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Reaserch Paper : Deep Inguinal Ring Repair By Prolene Purse String Stitch

KEYWORDS: Hernioplasty, Deep inguinal ring repair, Purse string suture, Prolene 1.0, Recurrence

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ABSTRACT *Inguinal hernia, one of the most common among all the hernias, have very high rate of recurrence despite modern surgical procedures. In recurrent hernias new sac may come through deep inguinal ring where laxity or gap may be left during routine hernia repair. In this study we carried out procedure of Purse –string stitch around deep inguinal ring with non absorbable suture material (prolene 1.0) in surgical treatment of inguinal hernia to prevent recurrence. This procedure was carried out in 100 patients of different age over the period of 1 year and follow up was done for 1 year with zero recurrence rate. So in agreement to other literature available this procedure gives excellent results in treatment of inguinal hernias without any noticeable disadvantage.*

INTRODUCTION

Inguinal hernia is the most commonly seen among all the hernias. The primary etiology behind the indirect inguinal hernia, the most common form of groin hernia across all the ages and both genders is patent processus vaginalis. Other predisposing factors are, repeated increase in intra-abdominal pressure, commonly associated with chronic obstructive pulmonary disease, abdominal ascites, labourers who repeatedly flex the abdominal wall musculature, individuals with chronic constipation, and with chronic prostatic diseases. Collagen formation and structure deteriorates with age and thus hernia formation is more common in older individual. Cigarette smoking is associated with connective tissue disruption , and hernia formation is more common in chronic smokers. Modern surgical procedures are very helpful to prevent recurrence in inguinal hernia, still we notice high rate of inguinal hernia after hernioplasty(<1%) (16). Along with the prolene mesh repair , Posterior wall repair with non-absorbable suture material is also done with various methods like Bassini, Shouldice ,etc. But still recurrence rate is high. Anatomical factors and straining factors may cause recurrence. New sac may come through deep inguinal ring where laxity or gap may be left during routine hernia repair, recurrence may occur through medial side of deep inguinal ring which is not prevented by these methods. In inguinal hernia surgery ,we usually do not anchor the mesh near and around the ring. By taking purse string stitches around deep ring , we are anchoring the mesh so that we can achieve deep ring repair , we are approximating the mesh to the posterior wall and hence enhancing fibrosis also.(10,11)

ANATOMY (DEEP INGUINAL RING)

The deep inguinal ring is "u" shaped condensation of the fascia transversalis, being incomplete above.it is situated 1 cm above midinguinal point . it transmits the spermatic cord/ round ligament and processus vaginalis. The fascia transversalis extends on the spermatic cord as the internal spermatic fascia. The inferior epigastric artery courses up along the medial side of deep inguinal ring.(4,9)

MATERIAL AND METHOD

SELECTION CRITERIA :

The study group consisted of 100 patients of inguinal hernia, unilateral or bilateral, who were admitted and operated at Smt SCL hospital over 1 year period from jan 2010 to jan 2011 . In children inguinal canal is very narrow so deep ring and superficial ring situated near by so deep ring repair wasn't done so age group 0-20 wasn't included in present series.

PROCEDURE :

Hernia repair is done by surgeon's preferred method (only mesh plasty/ mesh plasty along with posterior wall repair)(2,3) . Deep inguinal ring purse string suture is taken with prolene 1-0 starting lateral to the ring. Suture passes through conjoint tendon ,inguinal ligament laterally, oblique bite to inguinal ligament inferiorly ,transversalis fascia, conjoint tendon and inguinal ligament medially, conjoint tendon superiorly and along with part of the prolene mesh and encircles the cord at deep ring, (figure 1). Circumferential distance between bites of purse string stitch and deep inguinal ring is around 1 cm or 1 fingertip as shown in figure, (figure 2). Tip of index finger is kept alongside the cord to achieve this distance. While taking purse string stitch we tried to avoid to take deep bite near medial end as to avoid injury to inferior epigastric vessels (6,7,8)

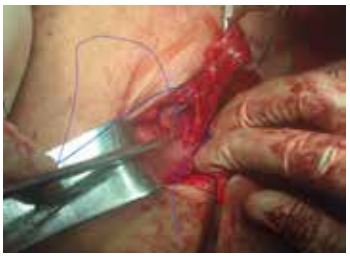

Figure 1: Deep inguinal ring repair wih prolene 1.0 purse string stitch with around 1 cm circumferential distance

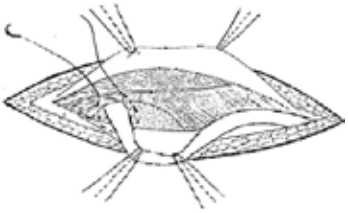

Figure 2 : Sketch showing deep inguinal ring repair with prolene purse string stitch

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RESULT

Follow up was done upto 1 years meanwhile no cases of recurrence has been reported. Bilateral repair was carried out in 20 patients without recurrence. No case of female inguinal hernia was reported in this study.

Out of the 100 patients 42 were chronic smokers and 23 patients had complaint of chronic constipation.

Table 1: Table showing the age groups to which the patients belonged.

Age (years)	Number of patients	Percentage
21-40	26	26
41-60	56	56
>60	18	18

Table 2 : Numbers showing distribution of cases into direct , indirect and combine hernia.

	Indirect hernia	Direct hernia	Combine (pantaloons hernia)
Unilateral	24	45	1
Bilateral	6	14	0
Total	30	59	1

Table 3: Table showing recurrence over follow up period of 1 year in 100 cases of inguinal hernias in this study

	Number of cases operated for inguinal hernia	Recurrence over follow up period of 1 year
Total	100	0

Table 4 : Table showing recurrence over follow up period of 1 year in patients with predisposing factors for hernia formation in this study

Predisposing factors	Number of cases operated	Recurrence over follow up period of 1 year
smoking	42	0
constipation	23	0
chronic urinary disease	13	0
COPD	1	0
Other factors (collagen disease, abdominal ascites, muscle wall weakness,	0	0

Table 5 : Table showing recurrence over follow up period of 1 year in patients with different types of inguinal hernia in this study

Type of hernia	Number of cases operated	Recurrence over follow up period of 1 year
Indirect hernia	30	0
Direct hernia	59	0
Combine hernia	1	0

Table 6 : Table showing recurrence over follow up period of 1 year in patients with different age group in this study

Age group	Number of cases operated	Recurrence over follow up period of 1 year
21-40	26	0
41-60	56	0
>60	18	0

Table 7 : table showing number of complications , intraop and post op in 100 operated cases of inguinal hernia repair with prolene 1.0 purse string stitch and mesh plasty.

	Intraop complications		Post op complications				
Number of cases operated	Inferior epigastric vessel injury	Bladder injury	Seroma formation	Infection	Neuralgia	Vas deference injury	Recurrence
100	2	0	1	1	1	0	0
Percentage	2%	0	1%	1%	1%	0	0
Management	B y tying the vessel intraoperatively	-	Conservatively	Conservatively	With analgesics	-	-

DISCUSSION

Recurrence of the hernia is often secondary to deep infection, undue tension on the repair, or tissue ischaemia. Overlooking of the hernia in the operating room and not doing repair of both an indirect and direct defect through strengthening of the internal ring and canal floor is one of the cause of recurrent inguinal hernia. Deep inguinal ring repair can be done through lytle method (take care of only medial side of ring),Gilberts method(umbrella shaped plug in deep ring) and The per Fix Plug repair(commercially manufactured plug is placed in internal ring and fixed with surrounding tissue).(13, 14)

In this study we performed deep inguinal ring repair through purse string stitch with prolene 1.0 along with mesh plasty. This way we are not leaving any dead space between mesh and the posterior wall of the canal. This method is simple and preferable in all cases to prevent chances of indirect inguinal hernia recurrence, as it takes care of both the defects responsible for direct and indirect inguinal hernia through repair of internal ring and canal floor. And for this procedure no any extra dissection is required, so its easy to perform.

Natural mechanism preventing herniation are as follow. (1,5)

1. Obliquity of canal.
2. Shutter action of conjoint tendon.
3. Internal oblique opposite deep ring.
4. Sliding value action of deep ring.

All this mechanism are retained and become more effective with purse string suture. It is more effective than lytle's repair which does not take care of lateral , superior and inferior margins of deep ring.(8)

CONCLUSION

Purse string stitch around deep ring along with mesh plasty to prevent recurrence of inguinal hernia is a simple, effective , minimally dissecting and cost effective technique with excellent results.

And in this study of 100 patients of inguinal hernia, over a time span of 2 years , operated with this procedure, no case of recurrence was noted. So in agreement to other literature (15, 16) available this procedure gives excellent results in treatment of inguinal hernias without any noticeable disadvantage.

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