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Original Research Article

Outcomes and complications of open mesh inguinal hernia repair in a district-level hospital in Bangladesh

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ABSTRACT

Background: An inguinal hernia occurs when tissue protrudes through a weak spot in the abdominal muscles near the groin. Open mesh inguinal hernia repair aims to reinforce the abdominal wall with a mesh implant, reducing the risk of recurrence. This study aimed to assess the outcomes and complications of open mesh inguinal hernia repair.
Methods: This cross-sectional study was conducted at the Department of Surgery, Moulvibazar 250 bed District Sadar Hospital from January, 2022 to July, 2023. As the study subjects, a total of 83 cases who had mesh repair for inguinal hernia were enrolled by using a purposive sampling technique. Data were analyzed using MS Office tools.
Results: In this study, inguinal hernia recurrence was observed in 3 cases (3.6%), with 2 cases (2.4%) requiring reoperation. Intraoperatively, 96.4% (n=80) experienced no complications, while 1.2% (n=1) each suffered from injury to the spermatic cord and neurovascular structures. Postoperatively, over 10% of participants reported complications, including numbness (18.1%), hematoma (16.9%), scrotal swelling (15.7%), and seroma (13.3%).
Conclusions: Recurrence and reoperation rates in open mesh inguinal hernia repair are relatively low. However, physicians should remain vigilant regarding potential postoperative complications such as numbness, hematoma, scrotal swelling, and seroma in patients undergoing this procedure.

Keywords: Inguinal hernia, Hematoma, Numbness, Open mesh repair, Seroma, Wound infection

INTRODUCTION

Inguinal hernia, regardless of its type, ranks among the most common conditions in the surgery arena. Advancements in surgical techniques and a deeper understanding of inguinal canal anatomy and physiology have markedly improved outcomes for patients. Over the past 130 years, inguinal hernia repair has undergone significant evolution, particularly in the last decade with the advent of tension-free repair, laparoscopic techniques, and the establishment of specialized hernia clinics.[1] Traditional suture repair methods are increasingly being replaced by tension-free mesh repair, which has become the standard approach in many countries.[2] Mesh repair offers advantages such as reduced recurrence rates compared to suture repair, along with shorter operating times and hospital stays, as evidenced by several studies. Lichtenstein introduced his open mesh repair technique for inguinal hernia in 1986. Since then, the Lichtenstein technique, with various modifications, has become the most widely utilized approach due to its simplicity and ability to provide tension-free repair with favorable long-term outcomes.[3] This method offers advantages such as reduced postoperative pain, quick recovery, early return to normal activities, and a low recurrence rate.[4] However, tension-free mesh repair is associated with potential

complications including foreign body reaction, infection, pain, fistula formation, mesh migration, shrinkage, and recurrence. Other possible complications include skin numbness, bruising, hematoma formation, seroma formation, orchitis, and testicular atrophy.[5] While numerous materials have been tested, currently three are commonly used: polyester mesh, polypropylene, and expanded polytetrafluoroethylene.[6] The lifetime risk for symptomatic inguinal hernia in adult men is as high as 16%, making hernioplasty one of the most common surgical procedures worldwide.[7]

Over the past decades, the Lichtenstein technique has emerged as the gold standard for open inguinal hernia repair.[8] Alternatively, endoscopic procedures are increasingly performed, with outcomes comparable to those of open surgery according to the European Hernia Society.[9] In Switzerland alone, more than 17,500 inguinal hernia operations are carried out annually.[10] Although the recurrence rate, which is less than 5%, is satisfactory, up to 11% of patients are reported to experience post-hernioplasty chronic pain.[11] Persistent pain affects everyday activities in 5–8% of these patients, even several years after the initial surgical intervention.[12,13] The objective of this study was to assess the outcomes and complications of open mesh inguinal hernia repair.

METHODS

This was a cross-sectional study that was conducted at the Department of Surgery, Moulvibazar 250 bed District Sadar Hospital from January, 2022 to July, 2023. As part of this study, 83 individuals who underwent mesh repair for inguinal hernia were included through purposive sampling. Written consent was obtained from all participants before data collection. The inclusion criteria encompassed patients who underwent elective and emergency surgeries, both primary and recurrent hernia repairs, and unilateral as well as bilateral hernia repairs. Exclusion criteria comprised patients under 18 years old, those with chronic constipation, chronic cough, and symptoms of prostatism, as well as those with irreducible, obstructed, or strangulated hernias. Comprehensive demographic and clinical data of all participants were documented. Data analysis was conducted using MS Office tools.

RESULTS

The age distribution of patients in the study varied, with 10% aged between 20 and 35 years, 31% between 36 and 50 years, 35% between 51 and 65 years, and 24% aged 66 years or older. The mean age of the participants was 44.10 years. Almost all cases (96.4%) were male, with only a small percentage (3.6%) being female. The distribution of hernia types revealed that over half of the participants had indirect hernia, while 36.1% and 8.4% of cases had direct hernia and combined hernia, respectively. The analysis of hernia side involvement showed that the majority of cases (53%) had hernia on the right side, while 45% and 2% of cases had hernia on the left side and bilateral involvement, respectively.

Table 1: Age distribution of patients.

Age group (years)	No. of patients	Percentage
20-35	8	10
36-50	26	31
51-65	29	35
≥66	20	24
Mean age	44.10	

Most patients (72%) were classified as ASA grade II, while 12.0%, 14.5%, and 1.2% of cases were classified as ASA grades I, III, and IV, respectively.

Table 2: ASA grade of the patients.

ASA grade	N	%
I	10	12.0
II	60	72.3
III	12	14.5
IV	1	1.2

Most of the participants (96.4%, n=80) experienced no intraoperative complications. However, 1.2% (n=1) each suffered from injury to the spermatic cord and injury to neurovascular structures.

Table 3: Intraoperative complications

Complication	N	%
None	80	96.4
Injury to spermatic cord structures	1	1.2
Injury to neurovascular structures	1	1.2

Table 4: Postoperative complications

Complication	N	%
Numbness	15	18.1
Hematoma	14	16.9
Scrotal swelling	13	15.7
Seroma	11	13.3
Neuralgia	5	6.0
Wound infection	3	3.6

Table 5: Treatment outcomes

Outcomes	N	%
Recurrence	3	3.6
Reoperation	2	2.4

More than 10% of participants had postoperative complications, including numbness (18.1%), hematoma (16.9%), scrotal swelling (15.7%), and seroma (13.3%).

Upon analyzing the outcomes, the study found inguinal hernia recurrence in 3 cases (3.6%), with reoperation performed in 2 cases (2.4%).

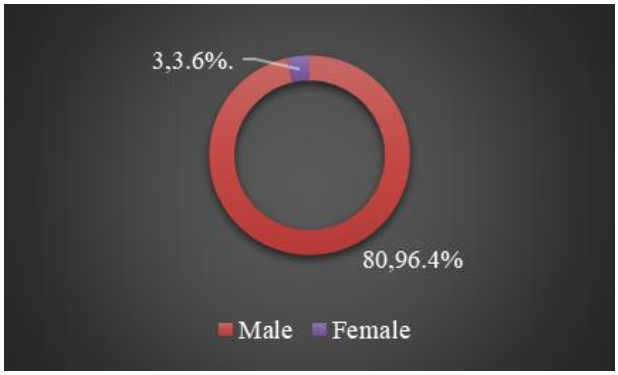


Figure 1: Surgical management.

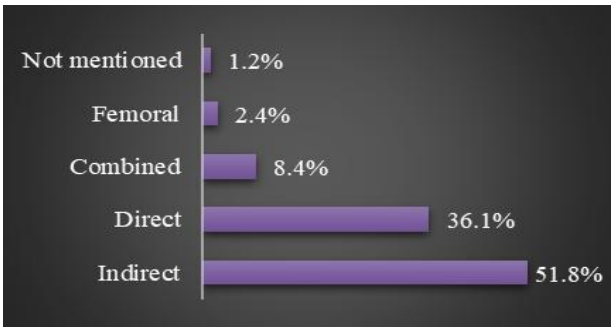


Figure 2: Type of hernia distribution

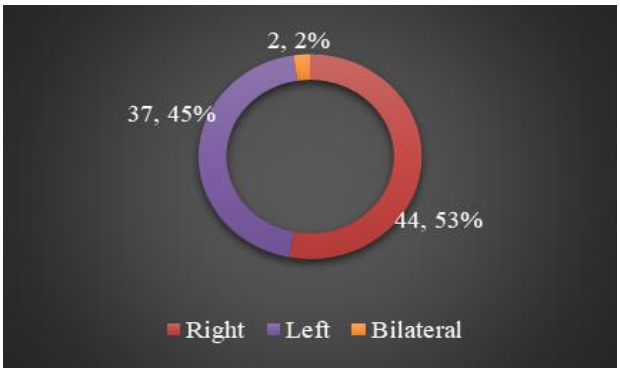


Figure 3: Side involvement of hernia

DISCUSSION

This study aimed to assess the outcomes and complications of open mesh inguinal hernia repair. The age distribution among the study participants varied, with 10% falling between 20 and 35 years, 31% between 36 and 50 years, 35% between 51 and 65 years, and 24% aged 66 years or older. The mean age of the participants was 44.10 years. Similar age distributions were observed in another study.[14] Among the participants, the overwhelming majority (96.4%) were male, with only 3.6% being female. This gender distribution aligns with findings from a study by Cheong et al, which reported 95.8% male and 4.2% female participants, consistent with our results.[15] Regarding hernia type, more than half of the participants (51.8%) had an indirect hernia, while 36.1% had a direct hernia, and 8.4% had a combined hernia. In a previous study, it was reported that eighty-two patients (79.6%) had indirect hernia, while 21 (20.4%) had direct hernia.[14] Among these, sixty-eight patients (66%) presented with pure inguinal hernia, while 35 patients (34%) presented with inguinoscrotal hernia. Our study similarly found that the majority (53%) of cases involved the right side of the hernia, with left-side involvement in 45% of cases and bilateral involvement in 2% of cases. These findings are consistent with those reported in another study.[16] Additionally, most of our patients were classified as ASA grade II, with 12.0%, 14.5%, and 1.2% of cases classified as ASA grades I, III, and IV, respectively.

Similar distributions were reported in a previous study.[15] In analyzing intraoperative complications, we observed that the majority of patients (96.4%) experienced no complications. However, some studies have reported a higher frequency of intraoperative complications in patients undergoing laparoscopic inguinal hernia repair compared to open procedures.[17,18] Postoperative complications were observed in more than 10% of participants, including numbness (18.1%), hematoma (16.9%), scrotal swelling (15.7%), and seroma (13.3%). Severe chronic pain following groin hernia repair is rare but can be debilitating.[19] In our study, recurrence of inguinal hernia was observed in 3 (3.6%) cases, with reoperation performed in 2 (2.4%) cases. Other studies have reported recurrence rates of inguinal hernia repair ranging from 0.5% to 10.0%. These findings contribute valuable insights for future research in similar areas.[20,21]

Limitation

This study's scope was limited by its single-centre focus and small sample size, alongside its short duration. Consequently, caution is necessary when interpreting its findings, as they may not accurately depict the broader context of the entire country.

CONCLUSION

In open mesh inguinal hernia repair, the rates of recurrence and reoperation are relatively low. Nevertheless, physicians must exercise caution regarding potential postoperative complications such as numbness, hematoma, scrotal swelling, and seroma in patients. While the procedure generally offers favorable outcomes, vigilance and proactive management of these complications are essential to ensure optimal recovery and patient satisfaction. By closely monitoring patients postoperatively and promptly addressing any adverse events that may arise, healthcare providers can uphold the safety and efficacy of open mesh inguinal hernia repair, further enhancing the overall quality of patient care.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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