Research Paper

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Comparison of Quality of Life Outcomes Between Stoppa's Procedure and Bilateral Lichenstein Procedure

Medical Science

KEYWORDS : Stoppa's procedure, bilateral inguinal hernia

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ABSTRACT

The technique of Giant Prosthetic Reinforcement of Visceral Sac involves the placement of a large mesh in the preperitoneal space deep to the transversalis fascia to cover the myopecteneal orifice bilaterally. A randomised prospective study was conducted by including a total of 108 patients admitted with uncomplicated bilateral inguinal hernias, between November 2012 and June 2014. They were divided randomly in two groups, Group A, who underwent a Stoppa's Procedure and Group B, who underwent a bilateral Lichenstein Procedure. The average time taken during surgery in Group A was 41.61 minutes, while the average time taken during surgery in Group B was 58.93 minutes. Post-operative complications and the pain measured by the Visual Analogue scale at intervals of 1,3,7,15 and 30 days was comparable in both groups. On measuring the quality of life by SF-36 health survey questionnaire, statistically significant improvements were noted between the mean scores in terms of physical functioning (PF) and role limitations due to physical problems (RP). Hence, Stoppa technique is an excellent technique to repair bilateral inguinal hernias, with less operative and better long term quality of life as compared to Lichenstein repair because of the simplicity, excellent results and avoidance of chronic pain.

Introduction

Inguinal hernia is one of the most common diseases that a surgeon has to manage; with repair of an inguinal hernia one of the most common procedure performed in general surgery. Improved surgical techniques and a better understanding of the anatomy and physiology of the inguinal canal have improved outcomes for many patients significantly.

Since its inception, the Lichenstein tension free mesh herniorrhaphy has been the most commonly performed technique of hernia repair. However, even this has certain concerns such as inguinodynia and a small but definite possibility of recurrence.

Stoppa's procedure or GPRVS (Giant Prosthetic Reinforcement of Visceral Sac) involves the placement of a large mesh in the preperitoneal space deep to the transversalis fascia to cover the myopecteneal orifice bilaterally. The mesh acts as an artificial endoabdominal fascia which prevents the herniation of visceral sac on both sides.

This approach allows easy separation of the retroperitoneal spaces without bleeding, and clear and direct exposure of the musculopectineal and hernial orifice without worsening existing defects in inguinal structures and without injuring superficial nerves, cord elements or femoral vessels. A feature of the abdominal midline approach is that it allows one to insert a large piece of synthetic mesh that covers the dimensions and depth of the defect.

Stoppa's procedure is particularly useful for bilateral and recurrent inguinal hernias.

Methods and Materials

A total of 108 patients admitted with uncomplicated bilateral inguinal hernias, between November 2012 and June 2014, were included in the study. Patients presenting with irreducible hernia, obstructed hernia, strangulated hernia and those with a midline scar from a previous laparatomy were excluded. They were divided randomly in two groups, Group A, who underwent a Stoppa's Procedure and Group B, who underwent a bilateral Lichenstein Procedure.

In Group A, the patients were operated under spinal anaesthesia. Patients were catheterised pre-operatively. A lower midline incision was given and the subcutaneous tissue dissected. The anterior rectus sheath was incised in the midline. The underlying rectii were separated from each other to reach the preperitoneal space deep to fascia tranversalis. The preperitoneal and prevesical cleavage was begun inferiorly and medially in the space of Retzius. Dissection progressed laterally under the rectus abdominis muscle on the side opposite the surgeon and posteriorly to the inferior epigastric vessels. Cleavage was continued downward anterior to the bladder, to the prostatic fossa and behind the iliopubic ramus in the space of Bogros. The pedicle of the hernia was isolated, either distinct from the spermatic cord (in direct inguinal or femoral hernias) or connected to it (in indirect inguinal hernias). The preperitoneal cleavage was then continued below the external iliac vessels and laterally along the psoas muscle. Parietalization of the components of the spermatic cord was undertaken. A similar procedure was done on the opposite side. A large chevron shaped mesh of width corresponding to two centimetres less than the distance between the two anterior superior iliac spines and vertical length corresponding to the distance between the umbilicus and the pubic symphysis was laid in the dissected preperitoneal space. Closure was done in layers. No drains were inserted. Operation time was noted.

Post-operative course in the hospital was noted for pain and other early post-operative complications.

Patients were evaluated on Post-Operative Day 10, 1 month, 6 months, 9 months and 12 months after surgery for minor complications, recurrence and chronic groin pain.

The fifty four patients in Group B were operated by the standard tension-free mesh hernioplasty as described by Lichenstein, bilaterally. The data was collected and results were analysed.

Results

108 patients were included in the study. All were males. The age of the majority of patients was between 40 and 70 years with a mean age of 55.85 years.

The average time taken during surgery in Group A was 41.61 min, ranging from a minimum time of 30 min to a maximum of 65 min. The average time taken during surgery in Group B was 58.93 min, ranging from a minimum time of 45 min to a maximum of 76 min. This difference was highly significant with p value < 0.001 (Table 1).

Post-operative complications were comparable in both groups (Table 2). No wound infection or early recurrence was noted. Mean duration of post-operative stay was comparable in both groups, with a mean of 2.22 days in each. The pain measured by the Visual Analogue scale at intervals of 1,3,7,15 and 30 days was comparable in both groups (Table 3).

The change in quality of life after surgery was measured by SF-36 health survey questionnaire. Although the difference between the two groups was not significant in the early post-operative period (at fifteen days of surgery), statistically significant improvements were noted between the mean scores in terms of physical functioning (PF) and role limitations due to physical problems (RP) subsequently (Table 4). On long term follow-up none of the patients had recurrence or chronic groin pain. There was no mortality.

Discussion

In our study, baseline characteristics like age and sex were comparable in both groups. All patients in our study were males, which is in accordance with the study reported by Ahmed et al, who reported a 96% incidence in males and a 4% in females.

The significantly shorter operative time in Stoppa's group (41.61 ± 7.47 SD minutes) than Lichenstein group (58.93 ± 8.04 SD minutes) was probably as a result of less time taken for pre-peritoneal dissection using a single incision in the former. Similar results were shown by Waleed Askar et al, who reported an operative time of 52 ± 20.7 minutes and 75 ± 16 minutes in Stoppa's and bilateral Lichenstein repair repectively.

Post-operative complications like hematoma, seroma, urinary retention and headache were comparable in both groups. Hematoma developed in 5(4.63%) cases, 2 in Lichenstein group and 3 in Stoppa's group. Patients were managed with tight dressing and scrotal support.

Seroma occurred in 9 (8.33%) cases, 5 in Lichenstein group and 4 in Stoppa's group. Out of these, four patients were aspirated with 18 G needles under aseptic conditions with administration of antibiotics for 5 days. Five patients had spontaneous resolution due to absorption of seroma.

Post-operative headache was present in 9(8.33%) cases, which was managed by keeping the head end low and administration of plenty of fluids.

In the study done by Z. Malazgrit et al, 10/23 and 7/23 patients developed post-operative complications in Stoppa's and Lichenstein groups respectively, with p value not significant.

In the present study, the recurrence rate is nil. However, due to the small study group and a shorter follow-up period, it is difficult to project an accurate incidence of recurrence. Nyhus, Condon and Harkins reported a recurrence of 2% in their series of 213 patients of pre-peritoneal repair.

The VAS scores were 4.94, 4.13, 3.06, 1.17 and 0.45 in Lichenstein group and 4.93, 4.15, 2.70, 1.37 and 0.54 in Stoppa's group on post-operative days 1, 3, 7, 15 and 30 respectively. It was comparable in both groups, suggesting that early post-operative pain in both groups was equal. Similar results were seen by Z. Malazgrit et al, who analysed post-operative pain on days 1, 7 and 30 by using the Mc Gill score.

Quality of Life parameters were assessed by SF-36 questionnaire and scoring was done by RAND score. There were no significant differences between the two groups in the early post-operative period (upto post-op day 15) in terms of physical functioning (PF), role limitation due to physical problems (RP) and bodily pain (P). PF score at day 15 was 72.69 ± 9.20 and 74.42 ± 9.98 in Lichenstein and Stoppa's group respectively (P = 0.353). RP score at day 15 was 17.59 ± 28.16 and 17.31 ± 25.02 in Lichenstein and Stoppa's group respectively (P = 0.956).

However, statistically significant improvements were noted between the median score in the Stoppa's and Lichenstein groups in terms of physical functioning – PF (95.88 v/s 91.67, P = 0.04), role limitations due to physical problems – RP (88.73 v/s 76.96, P = 0.026) and pain – P (91.67 v/s 84.80, P = 0.03).

M. Koc et al (2004) also showed that there is no difference between the two groups in the early post-operative period, but statistically significant improvements were noted between the median scores in the Stoppa and Lichenstein groups in the items of physical functioning – PF (85.1 v/s 74.8, p < 0.05), role limitations due to physical problems – RP (86.2 v/s 64.8, p < 0.05) and general health perception (85.2 v/s 74.4, p < 0.05).

This implies that the Stoppa technique improved patient perceived health status in the areas of physical functioning, role limitations due to physical problems and bodily pain. A probable explanation for the reduction in incidence of chronic pain and improvement in quality of life with Stoppa repair was the preperitoneal and sutureless mesh position outside the inguinal canal.

Conclusion

Stoppa technique is an excellent technique to repair bilateral inguinal hernias, with less operative and better long term quality of life as compared to Lichenstein repair because of the simplicity, excellent results and avoidance of chronic pain.

Tables

Table 1. Time Taken For Surgery

	N	Mean (min)	Standard Deviation	Minimum (min)	Maximum (min)	P Value
Group A	54	41.61	7.47	30	65	< 0.001
Group B	54	58.93	8.04	45	76	
TOTAL	108	50.27	11.63	30	76	

Table 2. Post-Operative Complications

	Group A (Stoppa)		Group B (Lichenstein)		TOTAL		P value / Significance
	Number	Percent	Number	Percent	Number	Percent	
Hematoma	3	5.56	2	3.7	5	9.26	1.00 / NS
Seroma	4	7.41	5	9.26	9	16.67	1.00 / NS

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Urinary Retention	8	14.81	4	7.41	12	22.22	0.36 / NS
Headache	5	9.26	4	7.41	9	16.67	1.00 / NS
Wound Infection	0	0	0	0	0	0	NA
Recur-rence	0	0	0	0	0	0	NA
TOTAL	20	37.04	15	27.78	35	64.82	

Table 3. Pain according to Visual Analogue Scale

		Day 1	Day 3	Day 7	Day 15	Day 30
Group A (stoppa)	Mean	4.93	4.15	2.7	1.37	0.54
	SD	1.18	1.22	1.69	1.25	1.26
Group B (lichen-stein)	Mean	4.94	4.13	3.06	1.17	0.45
	SD	1.11	1.23	1.65	1.28	1.15
P value		0.93	0.94	0.27	0.42	0.72
Significance		NS	NS	NS	NS	NS

Table 4. Quality of life (SF-36 health survey questionnaire)

		PD 15d	PD 6m	PF 15d	PF 6m	RP 15d	RP 6m
Group A (Stoppa)	Mean	62.07	91.67	74.42	95.88	17.31	88.73
	SD	16.59	11.9	9.98	7.79	25.02	22.54
Group B (Li-chenstein)	Mean	60.32	84.8	72.69	91.67	17.59	76.96
	SD	15.33	19.25	9.2	12.23	28.16	29.51
P value		0.58	0.03	0.35	0.04	0.956	0.03
Significance		NS	S	NS	S	NS	S

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