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Recurrence of Inguinal Hernia after Open Mesh and Laparoscopic Repair Approach: A Cumulative Review

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Abstract

Hernia repair is one of the most common surgeries performed worldwide which has a challenging aspect of recurrence as an irresistible problem besides the improvements in socio economical and technical factors. The recurrence rate depends upon the mode of primary repair also with skills of the surgeon. The factors lead to recurrence the most are technical, surgeon's experience, family history and other patient related factors including heavy weight lifting and other medical complications. This is concluded in the review that open mesh repair have less recurrence of hernia than laparoscopic due to skills of the surgeon and it is also more practiced approach due to economical reason.

Introduction

Invagination of a part of small intestine or abdominal fat into the inguinal canal through tear or a weak point into the peritoneum is termed as hernia. It occurs in groin area near one or both sides of scrotum in men on other hand more prominently into the peritoneum in females. It occurs in groin area near one or both sides of scrotum in men. In females, more common type of inguinal hernia is femoral hernia[1]. When the hernia protrudes through deep inguinal ring, it is called inguinal hernia whereas if it descends through the inguinal canal it is referred as indirect inguinal hernia. Surgical treatment of inguinal hernia associates with problems like recurrence and inguinodynia, recurrence of hernia can be detected at the site of surgery immediately or after some time[2,3]. Recurrence rate of hernia accounts about 13% of all the hernia surgeries performed worldwide[4,5].

Recurrence rate:

Recurrence rate ranges between 1-10% which also depends on surgical procedure follow up duration and the surgeon's experience[6,7]. In the two types of surgical procedures, laparoscopic repair is considered to be more beneficial due to less pain and hospitalization duration with a disadvantage of administration of general anesthesia for lower intraoperative problems. Where as in open repair, it has disadvantage of longer hospitalization but it can be done with local anesthesia and not too much intra operative skills of the surgeon. In open inguinal hernia repair, non mesh repair is more prone to recurrence. After laparoscopic repair, recurrent inguinal hernia can occur any time but more prone to younger patients also after three years of surgery[8-10]. It is found in some studies that laparoscopic repair comes with less recurrence rate than open repair treatment[11]. In a survey of

inguinal hernia, it was found that 38.02% recurrence was in 5 years, 57.46% after 10 years and upto 50 years it turned out to be 97.15%[12]. When it was compared between open and laparoscopic femoral hernia repair in some intraoperative findings, open repair was found more prone to recurrence in women[13]. In some studies it has been found that male patients are more prone than female patients with readmission for contralateral side involvement[14,15]. Some studies conclude that both repair procedures have similar recurrence rates whereas some says the laparoscopic surgery is more prone to recurrence because of the limitations of treatment[16-18]. A meta analysis also suggested that recurrence is higher after operating recurrent hernia rather than primary operation[19].

Causes and risk factors of Recurrence:

In both open mesh repair and laparoscopic repair, failure or dislocation of mesh can be a cause of recurrence which can be occurred due to many factors such as wrong mesh size, bad quality of mesh, improper placement, early displacement due to folding or lifting due to urinary retention or hematoma. Late displacement due to lesser growth of scar tissue, protrusion of mesh, collagen disease or pronounced shrinkage etc[20]. Mesh is used in almost all the hernia repairs in adults and avoided in pediatric cases due to inflammatory reactions and possible harm to the vas deferens/ testes/both and infertility problems[21]. Some additional risk factors are smoking, higher BMI, postoperative infections at surgical site, Diabetes, some surgical factors include the surgeon's experience also [16,22]. There were no evidences of effect of type and technique of mesh fixation[5]. Some other complications that can occur can be increased intra abdominal pressure, chronic pulmonary diseases, bladder extrophy, chryptochidism, connective tissue disorder, seizure disorder, malnutrition etc. It was indicated in studies that children of age <4years also come under greater risk of recurrence than the elder ones in both unilateral and bilaterall inguinal hernia[23,24]. Some studies reveal that recurrence of hernia also been affected by the family history as the patients with family history of hernia were in higher risk of recurrence than primary patients[25].

A meta analysis of recurrence in 7161 patients, it was found that recurrence was higher after laparoscopic repair than after open repair with an independent effect of obesity and smoking[26]. Whereas some came with the conclusion that smoking or alcohol doesn't have any effect. Studies also came up with conclusion that overweight people have lesser incidence of recurrence than normal weight[21]. In a comparative study of early and late recurrence, it was found that early recurrence occurs due to technical factors whereas late recurrence generally occurs due to patient related factors[28-31]. Another study came with a result that hiatal hernia diagnosed patients were having double risk of inguinal hernia whereas women of taller height, older age, resident of rural area, having umbilical hernia or chronic cough were associated with higher risk of inguinal hernia recurrence. Some studies conclude that laparoscopic and open repair both have similar rates of recurrence and depend more on surgeon's experience. For older and less healthy patients open repair becomes rather beneficial[32,33]. Complications associated with hernia repair are hematomas which include seromas, wound infection and penile or scrotal acchymosis but also uncommon. 5-12% of patients suffer from chronic pain which is a most common postoperative problem. It is generally related related to mesh contraction, chronic inflammation, nerve scarification or osteitis pubis[34-38].

On the age factor some studies evaluated that age doesn't affect the recurrence rate whereas some other studies concluded that persons between 50-70 years were in lower risk of recurrence than persons younger than 50[39-43]. A few studies

concluded that persons of age >50 have increased risk of recurrence and also shown that recurrence rate after laparoscopic repair become higher in older persons than after open repair[10]. In a study recurrence was found to be increased in indirect inguinal hernia cases and the major factor of risk of recurrence was found to be lifting heavy weight[44]. The early case of recurrence observed in the study were due to technical problems whereas late recurrence was due to local tissue failure[45-47].

Conclusion

From the above review of literature it has been concluded that patient related factors affects the incidence of recurrence the most. Two approaches of laparoscopic and open repair if performed by skilled surgeon, they have similar rates of recurrence. So it is highly dependent on the experience of the surgeon. If we compare mesh with non mesh open repair, non mesh repair tends to be more prone to recurrence. Laparoscopic repair is not performed in general in lower or mid income countries due to economical reason and also in developed countries due to experiencing of the surgeon.

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