

Laparoscopic versus Open Varicocelectomy a Prospective Study

SUNIL TELKAR, B.V. GOUDAR, Y.P. LAMANI, UDAY AMBI, RAMESH KOPPAL

ABSTRACT

Laparoscopic varicocelectomy is a safe, effective and minimally invasive technique. In addition to its better cosmetic results and its advantage in case of bilateral disease, it allows an excellent exposure and control of the affected vessel. Varicocele therapy is a controversial issue with no single approach, which has been adapted as the best therapeutic option. The patients were

divided into 15 members in each group, who received 2 different modalities of treatment. Group 1 which was treated with high inguinal ligation had a long hospital stay (4.5 days) as compared to Group 2 which underwent laparoscopic varicocele ligation (1.5day). Less postoperative pain and early return to normal activities were noted in the Group 2 patients, but laparoscopic varicocele ligation was more cost effective.

Key Words: Laparoscopic varicocele ligation, Varicocelectomy

INTRODUCTION

A varicocele is a varicose dilatation of the veins which drains the testes. A varicocele is a rare entity before puberty and the prevalence of this disease in adolescents is equivalent to that in the general population. In addition, the incidence of varicocele which was investigated for infertility is approximately 40%. In the last few years, with the introduction of minimal invasive techniques, varicocelectomy has been performed successfully. In the present study, our aim was to compare the advantages of laparoscopic varicocele ligation over the open conventional method of high inguinal ligation of the varicocele.

MATERIAL AND METHODS

This study was conducted in the Department of Surgery, SNMC and HSK hospital, Bagalkot, in the years 2008 to 2011. Patients with grade 2 disease and above, which were confirmed ultrasonographically, were included. Our study group included 30 patients who were in the age group of 18 to 45 years, who were randomly divided into two groups. The Group 1 patients were subjected to laparoscopic varicocele ligation and the Group 2 patients underwent the conventional inguinal high ligation.

Surgical Technique

All the patients in Group 1 had high inguinal ligation of the dilated testicular veins by the technique which was described by Palomo in 1969.

Laparoscopic varicocele ligation was performed under spinal anaesthesia, with the patient in the supine position with the head down to 10-15 degrees. A pneumoperitoneum was created with the open Hassen technique through a supraumbilical incision. Two working ports were placed in both the iliac fossae and the operating surgeon stood on the contralateral side of the operating table and used the working ports, while the assistant stood on the ipsilateral side and controlled the telescope. After the diagnostic laparoscopy, the spermatic vessels were identified and the overlying

peritoneum was divided. The vascular bundle was then carefully grasped and it was dissected approximately 3 to 5 cms from the parietal peritoneum. The testicular artery was not always searched and the vascular bundles were clipped approximately 3 to 5 cms above the deep inguinal ring. The operative time was noted from the induction of the anaesthesia till the last skin suture.

The Open Technique: the conventional high inguinal approach (MODIFIED WANISSEVICH). A 3 to 4cm oblique incision, two finger breadths above the pubic symphysis and just above the external ring, was made upto the external oblique aponeurosis, which was incised in the direction of its fibres. Care was taken to identify and preserve the ilioinguinal nerve. Next, the spermatic cord was mobilized near the pubic tubercle, and a penrose drain was passed beneath the cord to bring it through the incision. The internal and external spermatic fascia were incised and the dilated veins are identified. Once the dilated veins were isolated, they were doubly ligated with either 2-0 silk sutures or with small titanium clips. The cord was placed back into the canal and the external oblique fascia was closed by using a 3-0 vicryl suture. The subcutaneous layer was reapproximated by using a 3-0 plain catgut suture and the subcuticular layer was closed by using a 4-0 monocryl suture. The incision was infiltrated with lidocaine which was mixed with an equal amount of 0.5% bupivacaine.

RESULTS

In Group 1, the average operative time was 37.5 minutes for the unilateral cases and it was 57.5 minutes for the bilateral cases. For laparoscopic varicocelectomy, the overall average of the operative time for the unilateral cases was 75 minutes and it was 92.5 minutes for the bilateral cases. All the collateral veins were interrupted laparoscopically by using clipping according to their sizes [Table/Fig-2].

No intra-abdominal visceral or vascular injuries were associated with the laparoscopic varicocelectomy. The post-operative hospital stay for the patients in Group 1 was 5-9 days, with a mean of 7

days. In Group 2, the postoperative hospital stay was shorter, ie. 1-2 days, with a mean of 1.5 days.

One patient in Group 1 (6.6%) and 4 (26.6%) patients had wound infections that were managed by systemic antibiotics. In Group 2, hydrocele in 3 (20%) patients and wound erythema in 2 (13.3%) patients were noted. No analgesics were given in 2 patients (13.3%) and a single dose in 8 patients (53.3%), two doses in 4 patients (26.6%) and more than two doses in 1 patient (6.6%) were needed. In Group 2, one dose in 5 (33.3%), two doses in 7 (46.6%), and more than two doses in 3 (20%) patients were needed. As the procedure changes, the requirement of the injections does not change significantly [Table/Fig-3].

	Group 1 Laparoscopic varicocele ligation (15)	Group 2 Conventional inguinal high ligation (15)
Testicular pain	10 (66.6%)	8 (53.3%)
Swelling	3 (20%)	5 (33.3%)
Infertility	2 (13.3%)	5 (13.3%)
Grades		
II	5 (33.3%)	3 (20%)
III	7 (46.6%)	4 (26.6%)
IV	3 (20%)	8 (53.3%)

[Table/Fig-1]: Symptoms and grades of varicocele

Unilateral disease	Group 1 Laparoscopic varicocele ligation (15)	Group 2 Conventional inguinal high ligation (15)
Range	30-45 mins	60-90 mins
Average	37.5 mins	75 mins
Bilateral disease		
Range	45-70 mins	65-120 mins
Average	57.5 mins	92.5 mins

[Table/Fig-2]: Comparative operative time in both groups

Post-operative pain	Group 1 Laparoscopic varicocele ligation (15)	Group 2 Conventional inguinal high ligation (15)	P-Value
No Narcotic injections	2 (13.3%)	-	0.2144
1 Injection	8 (53.3%)	5 (33.3%)	
2 Injections	4 (26.6%)	7 (46.6%)	
>2 Injections	1 (6.6%)	3 (20%)	0.598
Wound infection	1 (6.6%)	4 (26.6%)	
Hydrocele	-	3 (20%)	0.2241
Wound erythema	-	2 (13.3%)	0.483

[Table/Fig-3]: Postoperative complications

	Group 1 Laparoscopic varicocele ligation (15)	Group 2 Conventional inguinal high ligation (15)
Test done	7	8
Improved	4 (57.1%)	4 (50%)
No change	3 (42.9%)	4 (50%)
Worst	-	-

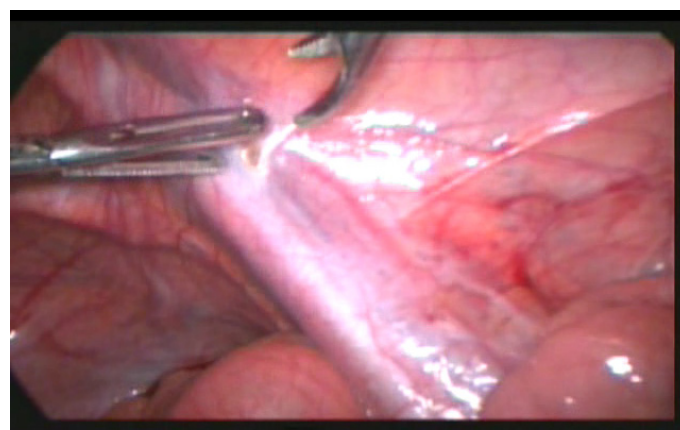
[Table/Fig-4]: Post operative semen analysis in both groups

P=>0.99.

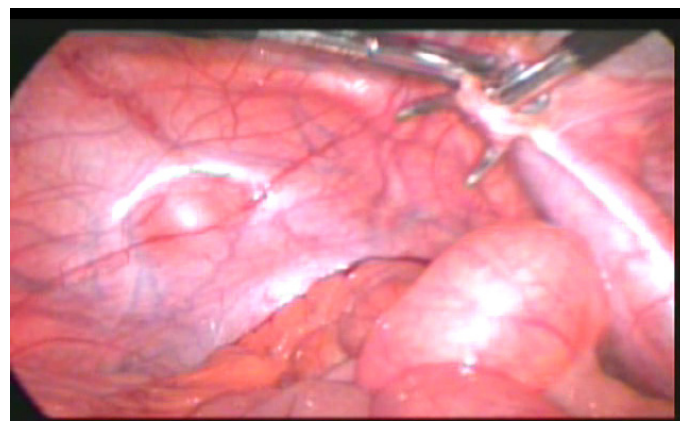
Semen analysis was done in 7 patients in Group 1 and in 8 patients in Group 2. The sperm count was found to be improved by 52% in Group 1 and by 45% in the Group 2 patients as compared to that in the pre-operative semen analysis. The increase in the sperm count was not significantly affected by the change in the procedure. [Table/Fig-4].

DISCUSSION

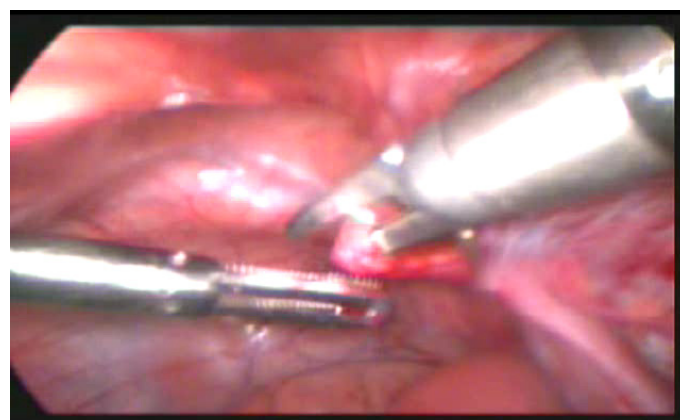
Laparoscopic varicocelectomy has gained lot of attention around the world. However, the role of laparoscopy in varicocele remains controversial. Several controlled trials have been conducted, some in favour and others not in favour of laparoscopy [1]. A varicocele has generally been attributed to the absence or the incompetence of the valves in the internal spermatic veins [2]. However, with the help of spermatic venography, bypassing collateral channels have



[Table/Fig-5]: Per-Operative



[Table/Fig-6]: Per-Operative



[Table/Fig-7]: Per-Operative

been found in about 205 of the patients with varicocele, despite the presence of the competent venous valves [3, 4].

The main indication of the surgery in the present study was the presence of a varicocele and pain was the main symptom, which was confirmed by colour Doppler in all patients. This was based on the concept that the early correction of a varicocele would alter not only the progressive decline in the fertility, but that it would also prevent future infertility in the younger male patients [5, 6, 7]. On comparing the reversal of the seminal parameters in both the procedures relatively (57.1% to 50%) and the fewer postoperative complications following laparoscopic varicocelectomy have shown that laparoscopic varicocele surgery was better as compared to the open conventional procedures.

The mean operative time of laparoscopic varicocele ligation which was reported in the present series was similar to that which was reported by Donovan and Winfield [8] and Tan et al [9]. However, it was markedly shorter than that which was reported by Fuse et al¹⁰ although laparoscopic varicocelectomy has been performed by many surgeons on a day surgery basis [9, 11, 12].

In our study, the hospital stay of the patients who underwent laparoscopic varicocele ligation was an average 1.5 days as compared to that of the patients who underwent conventional inguinal high ligation (4.5) days and the hospital stay was not affected by the unilateral or bilateral surgeries. All the patients who underwent laparoscopic procedures resumed normal work in 2 to 3 days as compared to 8 to 10 days among the conventional inguinal high ligation patients.

Post-operatively, in our study, the analgesic dose which was required for laparoscopic varicocele ligation was less and cost effective as compared to that which was required for conventional inguinal high ligation.

The post-operative period for those who underwent laparoscopic varicocele ligation was very smooth and only one patient had wound infection at a port site as compared to 4 patients in the open conventional inguinal high ligation group. No patient had hydrocele as a complication in the laparoscopic procedure group as compared to 3 patients in the open conventional inguinal high ligation group.

CONCLUSION

Laparoscopic varicocelectomy is a minimally invasive procedure that is easy to perform with simple instruments. Not only varicocelectomy, even other abdominal pathologies can be ruled out by laparoscopic procedures. A laparoscopic approach is better in patients with obesity as compared to the conventional open procedures. As compared to the open technique, laparoscopic varicocelectomy has minimal post-operative morbidity, a shorter hospital stay and an early return to normal activities. Hence, from our study, we recommend that the conventional open method be replaced by the laparoscopic technique for varicocele ligation.

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AUTHOR(S):

1. Dr. Sunil Telkar
2. Dr. B.V. Goudar
3. Dr. Y.P. Lamani
4. Dr. Uday Ambi
5. Dr. Ramesh Koppal

PARTICULARS OF CONTRIBUTORS:

1. Corresponding Author,
2. Associate Professor, Dept. of Surgery,
3. Assistant Professor, Dept. of Surgery,
4. Assistant Professor, Dept. of Anaesthesiology,
5. Associate Professor, Dept. of Anaesthesiology,

SN Medical College and HSK Hospital, Bagalkot, Karnataka, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Sunil Telkar
Assistant Professor, Dept. of Surgery,
SN Medical College and HSK Hospital, Bagalkot,
Karnataka, India-587101,
Phone: +918354-235400
Email-telkar@gmail.com

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