

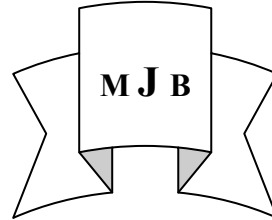
Concomitant Varicocelectomy and Jaboulay's Operation

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Abstract

Varicocele is the most common correctable cause of male infertility. It is found in 35 and 80% of patients with primary and secondary infertility respectively. The most effective treatment for varicocele is surgery. Varicocelectomy is associated with a lot of complications, hydrocele is the most common of which, and it affects about 20% of patients. Many techniques have been done to reduce the incidence of postvaricocelectomy hydrocele which is difficult to be done here nowadays. In this study we decided to do Jaboulay's operation (the operation for hydrocele) at the same time of varicocelectomy. We applied this maneuver for 76 patients and of course we got no postoperative hydrocele. So we recommend combining Jaboulay's operation with varicocelectomy for all patients with varicocele to avoid the occurrence of hydrocele and the need for a second surgery.

دمج عملية جابولي للقيلة المائية مع عملية استئصال دوالي الخصية

الخلاصة:

دوالي الخصية احد اسباب العقم القابلة للمعالجة اذ أنها قد وجدت في ٣٥% و ٨٠% من المرضى المصابين بالعقم الاول و الثانوي على التوالي. العملية الجراحية هي اهم طرق علاج الدوالي. لكن عملية استئصال دوالي الخصية مصحوبة بعدة مضاعفات اكثرها شيوعا هي القيلة المائية والتي تحدث عند ما يقارب ٢٠% من المرضى. لقد تم استخدام عدة تقنيات لتجنب حدوث القيلة المائية كاستخدام الجراحة المجهرية او تلويين الاوعية للمفاوية لكن معظم هذه التقنيات غير متوفرة في العراق في الوقت الحالي لذلك قررنا في هذه الدراسة القيام بأجراء عملية جابولي (عملية لعلاج القيلة المائية) في نفس وقت عملية استئصال الدوالي وبهذه الطريقة لم تحدث قيلة مائية في ٧٦ مريض أجريت لهم عملية الدوالي. لذا نقترح أجراء عملية جابولي في نفس وقت عملية الدوالي لتجنب حدوث القيلة المائية والحاجة لأجراء عملية ثانية.

Introduction

Varicocele is an abnormal dilatation of the veins of the pampiniform plexus. It occurs in 6% of children at age 10, 13% of adolescents, and 15 percent of males in the general population. However, varicocele has been observed in 35 percent of men with primary infertility and up to 80 percent of men with secondary infertility. Although many men with varicocele can father children, varicocele causes a progressive time-dependent decline in semen quality[1].

Varicocele is more common on the left side as 78% of varicoceles are left-sided, 1-2% are right-sided and up to 20% are bilateral. Unilateral right varicocele is rare and should alert the physician of possible association with right renal mass[1, 2].

The etiology of left sided predominance are:

- 1- Anatomic differences in left and right internal spermatic veins drainage.
- 2- Incompetent or absent valves in the spermatic vessels with blood backflow.
- 3- Compression of left renal vein between aorta and superior mesenteric

artery with high pressure transmitted to the left internal spermatic vein (so called nutcracker phenomenon)[1, 2].

The exact mechanism of impaired testicular function in patients with varicocele is not known. The most widely accepted concept presently is a varicocele-related increase of testicular temperature. The primary factor is abnormal retrograde blood flow within the gonadal veins. It has been established that normally the difference between the intra-abdominal and scrotal temperature averages 2.2°C . Varicocele can cause an increase in scrotal temperature by 2.6°C , neutralizing the required temperature gradient. The varicocele-associated pathology mainly includes changes in testicular size, histology, function of Leydig cells, sperm characteristics and testicular steroidogenesis. The World Health Organization (WHO) study reported that varicocele (most of which were on the left side) was associated with relative left testicular atrophy compared to the contralateral testis. In contrast, right and left testicular size was not significantly different in men without varicocele. Decrease of testicular volume was associated with increasing varicocele grade[1, 2].

The changes in testicular histology associated with varicocele are varied from normal to Sertoli cell only pattern, but hypospermatogenesis and premature sloughing of germ cells were found to be the most common[3].

Leydig cell dysfunction has been documented in men with varicocele. It was suggested that hyperplasia of the Leydig cells is the poor prognostic factor for fertility. Additionally, the mean testosterone concentration of men with varicocele older than 30 years of age was found to be significantly lower than that of younger patients with varicocele, whereas this trend was not observed in men without varicocele in the WHO

study. Conversely, significant increase in mean testosterone levels was documented after varicocelectomy without concomitant increase in FSH and LH levels. These findings suggest a detrimental time-dependent effect of varicocele on Leydig cell function[3].

Patients with varicocele are usually presented with infertility (usually secondary), pain or incidentally diagnosed by physical exam performed in the warm room. Varicocele may be graded in severity as follows:

Grade I: present only with Valsalva.

Grade II: present without Valsalva.

Grade III: visible through the skin ("bag of worms")[2].

Ultrasonography may aid the diagnosis. Varicocele can be reliably diagnosed with ultrasound, which will show dilatation of the vessels of the pampiniform plexus to greater than 2 mm. The patient being studied should undergo a provocative maneuver, such as Valsalva's maneuver or standing up during the exam, both of which are designed to increase intraabdominal venous pressure and increase the dilatation of the veins. Doppler ultrasound is a technique of measuring the speed at which blood is flowing in a vessel. An ultrasound machine that has a Doppler mode can see blood reverse direction in a varicocele with a Valsalva, increasing the sensitivity of the examination[4].

The detrimental effect of varicocele on spermatogenesis in the subfertile male is manifested by low sperm count, decreased sperm motility and low percentage of normal sperm morphology together or in different combinations. This 'stress pattern', described by Macleod in 1965 is also characterized by an increased number of tapered forms and immature cells. However, the characteristic stress pattern is not a sensitive marker for

varicocele and is not specific for this pathology[3].

No effective medical treatments for varicoceles have been identified. While some investigators are evaluating the role of antioxidants for the treatment of elevated levels of reactive oxygen species, this treatment approach is still experimental[4, 5].

Controversy still surrounds surgical treatment. Despite over 30 years of evidence that repair of varicoceles results in improved fertility; the retrospective nature of most of these reports has led to controversy regarding the utility of treatment[3,6].

The goal of surgical treatment of the varicocele is to obstruct the refluxing venous drainage to the testis while maintaining arterial inflow and lymphatic drainage. The term varicocelectomy is a misnomer. The procedure should be termed internal spermatic veins ligation, as the dilated veins are actually ligated but not removed[4, 6].

A variety of surgical approaches have been advocated for varicocelectomy. They include minimally invasive procedures, such as laparoscopic varicocele and transvenous percutaneous embolization ligation, and the traditional open surgical approach (retroperitoneal, inguinal and sub-inguinal)[6].

Repair of varicocele will halt any further damage to testicular hormone function and in a large percentage of men, result in improved spermatogenesis, as well as enhanced Leydig cell function. The potentially important role of urologists in preventing future infertility underscores the importance of utilizing a varicocelectomy technique that minimizes the risk of complications and recurrence.

The techniques for varicocelectomy include retroperitoneal, inguinal, and subinguinal varicocele repairs with and without magnification, laparoscopic repair, and percutaneous varicocelectomy with radiographic embolization of the internal spermatic veins[7].

Complications following varicocelectomy include hydrocele formation, epididymitis, injury to the internal spermatic artery and persistent or recurrent scrotal varicocele. Fortunately, this occurs in less than 3-5% of patients[8].

Pathogenesis of postvaricocelectomy hydrocele is related to an imbalance of serous fluid exudation and absorption as a consequence of lymphostasis and venous congestion[9].

Table 1 Complications of different techniques of varicocelectomy

Technique	Artery preserved	Hydrocele	Failure	Potential for serious morbidity
Retroperitoneal	No	7%	15-25%	No
Inguinal	No	3-30%	5-15%	No
Laparoscopic	Yes	12%	5-15%	Yes
Radiographic embolization	Yes	0%	5-11%	Yes
Microscopic subinguinal	Yes	0%	1%	Yes

Many techniques have been tried to decrease the incidence of these

complications and the need for another surgery to correct them.

Aim of the Study

In our study we aim to evaluate the benefit of carrying at Jaboulay's operation in concomitant with varicocelectomy to avoid the occurrence of the most common postvaricocelectomy complication (hydrocele).

Patients and Methods

From 2003 to 2006, varicocelectomy was done for 88 patients with grade ii and iii varicocele. In those patient subinguinal approach was selected and mass ligation of pampiniform plexus by number zero catgut was done. Owing to the common occurrence of hydrocele as a postoperative complication, we change our approach. We started to do jaboulays operations (a surgery for hydrocele) with varicocelectomy. This

done for 76 patients, as mass ligation of the plexus finished, a blunt dissection toward the testes was done and the testis delivered out into the incision where a longitudinal incision is done in the tunica vaginalis then eversion suturing of its edge done by 3.0 catgut. Ice packing advised after surgery to reduce edema and the patients followed for six months for the occurrence of complications and/or pregnancy in the wife.

Results

From the total number of patients (164), 119 patients presented with primary or secondary infertility. In 39 patients surgery was done to cure testicular pain and in six patients surgical repair asked by the patients after incidental diagnosis to avoid infertility after marriage.

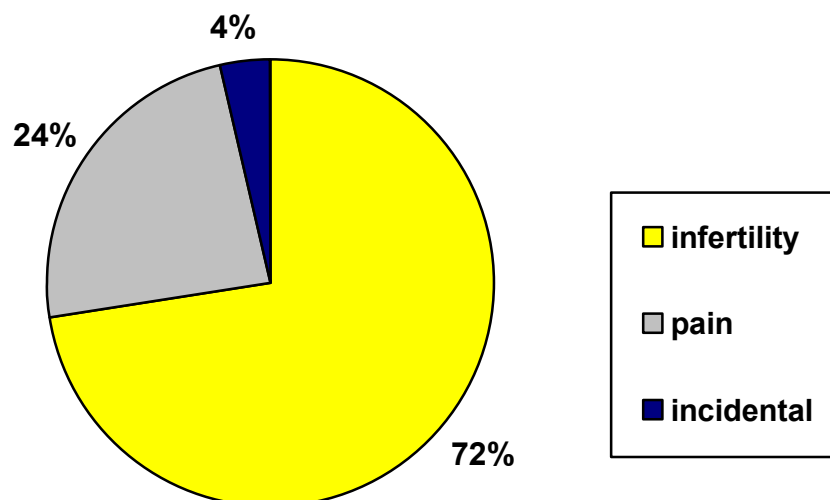


Figure 2 Pie showing the various presentation of patients with varicocele.

From the 164 patients, 142 were left sided varicocele, 4 patients were right- sided varicocele and

bilateral varicocele encountered in 18 patients.

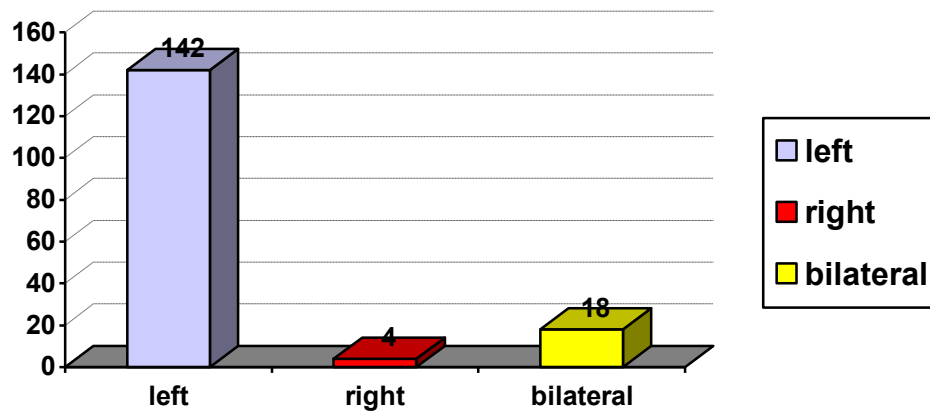


Figure 3 Chart showing the higher incidence of left sided varicocele.

Postoperative hydrocele occurred in nineteen patients (21.5%) of the first group while no hydrocele occurred in the second group.

Discussion

Although varicocele appear in approximately 20% of the general male population, it is much more common in the subfertile population (40%). In fact, scrotal varicoceles are the most common cause of poor sperm production and decreased semen quality[10.11.12]. Actually most of our patients varicocele (72%) diagnosed after scrotal examination for infertility counseling. The majority have secondary infertility. From the total number of 164 patients, 87% had left sided varicocele and 2% had right sided varicocele, bilateral varicocele encountered in 11% of the patients. These result are comparable to worldwide results. We prove the diagnosis in the patients with (grade I) by Doppler ultrasonography. Seminal analysis of infertile group of our patient met the stress pattern of low count and motility with increase abnormal shape. Seminal analysis not performed for patients presented solely with pain.

In the first 88 patient sub-inguinal incision was used and mass

ligation of papminiform plexus performed by number zero cat gut suture material. Hydrocele as a post operative complication occurred in 21.5% of the patients. It started and progress over a variable period after surgery.

Postvaricocelectomy hydrocele is not different from other types of hydrocele and should be treated surgically as aspiration usually fails to cure the condition. Jaboulay's operation—a surgery for hydrocele—used to treat this complication.

To avoid the occurrence of this common postoperative complication we decided to do Jaboulay's operation prophylactically at the same time of varicocelectomy. The same sub-inguinal incision is selected in the next 67 patients and after completion of varicocelectomy, the testicle delivered out, tunica vaginalis incised longitudinally and sutured inversely. This additional work does not take more than few minutes but it avoid the need for a second operation as none of those patients got postoperative hydrocele.

We used the sub-inguinal approach for the following reasons

1- It is an easy, rapid approach avoiding external oblique aponeurosis incision.

2- It is easy to deliver the testicle out through such incision to do Jaboulay's procedure after doing varicocelectomy.
3- Delivery of testis provides direct visual access to all possible avenues of testicular drainage.

Compared with the other techniques that have been tried to reduce the incidence of post operative complications, Marc Goldstein, M.D. in the New York Hospital-Cornell Medical Center used an operating microscope for reliable identification of spermatic cord lymphatics and its avoidance reduce the incidence of post operative hydrocele[13] He also got no postoperative hydrocele.

pediatric surgeons in S.BORTOLO hospital in Vicenza, Italy used preoperative lymphangiography with isosulphan blue to identify spermatic cord lymphatics to prevent hydrocele after laparoscopic varicocelectomy[14] they also got no hydrocele if lymphangiography was positive.

In our country operating microscope is not available yet and lymphangiography is an invasive technique. So to avoid the occurrence of postvaricocelectomy hydrocele and the embarrassments of doing another surgery we prefer to do the surgical technique of hydrocele repair (Jaboulay's techniques) at the same time of varicocelectomy. By this prophylactic action we spend additional few minutes and got no postoperative hydrocele.

Conclusion and Recommendations

We conclude from this study that hydrocele is a common complication after varicocelectomy and it is nearly inevitable. It is better to include Jaboulay's operation at the same time of varicocelectomy; it takes no more than ten minutes and avoids the occurrence of postvaricocelectomy

hydrocele and the need for a second surgery.

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