

Comparative Evolution of Surgical Management of Symptomatic Varicocele: Laparoscopic Varicocelectomy versus Inguinal Varicocelectomy

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Abstract

Background: A varicocele is an accumulation of dilated Venous network in the pampiniform plexus that voids the testicles and is situated in the apex of scrotum just above the ostentatious testis. Varicocele is the commonest cause of male infertility which can be surgically corrected.

Material & Methods: The present prospective study was conducted at department of general surgery of our tertiary care hospital. The study duration was of one year from January 2021 to December 2021. A sample size of 40 was calculated at 90% confidence interval at 5% acceptable margin of error by epi info software version 7.2. Patients with idiopathic symptomatic varicocele of grades I–III diagnosed by clinical examination and Doppler ultrasonography were randomly assigned to Laparoscopic varicocelectomy or inguinal varicocelectomy (20 patients in each group).

Results: In the present study, the indications for varicocele ligation in both the study groups were abnormal spiogram in 70% patients, scrotal pain in 40% cases and cosmetic impairment in 20% cases. Among the group A (Open Varicocelectomy) study participants, post op pain reported in all cases, wound erythema seen in 04 cases, wound infection reported in one case, hydrocele reported in one case and 03 cases had recurrent varicocele and among the group B (Lap Varicocelectomy) study participants, post op pain reported in 06 cases, wound erythema seen in 02 cases, wound infection reported in none case, hydrocele reported in one case and 01 case had recurrent varicocele. However, this distribution was statistically significant (P value <0.05) in terms of post op pain and recurrence between both the groups.

Conclusion: In present study, Laparoscopic varicocelectomy was associated with shorter operative time, shorter hospital stays and cosmetically better outcome compared to inguinal varicocelectomy.

Keywords: varicocele, open varicocelectomy, laparoscopic varicocelectomy.

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Introduction

Varicocele is the commonest cause of male infertility which can be surgically corrected. A varicocele is an accumulation of dilated Venous network in the pampiniform plexus that voids the testicles and is situated in the apex of scrotum just above the ostentatious testis [1]. Varicoceles are observed in around one sixth of the male population and in 40% of infertile male population all around the globe [2]. To interrupting the venous reflux within the spermatic veins we perform the surgical correction of varicoceles which may be performed by using open surgery or by using laparoscopic method or by injecting the sclerosing materials [3]. The collection of veins imposed effects on the testicular blood circulation and it is obviously not necessary to have both sided varicocele to affect both testis [4].

Many studies on different surgical solutions were conducted on varicoceles but despite of extensive information being present on varicoceles the gold standard method of varicocele correction is still a matter of research [5]. The research for ideal technique would have preferably less complication rates and low recurrences. In recent studies laparoscopic varicocelectomy (LV) has been preferred and has gained vast acceptance among surgeons [6]. Both laparoscopic varicocelectomy and inguinal varicocelectomy (varicocele ligation) have shown to be better outcome in many studies. However, insufficient comparative data and inconsistent results regarding morbidity, failure rates, duration of hospital stay and costs make it difficult to compare these techniques and which should be the procedure of [7]. Till date, very less prospectively randomized clinical studies comparing the both procedures had been published. Hence present study was conducted for comparative evolution of surgical

management of symptomatic varicocele by laparoscopic varicocelectomy and inguinal varicocelectomy at our tertiary care hospital.

Materials & methods

The present prospective study was conducted at department of general surgery of our tertiary care hospital. The study duration was of one year from January 2021 to December 2021. A sample size of 40 was calculated at 90% confidence interval at 5% acceptable margin of error by epi info software version 7.2. Patients with idiopathic symptomatic varicocele of grades I–III diagnosed by clinical examination and Doppler ultrasonography were randomly assigned to Laparoscopic varicocelectomy or inguinal varicocelectomy (20 patients in each group). Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent for the procedure was obtained from all the patients. Strict confidentiality was maintained with patient identity and data and not revealed, at any point of time.

The data were collected by predesigned Performa after randomization of the patients was done before commencement of the study. Patients who had chronic debilitating diseases, patients who were on steroid therapy or suffering from malignancy were excluded from the present study. Standard operative and postoperative protocol was followed for all the study participants. All patients were followed-up for 3–6 months to assess early complications, testicular size, late complications and persistence or recurrence of the varicocele. Data were entered in the MS office 2010 spread sheet and Epi Info v7. Data analysis was carried out using SPSS v22. Qualitative data was expressed as percentage (%) and Pearson's chi square test was used to find out statistical differences between the study groups and sensitivity, specificity, positive

predictive value and negative predictive value were calculated. If the expected cell count was < 5 in more than 20% of the cells then Fisher's exact test was used. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05 and highly significant if p value less than 0.01.

Results

In the present study the we enrolled 40 Patients of idiopathic symptomatic varicocele of grades I–III after randomization of study participants. So that we can get equal comparable study participants. Total study participants were classified in two major groups according to the surgical procedure used. Patients were divided in two groups after randomization as group A (Open

Varicocelectomy) and group B (Lap Varicocelectomy). Among the group A (Open Varicocelectomy) study participants, the mean age was 33.2 ± 2.4 years and among the group B (Lap Varicocelectomy) study participants, the mean age was 34.8 ± 2.7 years. Among the group A study participants, 60% had a left-sided varicocele, 30% had bilateral varicoceles and 10% a right-sided varicocele. and among the group B study participants, 65% had a left-sided varicocele, 20% had bilateral varicoceles and 15% a right-sided varicocele. On the basis of grading of varicocele among the group A study participants, 50% were grade III, 40% grade II and 10% were grade I and among the group B study participants, 40% were grade III, 45% grade II and 15% were grade I.

Table 1: Study parameter distribution in both the groups.

Parameters	Group A	Group B	p value
Mean age (Years)	33.2 ± 2.4	34.8 ± 2.7	>0.05
Site of varicocele	Right	02 (10%)	>0.05
	Left	12 (60%)	
	Bilateral	06 (30%)	
Grade of varicocele	I	02 (10%)	>0.05
	II	08 (40%)	
	III	10 (50%)	

In the present study, the indications for varicocele ligation in both the study groups were abnormal spiogram in 70% patients, scrotal pain in 40% cases and cosmetic impairment in 20% cases. Among the group A (Open Varicocelectomy) study participants, post op pain reported in all cases, wound erythema seen in 04 cases, wound infection reported in one case, hydrocele reported in one case and 03 cases had recurrent varicocele and among the group B (Lap Varicocelectomy) study

participants, post op pain reported in 06 cases, wound erythema seen in 02 cases, wound infection reported in none case, hydrocele reported in one case and 01 case had recurrent varicocele. However, this distribution was statistically significant (P value <0.05) in terms of post op pain and recurrence between both the groups. In present study, Laparoscopic varicocelectomy was associated with shorter operative time, shorter hospital stay and cosmetically better outcome compared to inguinal varicocelectomy.

Table 2: Complications in Open Varicocelectomy and Lap Varicocelectomy.

	Open Varicocelectomy	Lap Varicocelectomy	P value
Post op pain	20	06	<0.05
Wound erythema	04	02	>0.05
Wound Infection	01	00	>0.05
Hydrocele	01	01	>0.05
Recurrent varicocele	03	01	<0.05

Discussion

In the present study we enrolled 40 Patients of idiopathic symptomatic varicocele of grades I–III after randomization of study participants. So that we can get equal comparable study participants. Total study participants were classified in two major groups according to the surgical procedure used. Patients were divided in two groups after randomization as group A (Open Varicocelectomy) and group B (Lap Varicocelectomy). Laparoscopic varicocelectomy has gained lot of attention around the world. However, the role of laparoscopy in varicocele remains controversial. Several controlled trials have been conducted, some in favour of laparoscopy, others not. The goal of this review was to ascertain that if laparoscopic varicocelectomy is superior to conventional, and if so, what are the benefits and how it could be instituted more widely [8]. Among the group A (Open Varicocelectomy) study participants, the mean age was 33.2 ± 2.4 years and among the group B (Lap Varicocelectomy) study participants, the mean age was 34.8 ± 2.7 years. Although laparoscopic varicocelectomy has been performed by many surgeons on a day-surgery basis, the mean hospital stay after laparoscopic varicocelectomy in our study was relatively longer than was anticipated [9].

Among the group A study participants, 60% had a left-sided varicocele, 30% had bilateral varicoceles and 10% a right-sided varicocele. and among the group B study participants, 65% had a left-sided varicocele, 20% had bilateral varicoceles and 15% a right-sided varicocele. On the basis of grading of varicocele among the group A study participants, 50% were grade III, 40% grade II and 10% were grade I and among the group B study participants, 40% were grade III, 45% grade II and 15% were grade I. The sole indication for surgery in the present study

was the presence of varicocele, even when asymptomatic. The relatively higher rate of reversal of the seminal parameters and the fewer incidences of recurrent varicocele after laparoscopic varicocelectomy can be attributed to better visualization and access provided by the laparoscopic approach. This was based on the concept that early correction of varicocele will alter not only the progressive decline in fertility but will also prevent future infertility in younger male patients [10].

In the present study, the indications for varicocele ligation in both the study groups were abnormal spiogram in 70% patients, scrotal pain in 40% cases and cosmetic impairment in 20% cases. Among the group A (Open Varicocelectomy) study participants, post op pain reported in all cases, wound erythema seen in 04 cases, wound infection reported in one case, hydrocele reported in one case and 03 cases had recurrent varicocele and among the group B (Lap Varicocelectomy) study participants, post op pain reported in 06 cases, wound erythema seen in 02 cases, wound infection reported in none case, hydrocele reported in one case and 01 case had recurrent varicocele. However, this distribution was statistically significant (P value <0.05) in terms of post op pain and recurrence between both the groups. In present study, Laparoscopic varicocelectomy was associated with shorter operative time, shorter hospital stay and cosmetically better outcome compared to inguinal varicocelectomy. The hospital stay after laparoscopic varicocelectomy was not affected by whether the disease was unilateral or bilateral. Meta-analysis and literature analysis showed that the results after laparoscopic varicocelectomy are comparable to other surgical procedures. The laparoscopic approach has the advantage to treat simultaneously bilateral varicocele [11]. Similar to other studies, we did not find any significant difference

between testicular artery ligation and preservation during varicocelectomy [12,13].

Conclusion

We concluded from the present study that Laparoscopic varicocelectomy is a less invasive treatment than Inguinal varicocelectomy for managing male varicoceles. In present study, Laparoscopic varicocelectomy was associated with shorter operative time, shorter hospital stay and cosmetically better outcome compared to inguinal varicocelectomy. The hospital stay after laparoscopic varicocelectomy was not affected by whether the disease was unilateral or bilateral.

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