

Outcome of Varicocele Surgery and Infertility at Prince Hussein Urology Center

Mohannad Al-Naser MD, Firas Khorri MD*, Awad Kaabneh MD*,
Abdul Naser Shunaigat MD**

ABSTRACT

Objectives: To describe the outcome of surgical techniques for the treatment of testicular varicosity to improve fertility among infertile males at Prince Hussein Urology Center.

Methods: This descriptive study was conducted on a total of 844 patients who underwent Varicocele surgery at Prince Hussein Urology Center, for infertility between the period of June 2003 and June 2008, surgery was performed for patients upon presenting to our clinic complaining of infertility for one year or more in the absence of female factor for infertility. Patients were non-randomly selected. Sperm concentration, motility and morphology was assessed by analysis of at least two different semen specimens each obtained after a 5 days period of sexual abstinence and separated by three weeks interval. Post surgery patients were classified as responders (more than 50% increases in sperm parameters) and non-responders. Simple descriptive statistical methods (frequency, mean and percentage) were used to describe the study variables.

Results: Surgical treatment of clinical palpable Varicocele successfully cured over 95% of Varicocele. Post surgery spermatogenesis was improved among 256 patients (30.3%). Sperm concentration increased to variable degrees from 6.23 to 12.1 million among these patients with mean of 9.2 million, sperm motility improved from 5.2% to 18.7% with mean of 8.3%. Spontaneous pregnancy was achieved in 194(23%) couples within 12 months following surgery.

Conclusion: Varicolectomy is a safe, effective and associated with a rapid recovery and minimal morbidity. Varicolectomy resulted in the induction or enhancement of spermatogenesis in several men with clinical Varicocele and abnormal semen parameters. Despite the absence of definitive studies on the infertility outcome of varicocele surgery, it is reasonable to be considered as an option in selective patients with semen abnormalities.

Key words: Infertility, Spermatogenesis, Varicocele.

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Introduction

Varicocele, which is abnormal tortuosity and dilation of veins of pampiniform plexus within the spermatic cord, is the most commonly seen and correctable cause of male factor infertility,⁽¹⁾ although it is present in 15% of general male population, 40% of men presenting with infertility

have Varicocele.⁽²⁾ The reason for infertility associated with Varicocele are unclear, perhaps the accumulation of blood cause the testes temperature to be higher and so sperm production will be affected; or the pooled blood in the varicocele with higher hormonal contents may alter spermatogenesis.⁽³⁾

*From the Department of Urology, Prince Hussein Bin Abdullah II Center for Urology and Organ Transplants, King Hussein Medical Center (KHMC)

Correspondence to be addressed to Dr. M. Al-Naser, (KHMC), E-mail: mohandnaser@yahoo.com

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Only Varicocele detected by physical examination should be considered potentially significant, and if the Varicocele coexists with impaired semen quality, surgical repair may potentially restore spermatogenesis and fertility.⁽⁴⁾

Varicocele can be treated surgically (open and laparoscopic) or radiologically.⁽⁵⁾

Varicocele frequency found to be higher in first degree relatives especially among brothers.⁽⁶⁾

This study aims to describe the outcome of surgical techniques for the treatment of testicular varicosity to improve fertility among infertile male at Prince Hussein Urology Center.

Methods

This descriptive study was conducted on a total of 844 patients who underwent Varicocele surgery at Prince Hussein Urology Center, for infertility between the period of June 2003 and June 2008, surgery was performed for patients upon presenting to our clinic complaining of infertility for one year or more in the absence of female factor for infertility. Patients were non-randomly selected. Post surgery patients were classified as responders (more than 50% increases in sperm parameters) and non-responders. Patients were followed for one year after surgery.

Varicocelectomy was performed using inguinal approach (groin) among 196 patients, retroperitoneal (abdominal) approach in 600 cases and laparoscopic varicocelectomy among 48 cases.

Isolated left side varicocelectomy were performed among 766 patients, right side in 4 cases and bilateral varicocelectomy in the remaining 74 patients.

Patients age range between 20 years up to 40 years with mean age of 28 years.

Sperm concentration, motility and morphology were confirmed by analysis of at least two different semen specimens each obtained after a 5 days period of sexual abstinence and separated by three weeks interval according to World Health Organization guidelines classification, before surgery and then three and six months after surgery. Azospermia was confirmed in the absence of sperms in all analysis, severe oligospermia was defined as less than 5 millions /ml in all analysis submitted.

Post surgery patients were classified as responder (more than 50% increases in sperm count) and non responder.

Serum Follicular Stimulating Hormone,

Luteinizing Hormone, Prolactin and Testosterone level were checked prior to surgery to exclude other endocrine causes for infertility.

Out of 844 patients, 826 patients underwent the procedure on the basis of outpatient's surgery and discharged same day of surgery, 4 patients were admitted one day before surgery due to underlying medical illnesses and discharged first day after surgery, 14 patients were admitted after surgery for one day due to pain intolerance. Simple descriptive statistical method (frequency, mean and percentage) were used to describe the study variables.

Results

We found that surgical treatment of clinical palpable Varicocele successfully cured in around 95% of Varicocele patients. Post surgery spermatogenesis was improved in 256 (30.33%).

Sperm concentration increased to variable degrees from 6.23 to 12.1 million in some patients with average of 9.2 million, sperm motility improved from 5.2% to 18.7% with average of 8.3%.

Fourteen patients were admitted post surgery because of pain intolerance and high dose of analgesia were given and patients were admitted for observation and discharged second day. Three cases with simple wound infection treated by daily dressing and healed completely, 8 patients (1%) presented with hydrocele after surgery, 40 patients (5%) presented with recurrence of varicocele. Spontaneous pregnancy was achieved in 194 (23%) couples within 12 months following surgery.

Most patients return back to work three weeks after surgery.

Discussion

A study conducted by Kim *et al* revealed that early varicocelectomy repair especially for large varicocele may be beneficial in preventing future infertility as well as treatment of androgen deficiency.⁽⁷⁾ Pathophysiologic effect of Varicocele on spermatogenesis is related to testicular hyperthermia.⁽⁸⁾ Fujisawa *et al*, 1994 support the theory of reflux of toxic metabolites from renal and adrenal glands secondary to venous reflux have been implicated to hypospermatogenesis.⁽⁹⁾

Skoog *et al* consider that the testicular hypoxia is caused by venous stasis in varicocele.⁽¹⁰⁾ Marcello Cocuzza *et al* found that the improvement of semen parameters following varicocelectomy help infertile

people to achieve spontaneous pregnancy.⁽⁴⁾

Ali Shamsa *et al* found that the laparoscopic has more complications than open approach regarding operative time, recurrence and hydrocele formation.⁽⁵⁾

The correlation between severity of Varicocele and improvement of semen parameters after surgery remains equivocal.⁽⁶⁾

Andrade *et al* conduct a study on 143 patients with varicocele found that sperm quality is affected more than sperm quantity in all male age groups.⁽¹¹⁾

Cayan *et al*⁽⁴⁾ showed that open microsurgical inguinal or subinguinal varicocelectomy techniques have been shown to result in higher spontaneous pregnancy rates and less recurrence.

Treatment options for Varicocele in infertile men may be treated with many different modalities including radiologic, laparoscopic and open surgical approaches.⁽⁷⁻¹⁰⁾ Postoperative results for fertility suggest that Varicocele repair significantly increase sperm motility and total sperm count postoperatively.⁽¹¹⁾ Spontaneous pregnancy rate after varicocelectomy range from 16% to 55.2%.⁽¹²⁾ In the meta-analysis reviewed by Kim *et al*, the overall spontaneous pregnancy rate was 37.69% in the Paloma technique series,⁽⁷⁾ which was higher than our results. However, spontaneous pregnancy rates after varicocelectomy may differ depending on post surgery follow up interval, the presence of female factors and other reproductive health factors.⁽¹⁾

However; spontaneous pregnancy rate for patients with Varicocele and abnormal semen parameters estimated to be 10% which was lower than our results. Ishikawa T *et al*⁽¹²⁾ assessed the outcome of Varicocelectomy in the induction of spermatogenesis and they noticed that surgery for varicocele enhance spermatogenesis for several men with unobstructive or severe oligospermia.

Other studies confirmed no benefit of varicocelectomy over expectant management in subfertile couples in whom Varicocele is the only abnormal finding.^(13,14)

Further analytical follow-up studies using Doppler ultrasound for the diagnosis of varicocele with a larger number of patients is needed.

Conclusion

Varicocelectomy is a safe, effective and associated with a rapid recovery and minimal morbidity. Varicocelectomy resulted in the induction or enhancement of spermatogenesis in several men with clinical Varicocele and abnormal semen

parameters. Despite the absence of definitive studies on the infertility outcome of varicocele surgery, it is reasonable to be considered as an option in selective patients with semen abnormalities.

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