



## Stoppa Repair for Inguinal Hernia is Obsolete or Not

### KEYWORDS

Inguinal hernia; Open; Bilateral; Recurrent ; Posterior; Mesh; GPRVS.

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### ABSTRACT

**Background:** Inguinal hernias are commonly treated by surgeries. Stoppa or GPRVS ( Giant Prosthetic reinforcement of the visceral sac) repair uses large prosthetic mesh placed in preperitoneal plane covering both the hernial orifices and it covers the whole myopectineal orifice bilaterally. In 1975 Rene Stoppa<sup>1</sup> was first described stoppa repair is useful in cases of bilateral hernias, recurrent and multirecurrent hernias, unilateral hernias where risk of recurrence is more when associated with COPD, BPH, Poor abdominal tone and previous surgery. With the invention of laparoscopic hernia repair present study is to know the role of Stoppa repair in management of inguinal hernias specially in bilateral, recurrent and unilateral hernias which are at the risk of high recurrence.

**Methods:** Study done in teaching hospital at Bangalore and 250 cases were included for the stoppa repair. Bilateral hernias, recurrent hernias, unilateral hernias with one or more risk factors for recurrence and femoral hernias. Demographic data such as age, gender, occupation, smoking, symptoms as well as comorbid conditions such as chronic obstructive pulmonary disease, prostatism, and recurrence were collected. Duration of surgery was also noted. Complications such as seroma, hematoma, orchitis, and wound infection were recorded. Duration of hospital stay was recorded. Chronic groin pain and recurrences in each group were also recorded.

**Results:** Out of 250 patients 225 had bilateral inguinal hernia and 25 unilateral inguinal hernia, 48 were recurrent and 7 were rerecurrent hernia. All the patients were males with age group between 21 to 80 years. All the patients had swelling in the groin region 43.3 % of patients had associated pain. Direct hernia was common variety in this study as mean age in the study was more than 40 yrs. Most of the patients had one or the other risk factor for recurrence smoking was most common 76.6% . other risk factors are COPD, BPH, Poor abdominal tone, Previous surgery and strenuous work. All the patients were subjected to GPRVS under spinal anaesthesia / epidural anaesthesia with proper size of mesh and duration of surgery was 52 min. Intra operative course was uneventful except 4 cases of peritoneal tear which were sutured without any additional morbidity. patients were allowed early ambulation. Post operative course was uneventful without major complications and mortality. 4 cases of Recurrences were seen. Minor complications like seroma were managed conservatively with no sequelae. These results were comparable to other studies.

**Conclusion:** Eventhough the laparoscopic inguinal hernial surgery is widely practiced all over the world Stoppa repair is still effective and safe procedure can be done in cases of bilateral, recurrent and hernias which are at high risk of recurrence. Procedure is simple, shorter learning curve, complications are low with lower recurrence rate. Further studies were needed to confirm substantiate our study.

### Introduction

Hernia is protrusion of a part or whole of viscus through a defect from the cavity containing it<sup>2</sup>. Inguinal hernia is one such hernia unique for human for being upright on two legs. Bilateral Hernia is having an incidence of 6-8% of all groin hernias<sup>3</sup>. These hernias are also of very Significant importance because mankind is in search of ideal repair for the same.

The recurrent hernia and unilateral hernia with predisposing factors for other side Should be managed with a procedure of minimal morbidity. Hernia management has been changed over a period from tissue repair to tension free mesh repair. With the advent of laparoscopic procedures we also have Trans abdominal preperitoneal repair and totally extra peritoneal repair. Inspite of all these procedures the ideal hernia repair is still a debate. In this article we have studied Stoppas procedure for management of the inguinal hernia in our set up. Stoppas procedure

was described by Rives - stopppa in France in the year 1956 for covering all the myopectineal orifices of groin hernia by a giant prosthesis.

### Methodology

This was a prospective study conducted for the period of 10years from august 2005 to May 2015. In this we have included all patients with bilateral inguinal hernia, recurrent inguinal hernia and unilateral hernia with predisposing factors like chronic cough, constipation and urinary symptoms for future development of hernia on opposite side. A total of 250 patients were operated in this period by Stoppas procedure... The patients were followed up for post operative period and also over a period of 6 months for any recurrence and other complications. The complicated inguinal hernias and patients who had previous laparotomy with midline scar were excluded from the study.

**Surgical procedure**

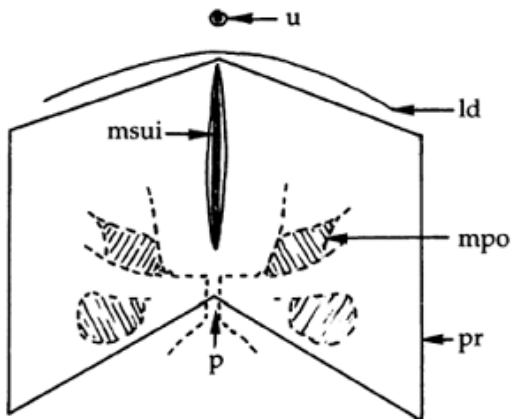
The technique of procedure is described briefly<sup>4-7</sup>. All patients received pre operative antibiotic before 20 minutes of incision. All procedures were performed either by spinal or Epidural anesthesia. Midline sub umbilical incision is made after opening rectus sheath and Separating rectus muscle the umbilico prevascular fascias is opened. Preperitoneal cleavage starts From lower portion of the midline in the retro pubic space of retzius it continues laterally behind Rectus abdominal muscle to the far side of the operator.

Dissection advances downwards in front of bladder up to prostate and then outwards behind the ilio pubic ramus in space of bogro's. When hernia pedicle is dissected it will be united or distinct from the spermatic cord depending on the type of hernia. Iliac vessels are covered by fascia are rarely injured unless sheath is opened inadvertently.

Indirect sac if it is small is resected after reducing contents. If it is large sac is resected at its proximal end leaving distal end undisturbed. Direct sac or femoral hernia sac is inverted after reducing contents. Cord structures are dissected from sac till they are parietalized or till spermatic cord turns medially and away from vessels figure 2 (a) and (b). Extent of dissection is Bogro's space and Retzius space, arcuate line above, laterally up to psoas muscle below till iliac vessels and retropubic space till prostate.

**Placement of mesh :**

Mesh size of size 15 \* 30 cms is determined by patient . length is distance between two iliac spines minus two cms. Width is distance between umbilicus and pubic symphysis. Mesh is cut in chevron shape as shown in figure 1.



**figure 1 – mesh positioning in Stoppas repair**

- u – umbilicus
- mpo- myopectineal orifice
- p – pubic symphysis
- msui- midline sub umbilical incision
- pr- prolene mesh

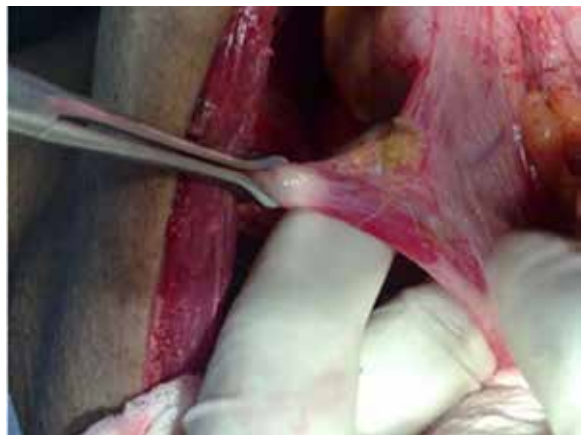
Mesh is grasped with long artery forceps in all angles and in middle. Assistant lifts abdominal wall with cord structures and mesh is placed with inferior middle forceps in between bladder and pubic bone . inferior angle , middle lateral and superior angle forceps are placed laterally as far as possible. Similarly mesh is placed on opposite side. Middle superior part of mesh is fixed to posterior rectus sheath near arcuate line. Drain is placed bilaterally on the mesh

figure 2( c) .Abdomen is closed in layers.Patientis encouraged early mobilization.

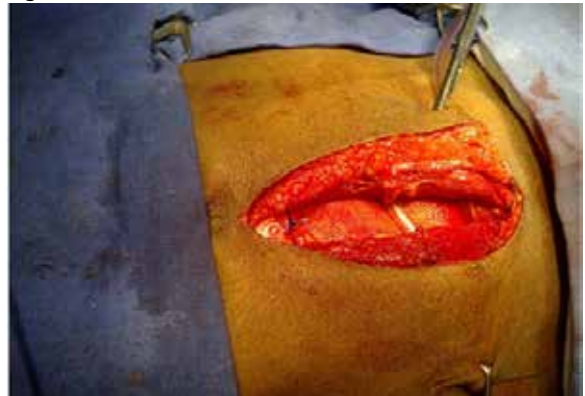
**Fig.2(a) creating preperitoneal space**



**Fig 2(b) Parietalisation of cord structures**



**Fig 2(c) Placement of Mesh and drain**



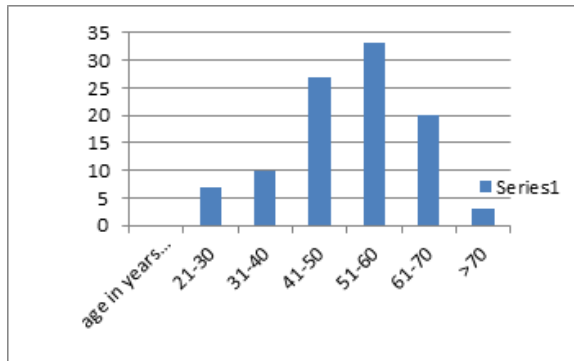
Patients were discharged from hospital on second day of surgery if no complications were noted. The patients were followed up after a week , a month and after 6 months. The details regarding duration of surgery , seroma formation , early recurrence and late recurrence at 6 months , wound infection and chronic groin pain at 6 months were collected. Following procedure patients were allowed to their routine activities once the pain and discomfort subsided.

**Results**

A total of 475 inguinal hernia (225 bilateral and 25 unilateral hernia) were operated. All patients were male . majority of patients (133 patients) were between 51 to 70 years

of age {Graph 1}. Five patients were more than 70 years of age. Mean age was about 63 years ( range 24 – 78 years). Concurrent medical disease was also documented . majority were cardiovascular problems noted in 58% Of patients , followed by respiratory problems 20 % ( copd , asthma and tuberculosis) and urologic problems constituting 20% ( benign prostatic hypertrophy , stricture urethra) . in 250 patients with 475 hernias we had 48 recurrent hernia and 7 re recurrent hernia and rest being primary hernia.

**Graph 1 – Age distribution of groin hernia**



There was 248 right side inguinal hernia and 227 left side hernia (table 1). Mean stay of hospital was noted to be 3.4 days. 3 cases of seroma was noted in our study which was aspirated and did not delay in recovery. No cases had neuropathies , testicular atrophy or chronic pain. 4 patients had recurrence, 2 in immediate postoperative period and 2 at 6 month follow up. The two early recurrence was re explored and mesh was found to be rolled up and was repositioned.

**Table 1 – type of groin hernia incidence**

Type of groin hernia	No. of patients
Bilateral indirect inguinal hernia	53
Bilateral direct inguinal hernia	108
Bilateral ( right direct , left indirect)	36
Bilateral ( right indirect , left direct )	28
Unilateral hernia	25
Recurrent hernia*	48
Rerecurrent hernia*	7

\*included in either bilateral or unilateral type.

All patients were operated by Stoppas repair by using polypropelene mesh. The mean operating time was noted to be 52 minutes ( range 45 to 90 min) (table 2)

**Table 2- duration of surgery in minutes**

Duration of surgery in minutes	No. of patients
40-50	42
51-60	128
61-70	30
71-80	28
81-90	22

**Discussion**

Inguinal hernia has maximum incidence in between 30 – 60 yrs. Studies done by Rosa fernandiz, Mathinnet M and Henmat maghsoudi showed that mean age of presentation was 52.7 , 60 , and 60 years respectively<sup>8</sup>. In our study mean age of presentation was 54.8 yrs which is compara-

ble to other studies. In our study all the patients studied were males. Studies done by Rosa fernandiz, Mathinnet M and Henmat maghsoudi had 96%, 97% and 100 % men in their Study<sup>9-11</sup>.

Most of patients had risk factors for development of hernia most common being smoking 76.6%, Obesity 10% , COPD 20% and BPH 20% . Unilateral hernias included in the study had one or more risk factor for development of recurrence and contra lateral hernia. Operating time is time gap between incision and last skin suture . This is comparable to other studies. Operating time is much shorter than laparoscopic repair and bilateral Lichtenstein repair done bilaterally. Operating time is not greatly increased even in cases of bilateral hernias and recurrent hernias.

No major complications were found in present study except for 4 peritoneal tears which occurred while operating for recurrent hernias which was closed with vicryl 2-0 primarily. No cases of major bleeding or bladder injury occurred.

No incidence of mesh infections were reported and recurrences were reported in 6 cases. There were no cases of scrota oedema, ischaemic orchitis or chronic groin pain . Recurrences reported in previous studies were occurred early in first year were due to mesh of lesser size , displacement of mesh or wrong technique<sup>12</sup> .

**Conclusion**

The Stoppa (GPRVS) procedure has many advantages of the preperitoneal approach in inguinal hernia repair. A key feature of GPRVS is the application of Pascal's principle in mesh placement that reinforces the lower abdominal wall with an elegant anatomical approach that does not disturb groin structures, even in cases that were dissected before. However it requires good dissection in preperitoneal plane and thorough parietalisation of cord structures.

The advantages of GPRVS are 1) allows bilateral approach for via single incision covering all the hernia orifices including inguinal, femoral and obturator hernias 2) avoids reoperation through defective ,scarred and weakened tissues especially in recurrent hernias 3) Complications are minimal as plane of dissection avoids major vascular structures , no dissection of cord structures or dissection or repair of defect 4) Can be done under regional anesthesia and easily practiced in rural areas 5) Duration of surgery is short even in complex recurrent hernias 6) Recurrence after mesh repair is low , is related to technical factors 7) Complications like testicular atrophy and chronic groin pain are less common and 8) Learning curve is shorter when compared to laparoscopic hernia repair.

In recent laparoscopic era the management of inguinal hernia has also been revolutionized<sup>13,14</sup>,but stoppas repair still has a significant role as the procedure is simple , less recurrence rate , minimal complications and short duration to operate<sup>15</sup>

**Conflict of interest : None**

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