

COMPARATIVE STUDY OF LAPAROSCOPIC VARICOCELE LIGATION VERSUS INGUINAL VARICOCELECTOMY

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ABSTRACT

Background: The research for ideal technique for varicocele correction 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. Both laparoscopic varicocelectomy and inguinal varicocelectomy (varicocele ligation) have shown to be better outcome in many studies.

Material & Methods: The present study was a randomized clinical study which includes Fifty 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 (25 patients in each group). **Results:** LV was associated with shorter operative time, shorter hospital stay and cosmetically better compared to IV. The overall incidence of postoperative complications including hydrocele, epididymitis and local pain was significantly higher among patients undergoing IV compared with LV (17.5% vs 5%). The incidence of persistent varicoceles was not significantly different between the 2 groups, but the varicocele recurrence rate was significantly lower in the LV compared to the IV group (5% vs. 17.5%, $p \leq 0.02$). **Conclusion:** Laparoscopic varicocelectomy is a less invasive treatment than Inguinal varicocelectomy for managing male varicoceles. It is also associated with short hospital stay and better outcomes.

Key words: varicocele, laparoscopic varicocelectomy, inguinal varicocelectomy.

INTRODUCTION

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 (1). 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 (2). Varicoceles are observed in around one sixth

of the male population and in 40% of infertile male population all around the globe (3). 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 (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. One of these techniques namely Palomo technique shows relatively high prevalence of postoperative discomfort (5). Hence over this the modified Palomo technique is often considered (6). A procedure described by Ivanissevich of testicular vein ligation at the inguinal ring and where the testicular artery was spared (7). 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. 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 choice. Till date, very less prospectively randomized clinical studies comparing the both procedures had been published. Hence present study was conducted for prospective analysis of the therapeutic success, complications, outcome and cost and of laparoscopic varicocelectomy and inguinal varicocelectomy in our hospital.

MATERIALS & METHODS

The present study was a randomized clinical study which includes fifty 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 (25 patients in each group). The study duration was of one year from June 1, 2016

to May 31, 2017. Written informed consent was taken from all the patients after taking ethical approval from ethical committee of our hospital. The patients were randomly selected and mean patient age was 25.2 ± 1.4 (range 18–40) years. Of the 50 patients treated 60% had a left-sided varicocele, 30% had bilateral varicoceles and 10% a right-sided varicocele. Of 50 varicoceles, 26 (52%) were grade III, 21 (42%) grade II and 3 (6%) were grade I. The indications for varicocele ligation were: abnormal spermiogram in 32 patients (64%), scrotal pain in 11 (22%) and cosmetic impairment in 7 (14%). A total of 50 varicocele ligations were performed (25 IV and 25 LV). All patients were followed-up for 3–6 months to assess early complications, testicular size, late complications and persistence or recurrence of the varicocele. The data were analyzed using MS Excel 2010, Epi Info v7 and SPSS v22.

RESULTS

In present study total 50 patients were enrolled by simple random sampling method. Laparoscopic varicocelectomy was associated with shorter operative time, shorter hospital stay and cosmetically better compared to inguinal varicocelectomy. The overall incidence of postoperative complications including hydrocele, epididymitis and local pain was significantly higher among patients undergoing inguinal varicocelectomy compared with Laparoscopic varicocelectomy (17.5% vs 5%). The incidence of persistent varicoceles was not significantly different between the 2 groups, but the varicocele recurrence rate was significantly lower in the Laparoscopic varicocelectomy compared to the inguinal varicocelectomy group (5% vs. 17.5%, $p \leq 0.02$).

Table 1

	Group I Open Varicocelectomy (25)	Group II Lap Varicocelectomy (25)
Symptoms :		
8-14 years old:	1	-
Testicular pain	1 (100%)	-
15-25 years old:	8	9
Testicular pain/swelling	6 (75%)	7 (77.7%)
Infertility	4 (50%)	4 (44.4%)
>25 years old:	16	16
Testicular pain/swelling	12 (75%)	13 (81.25%)
Infertility	9 (56.3%)	14 (87.5%)
Grades:		
I	2 (8%)	1 (4%)
II	11 (44%)	10 (40%)
III	12 (48%)	14 (56%)

Table 2

	Group I Open Varicocelectomy (25)	Group II Lap Varicocelectomy (25)
Test done	5	9
Improved	(40%)	(55.6%)
No change	(60%)	(44.4%)

Table 3

	Group I Open Varicocelectomy (25)	Group II Lap Varicocelectomy (25)
Postoperative pain (>12 years old)	25 patients	3 patients
• No analgesic inject		
• 1 injection	-	3 (12%)
• 2 injections	14 (56%)	-
• >2 injections	11 (44%)	-
Wound erythema	2 (8%)	1 (4%)
Wound Infection	1 (4%)	-
Hydrocele	1 (4%)	1 (4%)
Recurrent varicocele	2 (8%)	1 (4%)

Table 4

	Group I Open Varicocelectomy (25)	Group II Lap Varicocelectomy (25)
Unilateral Disease		
Range	25-45 min.	50-100 min.
Average	40 min.	56.3 min.
Bilateral Disease		
Range	40-85 min.	72-120 min.
Average	75 min.	78.4 min.

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 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). There is also diversity in quality of randomized clinical trials; the main variables in these trials are the following parameters:

1. No. of patients in trial.
2. Withdrawal of cases.
3. Exclusion of cases.
4. Blinding.
5. Publication.
6. Intention to treat analysis.
7. Local practice variation.
8. Prophylactic antibiotic used.
9. Follow-up failure bias.

The sole indication for surgery in the present study was the presence of varicocele, even when asymptomatic. 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 (9). The relatively higher rate of reversal of the seminal parameters (40% vs 55.6%) and

the fewer incidences of recurrent varicocele (8% vs 4%) after laparoscopic varicocelectomy can be attributed to better visualization and access provided by the laparoscopic approach.

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 (10). This difference was partially attributed to some cultural and social factors. Almost all our patients prefer to remain in the hospital and do not wish to resume activities until complete pain relief. In addition, the local health system covers the majority of the costs. Additional factors that contributed to prolonged hospital stay were postoperative wound complications and the performance of additional operative procedures, particularly inguinal hernia repair (11). The hospital stay after laparoscopic varicocelectomy was not affected by whether the disease was unilateral or bilateral. Similar to other studies, we did not find any significant difference between testicular artery ligation and preservation during varicocelectomy (12).

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 (13).

CONCLUSION

We concluded from the present study that Laparoscopic varicocelectomy is a less invasive treatment than inguinal varicocelectomy for managing male varicoceles. It is also associated with short hospital stay and better outcomes and should therefore be the preferred method of treatment for male varicoceles.

REFERENCES

1. Pastuszak AW, Wang R. Varicocele and testicular function. *Asian J Androl* [Internet]. 2015;17(4):659–67. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25926610>
2. Ficarra V, Sarti A, Novara G, Dalpiaz O, Galfano A, Cavalleri S, et al. Modified antegrade scrotal sclerotherapy in adolescent patients with varicocele. *J Pediatr Surg* [Internet]. 2004 Jul; 39(7):1034–6. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/15213893>
3. Kantartzi PD, Goulis CD, Goulis GD, Papadimas I. Male infertility and varicocele: myths and reality. *Hippokratia* [Internet]. 2007 Jul;11(3):99–104. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19582201>
4. Chan P. Management options of varicoceles. *Indian J Urol* [Internet]. 2011 Jan; 27(1):65–73. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21716892>
5. Barry J, Nady M, Ragab G, El-Khalaf B, Abdallah A, Imich AM. Five mm laparoscopic varicocelectomy versus conventional varicocele ligation in young men with symptomatic varicocele: A randomized clinical study. *African J Urol* [Internet]. 2012;18(1):12–5. Available from: <http://dx.doi.org/10.1016/j.afju.2012.04.004>
6. Söylemez H, Penbegül N, Atar M, Bozkurt Y, Sancaktutar AA, Altunoluk B. Comparison of laparoscopic and microscopic subinguinal varicocelectomy in terms of postoperative scrotal pain. *JSLs J Soc Laparoendosc Surg* [Internet]. 2012;16(2):212–7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23477168>
7. Binsaleh S, Lo KC. Varicocelectomy: microsurgical inguinal varicocelectomy is the treatment of choice. *Can Urol Assoc J* [Internet]. 2007 Sep; 1(3):277–8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/18542804>
8. Raheem OA. Surgical management of adolescent varicocele: Systematic review of the world literature. *Urol Ann* [Internet]. 2013 Jul [cited 2018 Feb 24];5(3):133–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24049372>
9. Paduch DA, Skoog SJ. Current management of adolescent varicocele. *Rev Urol* [Internet]. 2001 [cited 2018 Feb 24];3(3):120–33. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/16985704>
10. Bebars GA, Zaki A, Dawood AR, El-Gohary MA. Laparoscopic versus open high ligation of the testicular veins for the treatment of varicocele. *JSLs J Soc Laparoendosc Surg* [Internet]. 2000; 4(3):209–13. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10987396>
11. Aldoescu S, Patrascu T, Brezean I. Predictors for length of hospital stay after inguinal hernia surgery. *J Med Life* [Internet]. 2015 8(3):350–5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26351540>
12. Kachrilas S, Popov E, Bourdoumis A, Akhter W, El Howairis M, Aghaways I, et al. Laparoscopic Varicocelectomy in the Management of Chronic Scrotal Pain. *JSLs J Soc Laparoendosc Surg* [Internet]. 2014 [cited 2018 Feb 24];18(3):e2014.00302. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25392634>
13. Borruto FA, Impellizzeri P, Antonuccio P, Finocchiaro A, Scalfari G, Arena F, et al. Laparoscopic vs open varicocelectomy in children and adolescents: review of the recent literature and meta-analysis. *J Pediatr Surg* [Internet]. 2010 Dec; 45(12):2464–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21129568>