

## A Prospective Study On Clinical Features And Surgical Management Of Hernia

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### ABSTRACT

**Background:** Strangulated inguinal hernia occurs when part of the hernia becomes irreducible and subsequently causes bowel ischemia secondary to a reduction in blood flow to the hernia. Therefore, management strategy differs and depends on the presentation of the hernia, duration, patient, and surgical factors. One thing is for sure: conservative management is not recommended for a strangulated inguinal hernia, as it always requires surgical intervention. Among others are diagnostic laparoscopy, open hernioplasty with the hybrid technique, and laparotomy followed by inguinal herniorrhaphy. Eventually, the outcome of the surgery has to be considered while managing strangulated inguinal hernia cases. **Materials and methods:** This was a descriptive prospective study of patients who were operated for inguinal hernias at Tertiary care Teaching Center over a period of 1 year. All patients who presented to the surgical wards and clinics with a clinical diagnosis of inguinal hernias and subsequently underwent surgery were included in the study. Patients presenting with inguinal hernias associated with obstructive uropathy, chronic obstructive airway disease or chronic constipation and those who refused to give consent were excluded from the study. **Result:** The mean age of the patients was 50 + 21.3 years, 49 (98%) patients were men and only 1 (2%) woman in the series. Right inguinal hernia was strangulated in 36 (72%) patients and left in 14 (28%). Irreducible inguinal swelling, absent cough impulse and localized tenderness were observed in 50 (100%) and signs of intestinal obstruction in 33(66%) patients. The small gut alone or with omentum was the most frequent content of the hernial sac, found in 31(62%) patients. Resection and end-to-end anastomosis of ileum was performed in 16(32%) and partial omentectomy in 13(26%) patients. Open method herniorrhaphy was adopted in 44(88%) patients. No mesh was used in the series. The overall morbidity was 30% with no mortality in the study. **Conclusion:** The surgical management of inguinal hernias is a balance between tradition and innovation. Collaboration between surgeons and constant research are critical to advancing the field. The individualized approach and continuous improvement of techniques and materials will continue to provide patients with a better quality of life and more positive outcomes in the future.

**Keywords:** Inguinal hernias, Surgical management, Mesh repair, Surgical techniques, complications.

## INTRODUCTION

Hernia is defined as a protrusion of the viscus or part of the viscus through an abnormal opening of the walls of its containing cavity. The incidence in full-term babies is estimated at 1–5%, and it is close to 10% in pre-term babies (bilateral hernias are more common in pre-term babies).<sup>[1]</sup> The most commonly protruded viscus includes the small bowel, large bowel, omentum, bladder, appendix (amyand's hernia), or even gynecological organs.<sup>[2]</sup>

An inguinal hernia happens due to the weakening of the lower abdominal wall for various reasons. Congenitally, it is due to patent processes vaginalis which is an outpouching of the peritoneum.<sup>[3]</sup> It affects both men and women of various ages. However, inguinal hernia is more prevalent in males, whereas femoral hernia is more common in females. Having said that, strangulation is seen more in the femoral hernia as opposed to the inguinal hernia due to the narrow neck of the femoral hernia.<sup>[4]</sup> Generally, the femoral hernia will pass inferior-laterally to the pubic tubercle whereas the inguinal hernia, on the other hand, will pass superior-medially. Direct inguinal hernia involves protrusion of the viscus through the weakening of Hesslebach's triangle. The inguinal ligament, inferior epigastric vessels, and the lateral edge of the rectus sheath all encircle these triangles.<sup>[5]</sup>

Inguinal hernias can be managed conservatively unless the patient presents with obstruction or strangulation, where surgical correction is warranted. Reducible inguinal hernias can be managed expectantly with an outpatient elective hernioplasty. Irreducible hernias, on the other hand, need further assessment and intervention.<sup>[6]</sup> Based on a Cochrane review, it can be concluded that eventually, 54% of all inguinal hernias need surgical intervention due to complications such as incarceration or strangulation. Hence, elective surgical intervention is usually suggested for all patients with inguinal hernias.<sup>[7]</sup> The attending surgeon should explain clearly to patients the various available options and possible complications should the patient present in an acute setting with intestinal obstruction. This is because the morbidity and mortality of hernioplasty increase in the emergency setting as opposed to the elective setting.<sup>[8]</sup> A holistic approach needs to be taken when managing such complicated cases. Proper communication and documentation should be done in dealing with such cases to avoid any potential medico-legal issues later.<sup>[9]</sup>

Patients with a strangulated inguinal hernia usually present with nausea and vomiting, localized abdominal pain, abdominal distention, absolute constipation or diarrhea, per-rectal bleeding in cases of bowel ischaemia and less commonly, fever.<sup>[10]</sup> Clinically, these patients will be in pain, dehydrated and septic looking. Prompt resuscitation is needed to reverse the physiology back to normal before the operation. Chest and abdominal radiographs can be taken to look for any evidence of bowel strangulation or perforation. Fluid resuscitation, analgesia, and antibiotics should be commenced as soon as possible upon presentation in cases suspecting bowel ischaemia. Following adequate resuscitation, the patient should be brought to the operating theater for definitive surgery.<sup>[11]</sup>

It has always been a debate about whether to apply mesh in cases where bowel resection is done. The risk of mesh infection requiring explanation as opposed to the risk of hernia recurrence later should be taken into consideration. We have to bear in mind that mesh infection can lead to severe intrabdominal sepsis and even death has been reported in some cases. Therefore, the operating surgeon must pay attention to all these potential issues when managing strangulated hernia cases.

## **MATERIALS AND METHODS**

This was a descriptive prospective study of patients who were operated for inguinal hernias at Tertiary care Teaching Center over a period of 1 year.

All patients who presented to the surgical wards and clinics with a clinical diagnosis of inguinal hernias and subsequently underwent surgery were included in the study. Patients presenting with inguinal hernias associated with obstructive uropathy, chronic obstructive airway disease or chronic constipation and those who refused to give consent were excluded from the study. Recruitment of patients to participate in the study was done at the Accident & Emergency (A&E) department and in surgical wards and clinics. The clinical diagnosis of inguinal hernia was made by detailed history and clinical examination. Patients who were scheduled to undergo emergency surgery were admitted through A&E department after thorough resuscitation and patients scheduled for elective surgery were admitted a day before surgery through surgical outpatients.

Pre-operatively, all patients were assessed for fitness for surgery and anaesthesia. Each patient was classified according to the physical status scale of the American Society of Anesthesiologists or ASA class [17], which assigns a risk level for surgery and anesthesia. Those regarded as unfit for general anaesthesia were labeled as candidates for the procedure under local anaesthesia. A day before surgery the patients were subjected to clear fluid diet and were advised nil per oral regimen the midnight before surgery day. Surgery was performed under local, spinal, or general anesthesia in accordance with the patient's physiological status and the anesthetist's opinion.

Following incision the external oblique aponeurosis was cut exposing the inguinal canal and its contents. Then dissection of sac from the spermatic cord and herniotomy was performed leaving entire floor and posterior wall of the inguinal canal exposed for repair. The method of posterior wall repair was determined by the individual surgeon's preference. All wounds, except those closed subcutaneously, were closed with non-absorbable (nylon) sutures. Operative findings were noted and postoperative course and findings were noted. Postoperatively all patients were given a full dose of parenteral narcotic analgesic such as Pethidine. Antibiotics commonly ampiclox and gentamicin were also prescribed in all patients. Daycare patients were discharged home on the day of operation when it was ascertained that they had fully recovered from anaesthesia. Inpatients were discharged two to five days after surgery depending on the

physiological status of the patients. All patients were reviewed on the seventh day after operation. During this first visit, the wounds were inspected and stitches were removed. Patients were subsequently followed up for 1st month, 3rd and 6th months postoperatively for any complaints or wound complications. Data were collected using a pre-tested, coded questionnaire and included sociodemographic data (age, sex, and occupation), clinical presentation (duration of hernia, side affected, extent, reasons for late presentation, type of hernia, whether primary or recurrence, ASA status), type of surgical procedure, postoperative complications, the duration of hospital stay and mortality.

### Statistical data analysis

Statistical data analysis was done using SPSS software version 26.0 (SPSS, Inc, Chicago, IL). Data was summarized in form of proportions and frequent tables for categorical variables. Continuous variables were summarized using means, median, mode and standard deviation. P-values were computed for categorical variables using Chi-square ( $\chi^2$ ) test and Fisher's exact test depending on the size of the data set. Independent student t-test was used for continuous variables. Multivariate logistic regression analysis was used to determine predictor variables that are associated with outcome. A p-value of less than 0.05 was considered to constitute a statistically significant difference.

### Ethical consideration

Ethical approval to conduct the study was obtained from the institutional ethic review committee before the commencement of the study. Informed consent was sought from each patient before being enrolled into the study.

## RESULTS

During the study period, a total of 90 patients underwent emergency operations for strangulated inguinal hernia. The mean age of the patients was 50 +/- 21.3 years, ranging from 21-74 years. There were 81(90%) male patients and 9(10%) female. The strangulation of small inguinal hernia (8 cm) in 33(36.7%) patients. The right side was affected in 65(72.2%) patients and left in 26(28.9%). The time elapsed since the first symptoms appeared until the time of admission was quite variable from 4-180 hours with the mean of 32+/- 41 hours. Localized tenderness and absent cough impulse were seen in 90(100%) and dilated bowel loops on x-ray abdomen supine in 60 (66.7%) patients as in table 1.

**Table 1: Clinical features of strangulated inguinal hernia**

Symptoms and signs	n	%age
Irreducible swelling	90	100
Localized pain	90	100
Vomiting	72	80
Abdominal distension	40	44.4

Absolute constipation	36	40
Localized tenderness	90	100
Absent cough impulse	90	100
Abdominal tenderness	63	70
Dilated bowel loops	60	66.7
Absent bowel sounds	50	55.6
Multiple air fluid levels	45	50

**Table 2: Hernial sac contents with their viability status**

Hernial sac content	n	Viable contents	Nonviable contents
Ileum	44(48.9%)	18(20%)	25(27.8%)
Omentum	20(22.2%)	8(8.9%)	12(13.3%)
Ileum with omentum	11(12.2%)	9(10%)	3(3.3%)
Colon	7(7.8%)	7(7.8%)	-
Colon with omentum	4(4.4%)	4(4.4%)	-
Appendix	4(4.4%)	4(4.4%)	-

Peroperatively, the most frequent content of the hernial sac encountered, was only ileum in 44 (48.9%) patients and omentum in 20 (22.2%) as in table 2

**Table 3: Operative procedures for gangrenous hernial sac contents and inguinal hernia**

Operative procedure	n	%age
Resection and anastomosis of ileum	27	30
Partialomentectomy	18	20
Orchidectomy	5	5.6
Darn repair	72	80
Obliteration of inguinal canal	11	12.2
Bassini repair	9	10

Significant comorbidities were found in 27(30%) patients which included respiratory diseases in 8(8.9%), diabetes mellitus in 9(10%) and hypertension in 5(5.6%) patients. The viable contents of hernial sac or contents recovered their viability on hot fomentation and 100% oxygen inhalation was reduced into the peritoneal cavity while the resection was carried out for gangrenous contents. Resection and end-to-end anastomosis of ileum was performed in 27(30%) and Darn repair for hernia in 72(80%) patients as in table 3.

**Table 4: Postoperative complications with management**

<b>Postop complication</b>	<b>n</b>	<b>Management</b>
Respiratory tract infection	11 (12.2%)	Conservative
Wound infection	8 (8.9%)	Wound opened, Culture sensitivity and dressings
Scrotal oedema	8 (8.9%)	Conservative
Anastomotic leak	1 (1.1%)	Laparotomy and ileostomy

No mesh was placed in the series because of sterilization status in the emergency operation theatres. All the patients were keenly observed in the ward for postoperative recovery and earlier detection of complications and their prompt management. Respiratory tract infection was observed in 11(12.2%) and wound infection in 8(8.9%) patients as in table 4.

The high morbidity was due to advanced age, poverty, longer duration of symptoms, late hospitalization, gangrenous contents of the sac, chronic respiratory diseases and diabetes mellitus. There was no mortality in the series. Hospital stay varied from 2-11 days with the mean of 2.7 days.

## **DISCUSSION**

The surgical management of inguinal hernias has undergone a fascinating evolution over the decades, driven by advances in the understanding of anatomy, surgical technology, and the constant pursuit of optimal patient outcomes. The discussion around best practices and surgical approaches remains a key point in general surgery and has given rise to a rich field of scientific research and debate.<sup>[12]</sup>

The choice between open and laparoscopic repair techniques has been a topic of constant consideration. Open repair, despite its tradition and satisfactory results, has been questioned due to the need for a larger incision and the potential postoperative discomfort for patients. On the other hand, laparoscopic repair has emerged as an attractive alternative, thanks to its minimally invasive approach, resulting in less postoperative pain and faster recovery. However, this technique also presents technical challenges and learning curve for surgeons, requiring proper mastery before implementation.<sup>[13]</sup>

The choice between techniques should also consider the characteristics of the patient. Age, the presence of comorbidities and individual anatomy are factors that influence the decision of the surgical approach. Young, active patients may prefer laparoscopic surgery because of their faster recovery, while older patients or patients with preexisting medical conditions could benefit more from open repair.<sup>[14]</sup>

The discussion has also focused on the prevention of complications. Despite the effectiveness of modern techniques, recurrences remain a challenge. The choice of mesh and its careful placement have been shown to reduce the rate of recurrence, but long-term follow-up is still required to assess the durability of the results. In addition, careful attention to surgical technique, asepsis, and postoperative care are essential to prevent infections and other postoperative problems.<sup>[15]</sup>

The role of research and innovation is also crucial in this discussion. New surgical approaches, improved mesh materials, and more advanced suturing techniques continue to be areas of active research seeking improvements in patient outcomes and quality of life. In addition, identifying precise risk factors for recurrence and complications may allow for more accurate selection of surgical technique and a more individualized approach.<sup>[16]</sup>

Ultimately, the surgical management of inguinal hernias is a balance between tradition, innovation and individualization of treatment. Collaboration between surgeons, constant research and continuous evaluation of results are fundamental components for progress in this area. The evolution of techniques and approaches will surely continue, offering patients more effective care and faster recovery on their way to a better quality of life.<sup>[17]</sup>

## CONCLUSION

The surgical management of inguinal hernias is an essential part of current surgical practice. Understanding the anatomy, types of hernias, surgical indications, and treatment options is critical to providing high-quality care to patients. The evolution of surgical techniques and the constant search for better results have led to the implementation of less invasive approaches that allow a faster recovery and a better quality of life for patients. Individualization of treatment and careful preoperative evaluation are crucial to achieving successful results in the management of inguinal hernias.

## REFERENCES

1. Lu, Y., Chen, D. C., & MacQueen, I. T. (2021). General surgery: management of postoperative complications following ventral hernia repair and inguinal hernia repair. *Surgical Clinics*, 101(5), 755-766.
2. Shakil, A., Aparicio, K., Barta, E., & Munez, K. (2020). Inguinal hernias: diagnosis and management. *American family physician*, 102(8), 487-492.
3. Reuben, B., & Neumayer, L. (2006). Surgical management of inguinal hernia. *Advances in surgery*, 40, 299-317.
4. EU Hernia Trialists Collaboration: Mesh compared with non-mesh methods of open groin hernia repair: systematic review of randomized controlled trials. *Br J Surg* 2000, 87:854–859.

5. Baloch M, Shaikh SM, Bhatti Y, Shaikh GS, Deenari RA: Moloney darn repair versus Lichtenstein mesh repair: comparison of cost effectiveness & complications. *Medical channel* 2010, 16(1):81–83.
6. Ohene-Yeboah M: Strangulated external hernias in Kumasi. *West Afr J Med* 2003, 22:310–313.
7. Ohene-Yeboah M, Adippah E, Gyasi-Sarpong K: Acute intestinal obstruction in adults in Kumasi, Ghana. *Ghana Med J* 2006, 40:50–54.
8. Wolters U, Wolf T, Stutzer H, Schroder T: ASA classification and perioperative variables as predictors of postoperative outcome. *Br J Anaesth* 1996, 77:217–222. 18.
9. Kakiasvili, E., Bez, M., Shakra, I. A., Ganam, S., Bickel, A., Merei, F., ... & Almog, R. (2021). Robotic inguinal hernia repair: Is it a new era in the management of inguinal hernia?. *Asian Journal of Surgery*, 44(1), 93-98.
10. Ravikumar, V., Rajshankar, S., Kumar, H. R., & MR, N. G. (2013). A clinical study on the management of inguinal hernias in children on the general surgical practice. *Journal of clinical and diagnostic research: JCDR*, 7(1), 144.
11. Onuigbo, W. I. B., & Njeze, G. E. (2016). Inguinal Hernia. A Review. *J Surg Oper Care*, 1(2), 202.
12. Gulzar MR, Iqbal J, Ul haq MI, Afzal M: Darning versus Bassini repair for inguinal hernia; a prospective comparative study. *Professional Med J* 2007, 14(1):128–133.
13. Maggiore D, Muller G, Hafanki J: Bassini versus Lichtenstein two basic techniques for inguinal hernia repair. *Hernia* 2001, 5(1):21–24.
14. Watkin D, Kirk R: Abdominal wall and groin. In *General Surgical Operations*. 4th edition. Edited by Kirk RM. New York: Churchill Living Stone; 2000:117–140.
15. Lal P, Kajla RK: Laparoscopic total extraperitoneal versus open Lichtenstein inguinal hernia repair. *J Surg Enosc* 2003, 17:850–856.
16. EU Hernia Trialists Collaboration: Repair of groin hernia with synthetic mesh: meta-analysis of randomized controlled trials. *Ann Surg* 2002, 235(3):322–332.
17. Sanjay P, Woodward A: Inguinal hernia repair: local or general anaesthesia? *Ann R Coll Surg Engl* 2007, 89:497–503. 20. Menakuru SR, Phillip T, Ravindranath N, Fisher PW: Outcome of inguinal hernia repair at rural hospitals in northern Scotland. *Surgeon* 2006, 4:343–345.