workers (21.7%), homemakers (18.3%), and salesmen (16.7%) are highly prevalent in hernia. Risk factors of hernia include Patient who is overweight (65%), heavy lifters (73.3%), smokers (63.3%), and patients with a pregnancy history (48.3%). Most of the patient experience discomfort during prolonged standing and sitting (39.0%). An umbilical hernia is highly diagnosed in this study, antibiotics (58.3%) are highly prescribed medications during the admission. The incidence of hernia is highest at 40-50 (40%) years of age, in which the umbilical hernia was higher as compared to the inguinal, para-umbilical, and incisional hernia. The incidence of inguinal hernia was highest among males and umbilical hernia was highest in females (0.012%).

### Conclusion

Through this study we have assessed the risk factors which influenced the development of hernia, we also determined the incidence of hernia among different age groups. The main focus of this study is, we have counseled patients and distributed pamphlets regarding postoperative care after hernia repair. The importance of this counseling can help to prevent recurrent hernia complications and improve patient quality of life.

Keywords: Abdominal hernia, discomfort, complications, risk factors, postoperative care.

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## Introduction

Hernias are aberrant sacs with a peritoneal lining that protrude through the muscle layer covering the abdomen [1]. More than 20 million hernia operations are thought to be performed annually around the globe [2]. Another way to describe a hernia is as a tear in smooth tissue when an organ pushes through or protrudes. The abdominal, groin areas, navel area, and upper thigh areas are where it most frequently occurs [3]. For all ages worldwide, the prevalence of abdominal wall hernia was 1.7%. More than 20 million hernias are operated on each year worldwide, accounting for 15%–18% of all surgical procedures [4,5]. According to the participant's experience [6], abdominal muscular weakness is the most frequent cause, and previous abdominal surgery and obesity are the most frequent risk factors. The most typical signs of a hernia include groin swelling, a feeling of weight in the belly, and discomfort in the abdomen regions, particularly while coughing, lifting, or stooping [7]. However, some people may not experience symptoms and discover they have this problem only when they receive a medical checkup. Inguinal, femoral, umbilical area, Linea alba, the lower portion of the semilunar line, and sites of previous incisions are just a few locations where aponeurosis and fascia are not covered by striated muscles [8]. Depending on the scenario and the severity of the hernia, there are surgical and non-surgical options for treatment. If the patient did not receive enough medical care, various issues may arise after the hernia

was repaired, and it may reoccur in some circumstances. Depending on the underlying reason, a hernia may form suddenly or gradually [9]. Little hospitalization, prompt return to work, absence of urine retention, gas pains, and postoperative complications (pneumonia, thrombosis, atelectasis, nausea, and vomiting) [10]. The absence of postoperative pain.

In order to determine the prevalence and incidence of hernias, their symptoms, as well as the various forms of hernia and the postoperative care required following procedures, the current study was carried out.

## Materials and Methods

The study was approved by the Vels Institute of Science Technology and Advanced Studies institutional ethical committee-ECR/Indt/TN/2018/RR-21/014. This research design is a prospective study. The study was carried out for a period of six months. A validated self-designed hernia health questionnaire is used to evaluate the prevalence and risk factors of hernia at the site of, the government-aided tertiary care hospital, in Chennai. A total of 60 participants participated in this study, where patients within the age group 18 – 70 years were included and patients with recurrent hernia were also included. Exclusion criteria include, a complicated hernia that required emergency surgery, patients aged more than 70 years, and pregnant and lactating women were excluded.

## Study Procedure

The hernia health questionnaire consists of demographic details, medical histories such as co-morbidities, previous surgical history, family history, pain and discomfort (type, location, frequency of pain), diagnosis (type of hernia), and prescription drugs. After hernia repair, follow-up-based post-operative questions will be interviewed to the patient. Pamphlets were given to patients who have undergone surgery, about post-operative activities.

This study is a hospital-based observational study that will be conducted in the Department of general medicine, department of male surgery, and Department of female surgery over a period of 6 months. The subjects are inpatients recruited from a department of general surgery both male and female surgical wards. The subjects who are in the inclusion criteria given above are included and others are excluded from the study. Written informed consent was obtained from the patients prior to the study.

After getting proper consent from the

patients, they will be interviewed initially using a questionnaire that includes the socio-demographic details, past medical history, and social history will be collected from the medical records/ by interviewing the patient. After hernia surgery, post-operative complications will be documented using a case report form. The patient will be educated regarding post-operative activities.

## Statistical Analysis:

The data collected in the patient profile forms were entered into Microsoft Excel version 2017 and exported to the SPSS version continuous data were summarized as mean standard deviation. Categorical variables were provided as percentages. The data collected will be collated, tabulated, and summarized. Results were depicted in the form of tables and graphs.

The categorical value will be assessed by using the Pearson Chi-square test. P value < 0.05 is considered to be significant where the respected factors had a correlation between them.

## Results:

S.NO	Demographic Features	Variables	Frequency(n)	Percentage(%)
1.	Age	18 - 29	2	3.3%
		29 - 39	21	35%
		40 - 50	24	40%
		51 - 60	11	18.3%
		61 - 70	2	3.3%
2.	Gender	Male	31	51.7%
		Female	29	48.3%
3.	BMI	Normal	21	35%
		Overweight	39	65.0%
4.	Occupation	Bouncer	5	8.3%
		Salesman	10	16.7%

	Construction worker	13	21.7%
	Security	5	8.3%
	Call center	7	11.7%
	Tailor	3	5.0%
	Homemaker	11	18.3%

**Table 1: Demographic Features**

Table 1 shows that demographic features, most of the patients in the age group of 40-50 years of age account for 40% of the study population, the male patients (51.7%) are predominantly more in number than females (48.3%) in this study.

65% of patients are seen to be overweight. Occupation as construction worker (21.7%) is more in number, followed by (18.3%) homemaker, (16.7%) were working as salesman followed by (11.7%) of the study.

Risk factors	Frequency(n)	Percentage (%)
Heavy lifting	44	73.3%
Alcoholic	19	31.7%
Constipation	13	21.7%
Family history of hernia	23	38.3%
Overweight	39	65.0%
Coexisting comorbidities		
Diabetes	12	20.3%
Asthma/bronchitis	12	20.3%
Pregnancy history	29	48.3%

**Table 2: Risk factors of hernia**

Table 2 shows that the most common cause for the presence of hernia was lifting heavy objects in 44(73.3%) and improper bowel movement which was constipation seen in 13 (21.7%) of the patients. 23 (38.3%) had a family history of hernia. In females, 29 (48.3%) of patients with pregnancy history,

it was noted with 21(72.4%) with cesarean section operation. 38(63.3%) of the patients were smokers and 19 (31.7%) of them were alcoholics. In this 12(20.3%) had diabetes and 12(20.3%) had asthma / bronchitis.

Parameter		Frequency (n=60)	Percentage (%)
Type of Pain	Burning	5	8.3%
	Dull	23	38.3%
	Sharp	19	31.7%

	Pinching	13	21.7%
Location of pain	Abdomen	44	73.3%
	Back	9	15.0%
	Groin	6	10.0%
	Leg	1	1.7%
Discomfort	Prolonged standing/sitting	23	39.0%
	Coughing/sneezing	10	16.9%
	Straining (urinating)	1	1.7%
	Crossing legs	6	10.2%
	Worse during periods (females)	1	1.7%
	Walking up/downstairs	12	20.3%
	Bending	6	10.2%
Type of hernia	Incisional hernia	6	10.0%
	Umbilical hernia	21	35.0%
	Epigastric hernia	6	10.0%
	Femoral hernia	3	5.0%
	Inguinal hernia	13	21.7%
	Paraumbilical hernia	10	16.7%
	Hiatal hernia	1	1.7%
Prescription of drugs	Antibiotics	35	58.3%
	Analgesics	17	28.8%
	Supplements	8	13.3%

**Table 3: Character of hernia**

**Table 3** displays the hernia characteristics, Of the 23 (38.3%) patients were experienced dull pain, whereas 5(8.3%) experienced burning pain. Most of the patients experienced pain in the abdomen area. The majority of the patient had discomfort during prolonged standing and sitting 23(39.0%). Umbilical hernia 21(35.0%) are highly diagnosed hernia in this study, and antibiotics 35(58.3%) are highly prescribed medications during the admission.

Demographic Features	Types of hernia						%	P value
	Inguinal	Umbilical	Incisional	Para umbilical	Femoral	Hiatal		
Age								
18 – 28	0	0	0	0	0	1	3.3%	<b>0.008</b>
29 – 39	6	7	1	3	1	0	35%	
40 -50	2	8	3	6	2	0	40%	
51 – 60	4	4	2	1	0	0	18.3%	
61 -70	1	1	0	0	0	0	3.3%	
Gender								
Male	12	8	2	4	3	0	48.3%	<b>0.012</b>
Female	1	12	4	6	0	1	51.6%	
BMI								
18.5- 25	4	8	1	5	0	1	31.7%	<b>0.353</b>
25-30	9	11	5	4	3	0	65%	
30-35	0	1	0	1	0	0	3.3%	

**Table 4 shows, Prevalence of different types of hernia in relation to demographic features.**

In this age group, the incidence of hernia is highest in 40-50 years of age, in which umbilical hernia was higher as compared to inguinal, para – umbilical, and incisional hernia. It states that there are significant differences in the types of hernia and age groups. Therefore, the P value was determined to be 0.008. The prevalence of hernia is independent of different age-wisedistributions.

The incidence of Inguinal hernia was highest among males and umbilical hernia was highest in females. It states that there are significant differences in the gender and types of hernia. Therefore, the P value was observed to be 0.012.

The incidence of increased various types of hernia in the overweight body mass index category patients, states that there are no significant differences in the body mass index and types of hernia. Therefore, the P value was observed to be 0.353.

S.NO	Questions	Yes	No
1.	Do you have any pain in the operated area?	20(33.3%)	40(66.7%)
2.	Do you have any pain while coughing?	9(15%)	51(85%)
3.	Do you have urinary retention?	14(23.3%)	46(76.7%)
4.	Are your symptoms reduced when compared to before surgery?	56(93.3%)	4(6.7%)
5.	Do you have any physical pain other than at the surgical site?	12(20%)	48(80%)
6.	Are your bowel activities normal?	56(93.3%)	4(6.7%)
7.	Do you have any itching, rash, or pus formation?	6(10%)	54(90%)
8.	Does your abdominal pain affect your appetite?	8(13.3%)	52(86.7%)
9.	Is your pain affecting your mood and relationship with others?	10(16.7%)	50(83.3%)
10.	Are you comfortable with hospitalization?	60(100%)	0
11.	Do you think you can carry out your daily tasks after one week?	56(93.3%)	4(6.7%)

**Table 5: post-operative complications**

According to the results of the post-operative survey, 66.7% of patients report having no pain in the surgical area. 85% of individuals experience no pain when coughing after surgery. Regarding the third inquiry, 76.7% of patients say they have no trouble urinating. Compared to before surgery, 93.3% of the patient's symptoms have been reduced. Around 80% of patients report feeling no physical pain other than at the surgical site. 93.3% of the patient's bowel movements were typical.

90% of people don't experience any rash, itching, or pus formation at the surgical site. 86.7% of patients with abdominal discomfort report that it has no effect on appetite. 83.3% of patients said that their pain does not affect their mood or relationships with others. Every patient said they were feeling comfortable being hospitalized when asked if they were. After one week of being discharged, 93.3% of the patients reported being able to perform everyday activities.



## DISCUSSION:

The study was conducted among 60 participants at Government aided tertiary care Hospital, in Chennai. In this study, the prevalence and risk factors of hernias are evaluated. The age range of 40 to 50 years has the greatest proportion of patients (40.0%). According to a survey by Balram et al., the 42–50 age group made up the majority of the population in Jalaun, Uttar Pradesh [11]. Other investigations, including those by Sayanna et al, Gulzar et al, and Ruhl et al [12],[13],[14] likewise revealed a male majority. Lifting weights (55%) was a risk factor in the present research, which is similar to a study by Kumar R et al.; (48%) of hernias were caused by lifting heavy things; smoking and alcohol use were the other risk variable [15]. According to the amount of exposure to the time spent standing or walking during the span of a workday, the hernia is additionally associated with risk factors related to the workplace, according to a study by P.P.F.M. Kuijjer et al. [16].

This study highlighted the prevalence and risk factors of various types of hernia in which six (10%) individuals were identified as having incisional hernias when they complained of the most difficulties when extended standing or sitting. Twenty (33.3%) patients with umbilical hernias have complained of pain with extended standing or sitting, coughing or sneezing, and going upstairs or downstairs, as well as straining to urinate. Thirteen (21.66%) individuals who reported pain after prolonged standing or sitting, difficulty ascending stairs, or difficulty urinating had inguinal hernias. When bending, sitting, or standing for prolonged periods of time, patients with an epigastric hernia of seven (11.66%) felt pain. After suffering tension while urinating, three (5%) individuals were found to have femoral hernias. A (1.66%) patient with a hiatal hernia had pain when bending. Ten (16.66%) patients with para umbilical hernia reported difficulty when

bending, coughing, or sneezing, walking upstairs or downstairs, or standing or sitting for an extended amount of time.

Another study, was complete with this, showing inguinal hernia had the highest prevalence (21.8%), and in this study, umbilical hernia is prevalent (20%) followed by inguinal hernia (13.3%) [17]. Bedewi et al., in a study at King Saud University, Riyadh, Saudi Arabia, found the adult para-umbilical hernia positive cases among females was 24.9% and that among male was 23.3%. In our study antibiotics (58.3%) are prescribed mostly when compared to supplements, anti-ulcerative, and analgesics. Similarly, a study by Jyothsna Bollu et al in Andhra Pradesh conducted a study in which antibiotics were found higher prescription drugs compared to anti ulcerative [18].

The novelty of our study is that patient education was targeted to be more important than the obtained outcomes. Patient education was prioritized by distributing a self-prepared, validated patient leaflet form containing information regarding post-operative care

instructions to be followed and unfollowed. The pamphlet was distributed to the recruited patients and was received with positive and happy feedback. The patients felt that the pamphlet was easily understandable and useful for following the postoperative activities. The role of the patient information pamphlet distribution among patients had a significant impact on the counselling part. The patient was counseled regarding the disease, the significance of medication adherence, and lifestyle modification after surgery. The pamphlet contains information regarding postoperative care, and dos and don'ts after hernia surgery.

## Conclusion

Through this study we have assessed the risk factors which influenced the development of hernia, we also determined



the incidence of hernia among different age groups. In our study heavy lifting, being overweight, constipation, and social habits like alcoholism and smoking are associated with a higher occurrence of hernia. There is a lack of research evidence regarding post-operative recommendations after hernia surgery. The main focus of this study is, we have counseled patients and distributed pamphlets regarding postoperative care after hernia repair. The importance of this counselling can help to prevent recurrent hernia complications and improve patient quality of life.

### Limitations

In future perspectives, similar studies can be carried out in a large population prioritizing post-operative care involving a restricted diet, the definitive treatment that influences reduced hospitalization days, infection prevention, and further recurrence of the hernia.

### Conflicts of interest

There are no conflicts of interest

### Acknowledgments

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**POST - OPERATIVE CARE AFTER HERNIA SURGERY**

**DO'S** ✓

- Consider high fibre diet, such as fruits, vegetables and whole grains together.
- Support your incision firmly with small pillow close by stomach, before you try to cough or sneeze to protect from tearing.
- Aim to drink 6 to 8 cups of fluid per day. Reduce the risk of constipation by drinking lots of fluids.  
**HYDRATE YOURSELF**
- Do slowly add in other activities in the weeks after surgery. This can include brisk walking.
- Do wear loose, comfortable clothes that don't rub your incision.
- Do continue to take prescribed pain medications.
- Keep the area around the incision site clean.
- Do get enough rest.

**DONT'S** ✗

- Avoid processed foods, Oily foods, high fat dairy products, red meats and carbonated drinks.
- Avoid Lifting heavy weights, exercise, or any strenuous activity.
- Do not Stretch or strain as this will put sudden pressure on your wound.
- Avoid taking bath, or shower for at least 1 week after surgery.
- Do not ignore pain. In case of any discomfort or pain after any activity, just stop it.
- You should refrain from driving for atleast 1 week after surgery.
- Do not take any pain medication without your doctor's recommendations.
- Don't consume alcohol, while taking narcotic medications.

DR. G. ARUN

## References

1. Rains AJH, Capper WM. Bailey & Love's Short Practice of Surgery. 15th ed. London:Lewis; 1971. [Google Scholar]
2. Townsend C, Beauchamp D, Evers M, Mattox KL, Sabiston DC. Sabiston Textbook of Surgery: The biological basis of modern surgical practice. Philadelphia, PA: WB Saunders; 2001. [Google Scholar] [Ref list]
3. Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. *Lancet* 2003;362:1561–71. doi:10.1016/S0140-6736(03)14746-0  
Opmid:http://www.ncbi.nlm.nih.gov/pubmed/14615114CrossRefPubMedWeb
4. Sangwan M, Sangwan V, Garg M. Abdominal wall hernia in a rural population in India—Is spectrum changing? *Open J Epidemiol* 2013;2013. Google Scholar
5. Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. *The Lancet* 2003;362:1561–71. doi:10.1016/S0140-6736(03)14746-0
6. Mahfouz ME, et al. Knowledge about inguinal hernia among the Saudi Population. *Middle East Journal of Family Medicine*. 2020;7:12. [Google Scholar]
7. Kingnorth A, LeBlanc KA. Management of abdominal hernias. 3rd Edition. London:Edward Arnold, 2003.
8. Zinner J, Ashley W. Maingot's abdominal operations. 11th ed. USA: McGraw-Hill; 2007. Chapter 4, Hernias; p. 122.
9. Rutkow IM. Demographic and socioeconomic aspects of hernia repair in United States in 2003. *Surg Clin North Am*. 2003;83:1045–51. doi: 10.1016/S0039-6109(03)00132-4. [PubMed] [CrossRef] [Google Scholar]
10. Lichtenstein IL, Shulman AG, Amid PK. The tension free hernioplasty. *Am JSurg*. 1989; 157: 188-93.
11. Balram. Prevalence of inguinal hernia in Bundelkhand region of India. *Ann Int Med Den Res*. 2016;2(3):137-8
12. 4.Sayanna S. Prevalence of inguinal hernia in Indian population: a retrospective study. *Med Pulse Int Med Journal*. 2015;2(2):75-8.
13. 5.Gulzar, MR, Iqbal J, UlhaqMI, Afzal M. Darning vs bassini repair for inguinal hernia: a prospective comparative study. *Professional Med J*. 2007;14:128-33.
14. 6.Ruhl CE, Everhart JE. Risk factors for inguinal hernia among adults in the US population. *Am J Epidemiol*. 2007;165:1154-61
15. 7.KumarBRK, MadhusoodhananN, BalajiA, Poornima MA. Prevalence and risk factors of inguinal hernia—a hospital based observational study. *Int J Med Appl Sc*. 2014;3(4):191-8
16. 8.Kuijjer PPFM, Hondebrink D, Hulshof CTJ, Van der Molen HF. Work-relatedness of inguinal hernia: a systematic review including meta-analysis and GRADE. *Hernia*. 2020 Oct;24(5):943-950. doi: 10.1007/s10029-020-02236-0. Epub 2020 May 30. PMID: 32474653; PMCID: PMC7520410
17. Ahmed Alenazi A, Alsharif MM, Hussain MA, Alenezi NG, Alenazi AA, Almadani SA, Alanazi NH, Alshammari JH, Altimyat AO, Alanazi TH. Prevalence, risk factors and character of abdominal hernia in Arar City, Northern Saudi Arabia in 2017. *Electron Physician*. 2017 Jul 25;9(7):4806-4811. doi: 10.19082/4806. PMID: 28894539; PMCID: PMC5586997.
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