ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

A Study On Risk Factors For Inguinal Hernia In Old Age Patients.

Thivagar Thirugnanam*, and Aravind Nandagopal.

Assistant Professor, Dept. of General Surgery, Thanjavur Medical College, Tamil Nadu, India.

ABSTRACT

Inguinal hernia is a prevalent condition among elderly patients, yet the underlying risk factors remain underexplored in this age group. This study aims to identify and analyse the risk factors contributing to inguinal hernia in patients aged 60–80 years. Conducted at Thanjavur Medical College, this descriptive study involved 73 patients assessed through clinical evaluation, body mass index (BMI) analysis, socioeconomic classification and comorbidity screening. The research highlights key risk factors such as benign prostatic hypertrophy (BPH), systemic hypertension and chronic respiratory conditions, which collectively contribute to increased intra-abdominal pressure and muscle weakening. The study further explores the correlation between hernia type, laterality and patient demographics. Understanding these associations is crucial for early diagnosis, risk stratification and optimised surgical intervention in elderly patients.

Keywords: Inguinal hernia, risk factors, elderly patients, benign prostatic hypertrophy, BMI, socioeconomic status, systemic hypertension, indirect hernia, direct hernia, comorbidities

https://doi.org/10.33887/rjpbcs/2025.16.2.16

Corresponding author

ISSN: 0975-8585

INTRODUCTION

An inguinal hernia occurs when intra-abdominal contents protrude through the myopectineal orifice of Fruchaud, typically via a weakened section of the abdominal wall [1]. It accounts for approximately 75% of all abdominal hernias and is especially prevalent in elderly males. Age-related changes, such as connective tissue degradation and muscle atrophy, predispose older adults to hernias [2]. The inguinal canal, often referred to as the "House of Bassini," is an oblique passage extending from the deep to the superficial inguinal ring. Visualising this canal's anatomy is crucial for understanding hernia formation [3]. Factors like chronic coughing, constipation, and straining due to benign prostatic hypertrophy (BPH) increase intra-abdominal pressure, further exacerbating hernia risk [4]. Additionally, systemic conditions such as hypertension and diabetes mellitus may impair tissue integrity, while socioeconomic status and nutritional factors modulate vulnerability to herniation.This study seeks to comprehensively evaluate these risk factors, correlating clinical findings with anatomical insights to refine surgical management strategies [5].

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at Thanjavur Medical College over ten months, from October 2022 to July 2023 .73 Patients aged 60–80 years presenting with an inguinal hernia of less than one-year duration were included. Exclusion criteria comprised patients below 60 years, those requiring emergency hernia repair, or those with chronic, untreated hernias. All patients aged between 60 to 80 years admitted with Inguinal Hernia was assessed using the following parameters such as BMI for Nutritional Assessment. Socioeconomic status was calculated using Modified Kuppusammy scale. Comorbid conditions like T2DM, SHTN, Respiratory Disorders, CKD are also taken into Account. USG Abdomen and Pelvis was done in all patients to look for Post voidal Residual Urine Volume in relation to Prostate enlargement. Ultrasonography was performed to evaluate prostate size and post-void residual volume, while routine blood investigations and echocardiography helped assess overall fitness for surgery.

Statistical Analysis

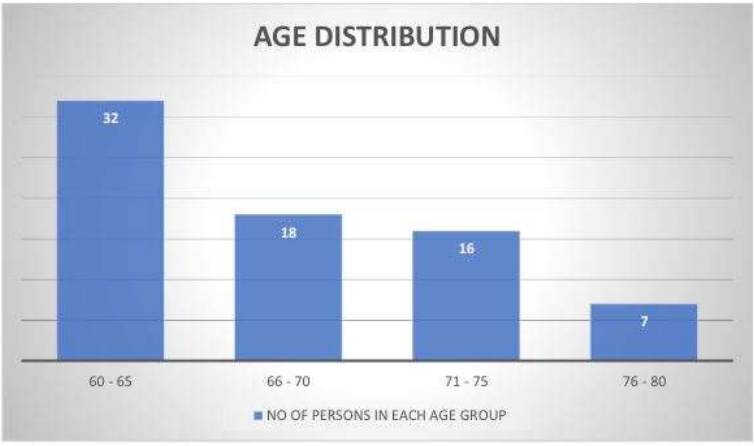
Data were meticulously recorded and statistical analysis was carried out to explore correlations between hernia type, comorbid conditions and demographic factors. The study design ensured comprehensive coverage of variables

OBSERVATION AND RESULTS

Patient Demographics

The study revealed a higher incidence of indirect hernias compared to direct or pantaloon hernias, with unilateral hernias being more prevalent. Patients in the 60–65 age group showed the highest incidence, gradually declining with advancing age.

Graph 1: Age distribution, visualising patient counts across age groups. Place this here.



ISSN: 0975-8585

Comorbidities and Risk Factors

The findings indicated a strong association between BPH and hernia formation, as urinary obstruction likely contributed to prolonged straining and increased intra-abdominal pressure. Systemic hypertension emerged as the most common comorbidity, potentially impairing vascular supply to the abdominal wall, weakening connective tissues over time.

Nutritional and Socioeconomic Influence

Nutritional status influenced hernia risk, with underweight patients exhibiting weaker musculature and overweight patients experiencing higher mechanical stress on the abdominal wall. Socioeconomic factors, particularly among lower middle-class patients, suggested limited access to timely healthcare and a higher prevalence of physically demanding occupations.

Graph 2: BMI-based nutritional status, classifying patients as underweight, normal, or overweight.

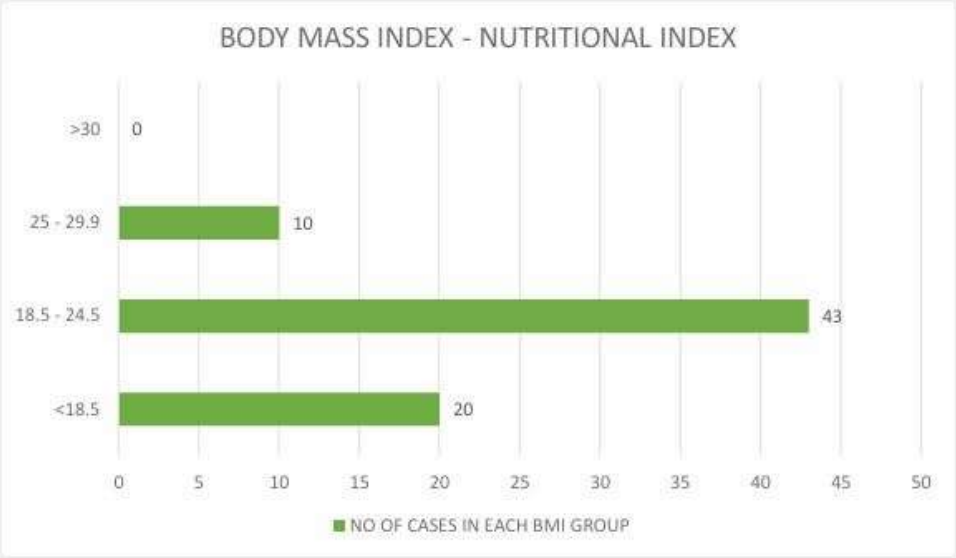
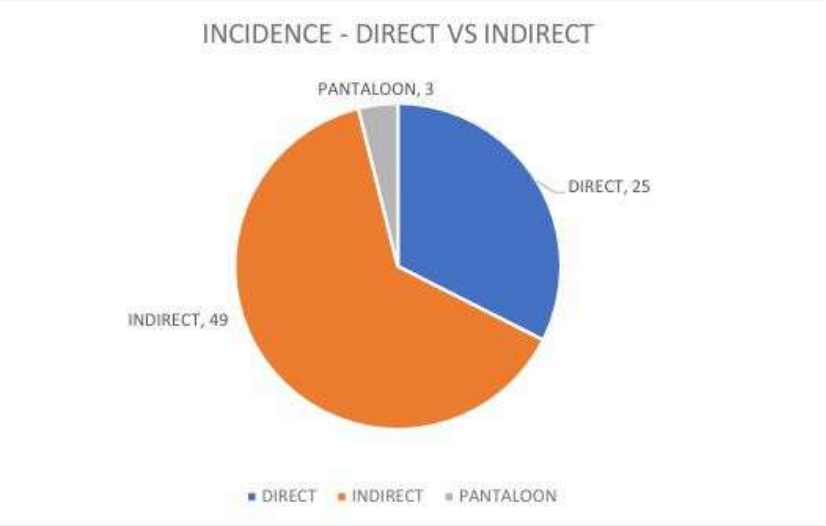


Chart 1: Incidence of hernia type, visualising direct, indirect and pantaloon hernias



ISSN: 0975-8585

Chart 2: Unilateral vs bilateral hernias, showing the proportion split.

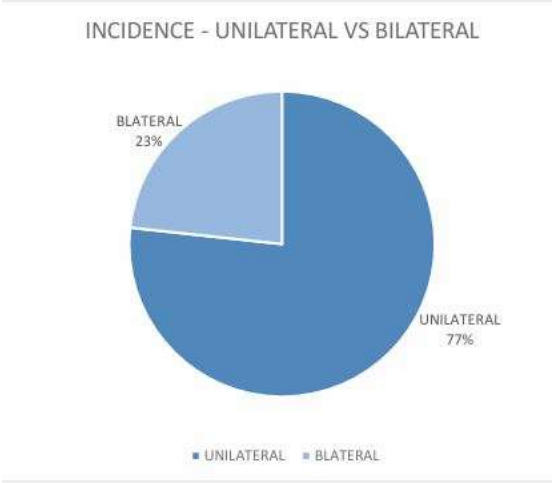


Chart 3: Comorbid condition distribution, showing proportions of hypertension, diabetes, coronary artery disease and CKD.

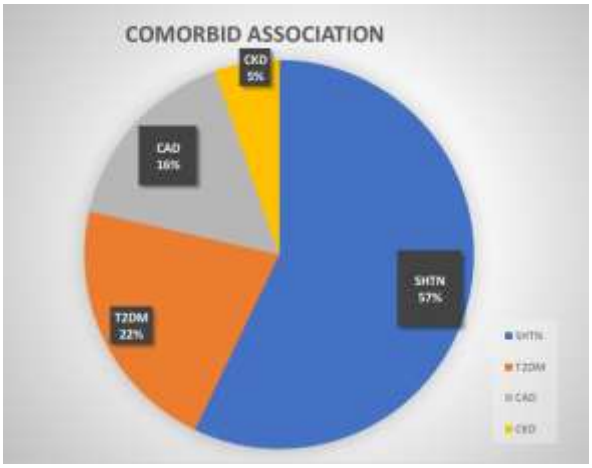


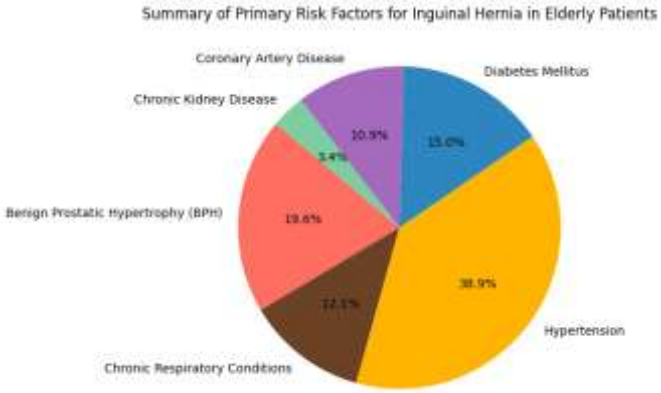
Table 1: Comparison with literature (created from study data), summarising the study's findings alongside existing literature

Study Parameter	Current Study Findings	Existing Literature Findings
Common Hernia Type	Indirect hernia (65.8%)	Indirect hernia (60–70%) [1]
Laterality	Unilateral (77%), Bilateral (23%)	Unilateral (70–80%) [2]
Top Risk Factor	Benign Prostatic Hypertrophy (28.8%)	BPH as a major risk factor in elderly males [3]
Common Comorbidities	Hypertension (57%), Diabetes (22%), CAD (16%)	Hypertension (55–60%), Diabetes (20–25%) [2]
Nutritional Influence (BMI)	Normal BMI (58.9%), Underweight (27.4%)	Normal BMI (50–60%), Underweight (20–30%) [4]
Socioeconomic Status (Class III)	45% of patients	40–50% in lower middle class [3]

These comparisons reinforce the reliability of the study's findings while highlighting unique aspects such as the high incidence of BPH. Aligning with global data, this study strengthens the argument for comprehensive geriatric screening and early intervention.The prominent role of BPH in this study underscores the significance of urinary pathology in hernia development. Straining during micturition

imposes repetitive stress on the inguinal canal, facilitating hernia formation over time. Managing urinary symptoms in elderly patients may thus be a pivotal component of hernia prevention.

Chart 4: Summary of primary risk factors, visually reinforcing the study's conclusions.



DISCUSSION

The findings of this study align with existing literature, emphasising the multifactorial nature of inguinal hernia development in elderly patients. Inguinal hernias result from a complex interplay of anatomical vulnerabilities, age-related tissue degeneration, and chronic intra-abdominal pressure caused by systemic comorbidities [6]. The high incidence of indirect hernias (65.8%) observed in this study is consistent with previous research, which highlights that the oblique course of the inguinal canal predisposes patients to indirect herniation, especially when the deep inguinal ring fails to close adequately with age. The anatomical layout of the inguinal canal plays a pivotal role in hernia formation. The canal is bounded anteriorly by the external oblique aponeurosis, posteriorly by the fascia transversalis, superiorly by the arched fibres of the internal oblique and transversus abdominis muscles, and inferiorly by the inguinal ligament. Weakness in any of these structures can facilitate herniation. The posterior wall, being the thinnest, is most susceptible to failure, explaining the predominance of indirect hernias in elderly patients [7]. The myopectineal orifice of Fruchaud further explains the predisposition to hernias. This anatomical region, divided into upper and lower parts by the inguinal ligament, represents a potential site of weakness where intra-abdominal contents can protrude. This correlates with the study's observation that unilateral hernias (77%) were far more common than bilateral hernias, as anatomical variation on one side may lead to uneven stress distribution [8]. The study's findings revealed a strong correlation between benign prostatic hypertrophy (BPH) and hernia formation, with 28.8% of patients affected. BPH leads to chronic urinary obstruction, causing patients to strain during micturition, which raises intra-abdominal pressure and stresses the inguinal canal. This aligns with literature that identifies BPH as a leading modifiable risk factor for inguinal hernia, reinforcing the need for early urological management in elderly patients with hernias [9]. Systemic hypertension, observed in 57% of patients, may impair vascular supply to the abdominal wall, weakening connective tissues over time. Hypertension-induced arterial changes can lead to microvascular ischemia, compromising tissue integrity and making it more prone to herniation. Similarly, diabetes mellitus (22% of patients) affects collagen synthesis and delays tissue healing, further exacerbating the weakening of the inguinal canal [10].

CONCLUSION

Inguinal hernia in elderly patients is driven by a confluence of factors, including age-related tissue degeneration, chronic straining due to BPH and systemic conditions like hypertension and diabetes mellitus.Early identification and management of contributory factors, coupled with patient education and timely surgical intervention, can reduce hernia-related morbidity and improve postoperative recovery.

REFERENCES

[1] Malangoni MA, Gagliardi RJ. Hernias. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL, editors. Sabiston's Textbook of Surgery. 17th edition. Philadelphia: Elsevier-Saunders; 2004. p. 1199-218.

[2] Roseano M, Ressetta G, Pozzetto B, Babich F, de Manzini N. The treatment of inguinal hernia in the elderly: open technique or laparoscopic approach? Acta Biomed 2005;76 Suppl 1:52-5.
[3] Amid PK, Shulman AG, Lichtenstein IL. Open "tension-free" repair of inguinal hernias: the Lichtenstein technique. Eur J Surg 1996;162(6):447-53.
[4] Amid PK, Lichtenstein IL, Shulman AG, Hakakha M. Biomaterials for "tension-free" hernioplasties and principles of their applications. Minerva Chir 1995;50(9):821-6.
[5] Morris-Stiff GJ, Hughes LE. The outcomes of nonabsorbable mesh placed within the abdominal cavity: literature review and clinical experience. J Am Coll Surg 1998;186(3):352-67.
[6] Voyles CR, Richardson JD, Bland KI, Tobin GR, Flint LM, Polk HC Jr. Emergency abdominal wall reconstruction with polypropylene mesh: short-term benefits versus long-term complications. Ann Surg 1981;194(2):219-23.
[7] Leber GE, Garb JL, Alexander AI, Reed WP. Long-term complications associated with prosthetic repair of incisional hernias. Arch Surg 1998;133(4):378-82.
[8] Klosterhalfen B, Klinge U, Hermanns B, Schumpelick V. Pathology of traditional surgical nets for hernia repair after long-term implantation in humans. Chirurg 2000;71(1):43-51.
[9] Sher W, Pollack D, Paulides CA, Matsumoto T. Repair of abdominal wall defects: Gore-Tex vs. Marlex graft. Am Surg 1980;46(11):618-23.
[10] Brown GL, Richardson JD, Malangoni MA, Tobin GR, Ackerman D, Polk HC Jr. Comparison of prosthetic materials for abdominal wall reconstruction in the presence of contamination and infection. Ann Surg 1985;201(6):705-11.