

A STUDY OF POSTOPERATIVE COMPLICATIONS FOLLOWING OPEN MESH INGUINAL HERNIA REPAIR

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ABSTRACT

BACKGROUND

Inguinal hernia is the most common type of hernia. Inguinal region consists of deep inguinal ring, inguinal canal and superficial inguinal ring, which make the region weak and susceptible to hernia. 65% of inguinal hernias are indirect hernias and 35% direct hernias.

Hernioplasty is the strengthening of posterior wall of inguinal canal. It can be done either with the help of mesh repair or darning. Hernioplasty is indicated in recurrent hernia cases, inguinal hernia with weak abdominal muscle tone where mesh plasty is preferred and inguinal hernia with good muscle tone where darning can be done.

In mesh repair, posterior wall (Lichtenstein repair) of inguinal canal is strengthened by a Prolene or Marlex mesh. Over time, fibroblasts and capillaries grow over the mesh converting it into a thick sheath strengthening the posterior wall.

Complications which can be encountered postsurgery are pain, bleeding, urinary retention, scrotal swelling, abdominal distension, seroma and wound infections, chronic pain, keloid and testicular atrophy.

MATERIALS AND METHODS

- The study was conducted in the Department of General Surgery, Travancore Medical College, Kollam.
- The study was done from January 2015 to January 2016.
- One hundred cases were identified and were chosen for the study.

INCLUSION CRITERIA

Inguinal hernia cases treated by open mesh repair.

EXCLUSION CRITERIA

Other types of inguinal hernia repair.

RESULTS

All the cases studied belonged to male sex.

In our study, age group twenty to forty years amounted to sixty one cases followed by age group forty to sixty years, which amounted to twenty eight cases. Age group zero to twenty years amounted to six cases and age group more than sixty years amounted to five cases. In the study group, seventy two cases were indirect inguinal hernias and twenty eight cases were direct inguinal hernias.

Based on the complications encountered, pain at the site was the commonest complaint, which amounted to eleven cases, seroma was seen in seven cases, in six cases scrotal swelling was seen, two cases developed keloid at the scar site, wound dehiscence, infection, bleeding from site amounted to one case each.

CONCLUSION

Open mesh repair for inguinal hernia is a safe method of operation. Newer laparoscopic mesh repairs are on the rise, but they need expertise and there is a learning curve.

KEYWORDS

Postoperative, Open Mesh Inguinal Hernia, Complications, Abdomen.

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INTRODUCTION: Abdominal wall is mostly composed of muscle, fascia and bones. Its main function is to protect the intra-abdominal organs and structures. The abdominal wall has elasticity and ability to stretch, which leads to compromise in its strength. The lumbar triangle and the posterior wall of inguinal canal are natural weaknesses in the abdominal wall. The abdominal wall is also rendered weak because of passage of many structures in and out of the abdominal cavity. Hernia is the bulging of the abdominal

parts/contents of the abdominal cavity through a weakness in the abdominal wall. Various causes for hernia can be;

- Design weakness.
- Structures entering and leaving abdominal cavity leading to weakness.
- Developmental anomalies.
- Genetic.
- Trauma.
- Pregnancy and ageing leading to weakness.
- Neurological or muscle disease.
- Increased intra-abdominal pressure because of chronic cough.

Hernia consists of three parts, sac, contents of sac (omentum, intestine, Meckel's diverticulum) and coverings of hernia sac.

Inguinal hernia is the most common type of hernia. Inguinal region consists of deep inguinal ring, inguinal canal and superficial inguinal ring, which make the region weak and susceptible to hernia. Inguinal canal is bounded anteriorly by external oblique aponeurosis and laterally by fibres of conjoint muscle. Superiorly, it is bound by arched fibres of conjoint muscle. Inferiorly by inguinal ligament and lacunar ligament and posteriorly by fascia transversalis and conjoint tendon. 65% of inguinal hernias are indirect hernias and 35% direct hernias.¹

Indirect inguinal hernia results from herniation of abdominal contents through deep inguinal ring into the inguinal canal. Usually, it occurs due to persistent processus vaginalis. The hernia sac passes through the inguinal canal, external inguinal ring and extends up to the scrotum. Indirect inguinal hernia is covered by skin, two layers of superficial fascia, external spermatic fascia, cremasteric fascia, internal spermatic fascia, extraperitoneal fat and peritoneum.

Types of indirect inguinal hernia are;

- Complete hernia/scrotal hernia: Here, the hernia sac is patent up to the scrotal bottom.
- Funicular: It is an incomplete hernia. The hernia sac is patent up to the scrotal roof.
- Bubonocele: Here, the sac is confined to the inguinal canal.

Direct inguinal hernia is an acquired type of hernia, which occurs through a weakness in the posterior wall of inguinal canal called as Hesselbach's triangle.

The usual precipitating factors are weakness of transverse abdominis fibers, chronic constipation, chronic cough and smoking.

The direct inguinal hernia is covered by skin, two layers of superficial fascia, external oblique aponeurosis, conjoint tendon, fascia transversalis and peritoneum.

A case of inguinal hernia usually presents with a swelling in the inguinal region, which disappears on lying down and increases on straining. In some cases, there may be history of pain. On examination, there is a swelling in the inguinal region, expansile impulse on cough is present,

getting above the swelling is not possible, external ring invagination test where in skin is lifted up at the root of scrotum with little finger and invaginated to external ring. In indirect inguinal hernia, the finger goes obliquely and laterally; in direct hernia, finger goes backwards. When patient is asked to cough, impulse touches tip of finger in indirect hernia and pulp of finger in direct hernia. Leg raising/head raising test can be done to assess the weakness of abdominal muscles.

Radiological tests like ultrasound and CT can be done in complications.

Inguinal hernia must be differentiated from various other groin swellings like femoral hernia, vaginal hydrocele, retractile testis, saphena varix, inguinal lymphadenitis, funiculitis and lipoma of the cord.

Types of operations done for inguinal hernia are;

- **Herniotomy:** Done in children where sac is excised.
- **Herniorrhaphy:** It can be done in 2 types.
 - **Modified Bassini's:** Done in young patients with good muscle tone. Herniotomy is done by approximating posterior wall of inguinal canal by suturing inguinal ligament and conjoint tendon using non-absorbable sutures.
 - **Shouldice Repair:** Here, local tissues are used. Inguinal canal is opened. Transversalis fascia is incised from inguinal ring to pubic tubercles. The flaps of transversalis fascia are sutured in a double breasting manner using non-absorbable sutures. After this step, conjoint tendon is sutured to inguinal ligament followed by suturing of external oblique aponeurosis to inguinal ligament.
- **Hernioplasty:** It is the strengthening of posterior wall of inguinal canal. It can be done either with the help of mesh repair or darning. Hernioplasty is indicated in recurrent hernia cases, inguinal hernia with weak abdominal muscle tone where mesh plasty is preferred and inguinal hernia with good muscle tone where darning can be done.
 - **Mesh Repair:** Posterior wall (Lichtenstein repair) of inguinal canal is strengthened by a Prolene or Marlex mesh. Over time, fibroblasts and capillaries grow over the mesh converting it into a thick sheath strengthening the posterior wall.
 - **Prolene Nylon Darning:** Here, the conjoint tendon and inguinal ligament are sutured in a crisscross manner without tension using Prolene suture material.²

Even though, the hernia repair is a common surgery, it is not without complications.

- During surgery complications like injury to urinary bladder or injury to iliac vessels may arise.
- Post-surgery, early complications are pain, bleeding, urinary retention, scrotal swelling and abdominal distension.

- Intermediate complications, which can occur between 3-7 days are seroma and wound infections.
- Late complications are chronic pain, keloid and testicular atrophy.³

AIMS AND OBJECTIVES: To study the postoperative complications following open mesh inguinal hernia repair.

MATERIALS AND METHODS: The study was conducted in the Department of General Surgery, Travancore Medical College, Kollam.

The study was done from January 2015 to January 2016.

One hundred cases were identified and were chosen for the study.

Inclusion Criteria: Inguinal hernia cases treated by open mesh repair.

Exclusion Criteria: Other types of inguinal hernia repair.

All the complications that was encountered was noted and reported.

RESULT:

Sex	Frequency
Male	100
Female	Zero

Table 1: Showing the Sex Distribution

Age Group	Frequency
0-20 years	6
20-40 years	61
40-60 years	28
>60 years	5

Table 2: Showing Age Group

Type	Incidence
Indirect inguinal hernia	72
Direct inguinal hernia	28

Table 3: Showing the Type of Inguinal Hernia

Complications	Frequency
Pain	11
Bleeding from site	1
Seroma	7
Infections	1
Scrotal swelling	6
Wound dehiscence	1
Keloid formation	2

Table 4: Showing the Complications

DISCUSSION: All the cases studied belonged to male sex. In our study, age group twenty to forty years amounted to sixty one cases followed by age group forty to sixty years, which amounted to twenty eight cases. Age group zero to twenty years amounted to six cases and age group more than sixty years amounted to five cases.

In the study group, seventy two cases were indirect inguinal hernias and twenty eight cases were direct inguinal hernias.

Based on the complications encountered, pain at the site was the commonest complaint, which amounted to eleven cases, seroma was seen in seven cases, in six cases scrotal swelling was seen, two cases developed keloid at the scar site, wound dehiscence, infection, bleeding from site amounted to one case each.

None of the complications were serious and life threatening and were managed conservatively.

This study was in agreement with the study conducted by Rashid Abd Elhalim Khalil, Awad Ali M Alawad.⁴

Open mesh repair had less number of complications compared to laparoscopic repair as evidenced in study conducted by other researchers.^{5,6,7}

CONCLUSION: Hernia repair is one of the first operations, which a surgeon will learn in his academic life. Open mesh repair for inguinal hernia is a safe method of operation. Newer laparoscopic mesh repairs are on the rise, but they need expertise. Further studies with a larger sample size are required.

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