

Total Bilateral Extraperitoneal Varicocelelectomy with Hernioplasty

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Abstract

Background: A varicocele is characterized by the abnormal dilation of veins draining the testis. In many cases, a varicocele coexists with an inguinal hernia, either presenting with symptoms or remaining asymptomatic. This study aimed to evaluate the efficacy of laparoscopic total extraperitoneal varicocelelectomy with concomitant hernioplasty.

Method: A 27-year-old male presented to the surgical outpatient department with a painless inguinoscrotal swelling. Physical examination revealed a reducible 3 × 3 cm swelling with a positive cough impulse. Bilateral examination revealed a grade 3 varicocele and a reduced right inguinal hernia. The patient underwent laparoscopic surgery, with caution taken to avoid the use of energy sources.

Results: Pre op sperm count was 16 million/ml and after 1 month improved to 34 million/ml. Sperm motility improved grossly, pre op majority of sperms were dead and it improved to 58.3%.

Conclusion: Laparoscopic varicocelelectomy by extra peritoneal route is a safe procedure and avoids intraperitoneal adhesions and bowel injury as compared to transabdominal pre peritoneal route.

Keywords: Inguinal hernia; Extraperitoneal varicocelelectomy; Hernioplasty.

Introduction

A varicocele is a dilation of veins within the pampiniform plexus and affects 15% of males worldwide. It often occurs during puberty and gets worse with age.

There are 3 grades of varicoceles. Grade 1 and 2 varicoceles are tiny and challenging to find without the help of a medical expert. Varicoceles of grade 3 are easily palpable and frequently visible. When standing upright, they may feel like a sack of worms around the

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testicles or may give the impression that one testicle is larger than the other. The testicles and scrotum may experience a mild ache from larger varicoceles. Physical examination is used to make the diagnosis; grade 1 and 2 conditions are typically detected with color doppler ultrasonography.

Causes of varicoceles

Veins that transport blood away from the testicles and towards the heart give rise to a varicocele. Normally, valves in these veins help blood move the blood in the upwards direction. If there is a problem within valves, a backflow of blood can occur. This causes the veins around the testicle to dilate and swell, resulting in a varicocele. With a frequency of roughly 30% among males presenting with primary male infertility and up to 85% in secondary infertility, it is also one of the most common male factors causes of infertility [1]. Varicoceles can harm the testicles in some patients, leading to spermatogenic dysfunction, loss of testicular volume, disruption of hormone synthesis, and sperm DNA damage [2-4]. The testicle has been shown to be 1-2°C lower than the core body temperature under normal physiological conditions [5]. Venous stasis is frequently present when varicoceles form, and the accumulation of heated venous blood in these lesions is hypothesized to cause a loss of the countercurrent heat exchange [6]. This theory is supported by research utilizing intrascrotal temperature probes, which revealed that the intratesticular temperatures of patients with varicoceles were substantially greater than those of patients without varicoceles [7]. It has been discovered that this increased heat decreases

spermatogenesis, as well as causes DNA damage and the death of germ cells [8]. According to additional research, varicoceles can also cause temporary hypoxia, which increases reactive oxygen species and may be a factor in testicular dysfunction [9,10].

Most frequently, varicocele is seen on the left side of the testicles. Male infertility varicocelectomy has been done laparoscopically using a transabdominal preperitoneal technique. Laparoscopic varicocelectomy by intraperitoneal approach has risk of intraperitoneal injuries and intraperitoneal adhesions. Laparoscopic extraperitoneal varicocelectomy has not been performed frequently despite the inherent advantages of the retroperitoneal, extraperitoneal technique for urosurgical operations. Total extraperitoneal approach has been a well-established procedure for inguinal hernia surgery, with good understanding this approach was planned for varicocelectomy.

Methods

A procedure is typically not essential if a person is not in pain and their fertility is not compromised. Sometimes an ultrasound of a person with pain reveals a varicocele, but it is crucial to rule out other causes of discomfort, such as an infection or trauma, before treating the varicocele. For individuals with decreased fertility or pain due to a varicocele, multiple treatment options are available and should be discussed with a surgical specialist or a urologist. Open surgery (varicocelectomy), laparoscopic surgery (using cameras implanted in the belly), embolization (blocking the veins with coils), and microsurgical inguinal varicocele repair are

among the available treatments which uses a magnifying lens or a microscope. The purpose of these procedures is to tie off or block the veins responsible for a varicocele and restore normal testicular function.

Varicocelectomy is useful for males with pain 80 to 90 percent of the time. In as little as 3 to 6 months after having the varicoceles repaired, 70% of men who are worried about their ability to conceive see an improvement in sperm production. In addition, after repair, success rates for assisted reproductive techniques such in vitro fertilization and intrauterine insemination may increase.

A patient presenting with bilateral varicocele and a right inguinal hernia was counseled and scheduled for laparoscopic surgery. Informed consent was obtained for the extraperitoneal approach, as well as for the possibility of converting to an intraperitoneal approach or open surgery if necessary. Pre-operative semen analysis was performed to assess the patient's fertility status. During the surgery, papaverine, a vasodilator, was used to relax the muscles and facilitate the dissection of the testicular artery. The testicular artery was carefully dissected and separated from the testicular vein to preserve its blood supply.



Figure 1: Dissection of artery.



Figure 2: Clipping of Testicular vein and isolation of testicular vein separated from artery.

Results

Following the surgery, the patient experienced scrotal edema, which was successfully resolved with scrotal support and the administration of anti-inflammatory medication. The procedure was technically successful, with no complications such as visceral injuries, conversion to a different approach, significant bleeding, or the need for energy sources. There was no observed reduction in testicular size. One-month post-surgery, the patient's hydrocele, a common side effect of varicocelelectomy, had substantially reduced, although mild edema remained. The post-operative semen analysis showed a significant improvement in sperm count, increasing from 16 million/ml pre-operatively to 34 million/ml after one month. Additionally, there was a noticeable

improvement in sperm motility, with the percentage of motile sperm rising to 58.3%, compared to a majority of non-motile sperm pre-operatively.

Conclusion

Laparoscopic varicocelelectomy performed through an extraperitoneal approach is a safe and effective procedure. By avoiding entry into the intraperitoneal space, this technique minimizes the risk of intraperitoneal adhesions and bowel injuries associated with the transabdominal preperitoneal approach. The patient in this case benefited from the surgery, as indicated by the improvement in semen parameters. These findings support the use of the extraperitoneal approach as a preferred method for laparoscopic varicocelelectomy.

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