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LAPAROSCOPIC VARICOCELECTOMY

For MALE INFERTILITY

Can it replace IVF and ICSI?



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Introduction:

A number of Assisted Reproductive Technologies (ART) are now widely available, and male-factor infertility in couples has become more treatable due to the use of in vitro fertilization/intracytoplasmic sperm injection (IVF/ICSI). In this context, although infertile couples may include men with a varicocele, IVF/ICSI as primary treatment for male factor infertility has greatly increased and can potentially decrease direct medical intervention for infertile men when they seek treatment from a urologist specializing in male infertility. Such series of treatment strategy might increase the risk of unnecessary interventions for the female partner, which could lead to potentially serious complications of ART, such as multiple pregnancies and ovarian hyperstimulation syndrome. In addition, repeat IVF/ICSI can be a considerable economic burden for infertile couples. Unfortunately, there is no consensus as to whether varicocele repair improves pregnancy rate. Additionally, there remains controversy regarding the procedures that are most appropriate for treating varicoceles in male infertility patients.

Laparoscopic Approach of Varicocele Repair:

The feasibility and successful results of treating the varicocele using the video laparoscopic approach because of its bigger vascular vessels, makes the laparoscopic approach as a preferred method for varicocelectomy. The duration of the surgery is around 1-1.5 hour for most, for both left and right varicoceles. Each patient also returned home 4 to 6 hours after surgery and to work after 2 to 3 days. The bilateral laparoscopic varicocelectomy is, therefore, an important approach. The surgery time and hospital stay are usually less than that required for open varicocelectomy, which is in agreement with a prospective comparative study between laparoscopic and open techniques.¹⁶

The technique requires skills and experience. It is a same-day surgery procedure, resulting in rapid recovery, cost savings, and is well accepted by the patient. The important feature of the surgery is the degree of magnification obtained through the video laparoscopy, enabling a complete and thorough bilateral ligation of the testicular veins, without risk of injury to the testicular artery. Some surgeons have reported using the 2-port laparoscopic technique with comparable recurrence and complication rates, but citing the advantage in terms of operating time and cosmetics, especially in adolescents.^{17,18}

Technique:

The technique of laparoscopic varicocele ligation is straightforward. The procedure is usually performed using general

anesthesia. A ure-thral catheter is placed to empty the bladder, and a Veress needle is placed at the umbilicus to inflate the peritoneal cavity with carbon dioxide. Alternatively, Hasson's technique can be performed at the inferior margin of the umbilicus, and the trocar can be placed into the peritoneum under direct vision. Three laparoscopic ports are placed for varicocelectomy according to the baseball diamond concept.

The intra-abdominal vas deferens can be identified as a structure joining the spermatic cord above the internal inguinal ring. The gonadal vessels are visualized easily in the retroperitoneum. The posterior peritoneum is excised with cautery, laser, or endoscopic scissors. The gonadal vessels are then mobilized; however, reliably identifying the spermatic artery and its branches is sometimes difficult through the laparoscope. Therefore, many surgeons prefer to use the laparoscopic Doppler probe to facilitate identification of the spermatic artery during laparoscopic varicocele ligation. The Doppler probe is 28.58 cm long and fits through a 5 mm laparoscopic port. After identifying the gonadal artery, the surgeon isolates the gonadal vein or veins using blunt dissection with atraumatic graspers. Endoscopic clip applicator is used to secure it or intracorporeal suturing is used to ligate the gonadal vein or veins while sparing the artery.

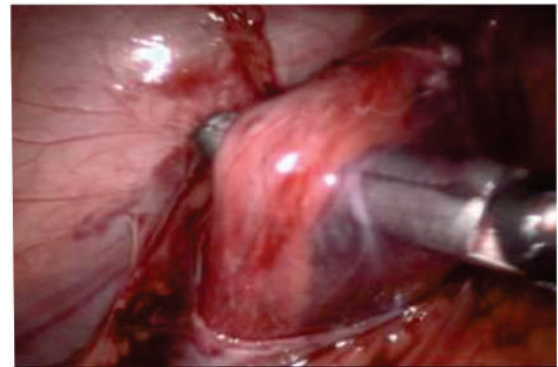


Image-1: identification of spermatic vein.

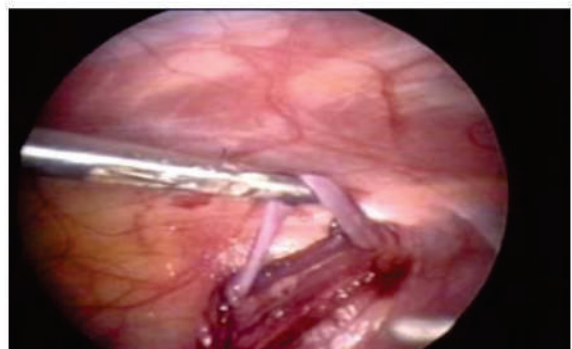


Image-2: identification of spermatic vein.

Follow-Up

Patients usually recover in 4 to 6 hours and were discharged from the day surgery ward and reviewed in the clinic. Patients recovered well and returned to work in 2 to 3 days. Sexual intercourse resumes in 1 to 2 weeks and sports were resumed in 2 to 3 weeks.

The first response to the varicocelectomy is assessed by semen analysis 4 weeks later. During this time, patients are given zinc, vitamin E, and a dietary supplement (Exsativa; Arcopharma, Lugano, Switzerland). In the more severe cases of sperm defects, patients were administered alternating doses of follicle-stimulating hormone 150 IU injections twice weekly and hCG 5000 IU weekly. This was done for a period of 3 months or longer, until improvement occurred, as monitored by semen analysis.

Effectiveness of varicocele repair in treating male infertility

No morbidity and mortality were encountered with this procedure, with little likelihood of recurrence of the condition. The semen profile was improved, including a decreased sperm DNA fragmentation rate as observed in a review of varicoceles and DNA fragmentation¹⁹ and successful pregnancy favor this approach as an established, safe, and effective treatment of male infertility.

current evidence indicates that varicocele repair improves semen parameters; however, evidence regarding spontaneous pregnancy rates is equivocal.

Varicocele repair for couples who undergo IVF/ICSI

The evidence strongly suggests that varicocele repair improves semen parameters by reversing sperm DNA damage, which could ultimately improve IVF/ICSI outcomes. The mean intervals from surgery to improvement in semen parameters and to spontaneous pregnancy were reported to be approximately 5 and 7 months, respectively^[59].

Advantages of Laparoscopic Varicocele Surgery over other techniques:

- Accurate identification of all the veins and avoiding injury to the artery and lymphatic vessels as the surgery is done under magnification during laparoscopy
- Varicoceles from both sides of the body can be corrected at the same time without needs for further surgical incisions- Rapid recovery from surgery with minimal pain as the small 5mm wounds causes minimal trauma to tissue Surgery is completed within 45 minutes, even in the case of varicoceles occurring on both sides.
- Patient can be discharged a few hours after surgery and return to work is within 48 to 72 hours.

Conclusion:

Laparoscopic approach is a safe and effective method of varicocele repair.

- A varicocele should be corrected in infertile men because:
- 1) Surgery has the potential to reverse a pathological condition.
 - 2) Surgery improves semen parameters in the majority.
 - 3) It may possibly improve fertility.
 - 4) The risks of treatment are small.

However before choosing a patient for varicocelectomy, it is also important that certain basic requirements be met. A varicocele should be corrected when:

- 1) It is clinically palpable.
- 2) The couple has infertility.
- 3) The female partner is fertile or has correctable infertility.
- 4) At least one semen parameter is abnormal.



Dr. B. Kalpana Infertility Specialist Received **BEST SERVICE AWARD** from District Collector on independence day