

The Outcome of Varicocelectomy on Sperm Parameters in Subfertile Men with Clinical Varicoceles Who Have Asthenozoospermia and or Teratozoospermia with Normal Sperm Count

Mohammed Ali Ghadhban¹, Ahmed Abdulameer Alwan²

FACS, F.I.C.M.S Urology. Department of Urology, Al-Diwaniya Teaching Hospital¹. F.I.C.M.S urology Department of Urology, Al-Diwaniya Teaching Hospital².

الهدف من الدراسة:

لتحديد نتائج عملية رفع الدوالي الخصيه على تحاليل المنى لمرضى العقم من الذين لديهم ضعف في حركة النطف مع او بدون وجود تشوهات في النطف.

الطريقة:

شملت الدراسة 100 مريض خلال فترة عام واحد مصابون بعقم اولي لفترة ثلاث سنوات مع وجود دوالي في الخصيه. تم اجراء تحاليل للمني قبل وبعد اجراء عملية رفع الدوالي وحسب مقاييس منظمة الصحة العالمية بفاصل ستة اشهر بين تحليل واخر.

التخدير العام استخدم لجميع المرضى.

النتائج:

100 مريض ممن تنطبق عليهم الشروط معدل اعمارهم بين 25 الى 45 سنه مع معدل عمر 32 ± 3 سنوات. معدل فترة العقم تبلغ ثلاث سنوات فقط المرضى الذين لديهم أعداد نطف طبيعية أظهروا تحسنا ملحوظا في حركة النطف بعد العملية.

الاستنتاج:

لم يحصل تحسن ملحوظ في شكل النطف لدى مرضى دوالي الخصيه الواضح سريريا وعدد نطف طبيعي بعد اجراء عملية رفع الدوالي جراحيا.

Abstract:

Design Of Study: prospective study.

Duration: From 2014 to 2015

Setting: Department of Urology, AL-Diwaniya teaching Hospital, Infertility clinic.

Patients & Methods: Over a period of one year hundred (100) patients with varicocele associated with male infertility over a 3-years period were included in this study. Pre- and postvaricocelectomy seminal fluid parameters evaluation according to the World Health Organization (WHO) criteria was performed at 6-month intervals. General anesthesia was given to all patients.

Results:

One hundred patients met the criteria their age range from 25 to 45 years with a mean age of 32 ± 3 years. The mean duration of infertility was 3years (range: 1.5–6). Only the sperm motility of patients with normospermia showed a significant improvement postoperatively

Conclusion:

No significant improvement in sperm morphology may be obtained in patients with clinical varicocele and preoperative normospermia.

Key Words: varicocele ,primary infertility, General Anaesthesia.

Introduction

Infertility is defined as the inability to conceive after 1 year of unprotected sexual intercourse. Infertility affects approximately 15% of couples. Roughly 40% of cases involve a male contribution or factor, 40% involve a female factor, and the remainder involve both sexes.(1)

The incidence of infertility is 10–15% among couples trying to conceive, with male infertility contributing to nearly 50% of cases [2]

A varicocele is defined as dilated and tortuous veins within the pampiniform plexus of scrotal veins. It is the most surgically

correctable cause of male subfertility. The varicocele is a disease of puberty and is only rarely detected in boys <10 years of age. A left-sided varicocele is found in 15% of healthy young men. In contrast, the incidence of a left varicocele in subfertile men approaches 40%. Bilateral varicoceles are uncommon in healthy men (<10%) but are palpated in up to 20% of subfertile men. In general, varicoceles do not spontaneously regress. The cornerstone of varicocele diagnosis rests on an accurate physical examination.(3)

Several anatomic features contribute to the predominance of left-sided varicoceles. The left internal spermatic vein is longer than the right; in addition, it usually joins the left renal vein at right angles. The right internal spermatic vein has a more oblique insertion into the inferior vena cava. This particular anatomy in the standing man may cause higher venous pressures to be transmitted to the left scrotal veins and result in retrograde reflux of blood into the pampiniform plexus.(4)

Varicoceles are associated with testicular atrophy and varicocele correction can reverse atrophy in adolescents. There is indisputable evidence that the varicocele affects semen quality. In fact, a classic semen analysis pattern has been attributed to varicoceles in which low sperm count and motility is found in conjunction with abnormal sperm morphology. The finding of semen abnormalities constitutes the main indication for varicocele surgery in infertile men.(5)

Precisely how a varicocele exerts an effect on the testicle remains unclear. Several theories have been postulated; it is likely that a combination of effects results in infertility. Pituitary-gonadal hormonal dysfunction, internal spermatic vein reflux of renal or adrenal metabolites, and an increase in hydrostatic pressure associated with venous reflux are also postulated effects of a varicocele.(6)

The most intriguing theory of how varicoceles affect testis function

invokes an inhibition of spermatogenesis through the reflux of warm corporeal blood around the testis, with disruption of the normal counter current heat exchange balance and elevation of intratesticular temperature.(7)

Patients And Method

From October 2014 to October 2015 100 patients with primary infertility and had left sided varicocele were enrolled in this study seeking for surgical treatment of varicocele in Al Diwaniya teaching hospital hospital. their age range from 25 to 45 years with a mean age of 32 ± 3 years.

All patients had basic infertility evaluation including a detailed history and a thorough physical examination was carried out.

All of the patients were married with primary infertility and varicocele (grade 1–3) having normospermia either having sperms with decreased normal forms(teratozoospermia) and/or motility (asthnozoospermia) (progressive motility and nonprogressive motility).

All the patients with varicocele were tested with color Doppler ultrasound which identified it as anechoic tubular structures that dilated on Valsalva maneuver.

The seminal fluid analysis parameters were evaluated according to the WHO Manual for Semen Analysis were as follows: volume of semen in adult males: 1.5 mL , sperm concentration: 15×10^6 , sperm morphology (normal forms): 4%, progressive and non progressive motility (PR+NP): 40%, and progressive (PR): 32%.

Subinguinal varicocelectomy was performed for all of the patients.

One month after the operation, a Doppler ultrasonography imaging was performed to confirm the improvement of varicocele by the absence of venous back flow.

We followed up the patients for 6 months, and seminal analysis were performed to evaluate changes in the seminal parameters .

Results

A total of 100 patients with primary infertility and left sided varicocele were treated

by Subinguinal varicocele. their age range from 25 to 45 years with a mean age of 32 ± 3 years.

The mean duration of infertility was 3 years (range: 1.5–6). Asthenozoospermia defined as sperm poor forward motility and represented as PR+NP motile sperms was found in 90 (90%) patients preoperatively.

No. 100	Sperm count	Morphology %	Motility (a) %	Motility (a + b) %
Preoperative	60 ± 50.2	3.6 ± 1.5	20.4 ± 8.0	30.7 ± 10.2
Postoperative	65 ± 53.2	3.7 ± 1.3	28.4 ± 8.4	52.5 ± 10.2
P value	0.105	0.400	0.000	0.000

Discussion

Varecocele cause reduction in function and number of the testicular cells which is reflected as an altered sperm parameter [8].

Surgical treatment is indicated in men with varicocele when the semen analysis shows oligospermia, asthenospermia, teratospermia, or coexistence of these abnormalities. To date, previous studies have demonstrated a beneficial effect of varicolectomy in subfertile men with varicocele who have poor sperm quality [9].

It is also known that several patients with clinical varicoceles have isolated abnormalities such as sperm motility or morphological parameters in the semen analysis and varicolectomy is carried out in these patients as well. However, it has not been studied much whether varicolectomy is beneficial in such patients.

In this study, we tried to examine the changes in the semen parameters after varicolectomy among the patients who have normal sperm count associated with asthenospermia and/or teratospermia.

Evidence suggests that men with normospermic varicocele respond to varicolectomy differently from those patients who have oligospermia preoperatively due to a different pathophysiological mechanism [10].

Postoperatively, asthenospermia was found in 35 (35%) of the patients.

Teratospermia was defined as normal sperm morphology of less than 4%. fifty (50%) patients were found to have teratozoospermia preoperatively.

Following varicolectomy, teratospermia was seen in 45 (45%) patients.

Two important studies evaluated the postoperative outcomes of varicocele correction in normospermic patients. In one, isolated teratospermia did not show any significant improvement following varicolectomy; in the other, neither asthenospermia nor teratozoospermia showed improvement [11, 12].

Our study also demonstrated that these patients with preoperative normospermia did not show significant improvement in teratozoospermia; the only benefit of surgery is at sperm motility.

Also Our study demonstrated that patients with preoperative normospermia did not show significant improvement in teratozoospermia; the only benefit of surgery is at sperm motility.

The possible explanation is that the poor morphology observed in varicocele patients with normal sperm density may not be only due to the presence of varicoceles. Varicolectomy in these patients may lead to an unknown alteration or damage to the semen physiology and subsequently morphological abnormalities.

Conclusion and Recommendation

normospermic subfertile men with clinical varicoceles and teratozoospermia may not show statistically significant improvement in sperm morphology following varicolectomy. With the evidence of the

present and previous studies, it may therefore be recommended that normospermic subfertile men with clinical varicoceles and poor sperm motility or morphology should undergo assisted reproductive techniques rather than surgical varicocele ligation.

We think that varicocelectomy choice for normospermic patients with teratospermia should be at least carefully considered

REFERENCES

1. Gui YL et al: Male hormonal contraception: Suppression of spermatogenesis by injectable testosterone undecanoate alone or with levonorgestrel implants in chinese men. *J Androl* 2004;25:720. [PMID: 15292101]
2. World Health Organization: The influence of varicocele on parameters of fertility in a large group of men presenting to infertility clinics. *Fertil Steril* 1992;57:1289. [PMID: 1601152]
3. M. Cocuzza, M. A. Cocuzza, F. M. P. Bragais, and A. Agarwal, "The role of varicocele repair in the new era of assisted reproductive technology," *Clinics*, vol. 63, no. 3, pp. 395–404, 2008.
4. A.-F. Abdel-Maguid and I. Othman, "Microsurgical and nonmagnified subinguinal varicocelectomy for infertile men: a comparative study," *Fertility and Sterility*, vol. 94, no. 7, pp. 2600–2603, 2010.
5. *WHO Laboratory Manual for the Examination of Human Semen and Sperm-Cervical Mucus Interaction*, Cambridge University Press, Cambridge, UK, 5th edition, 2010.
6. D. A. Paduch and J. Niedzielski, "Repair versus observation in adolescent varicocele: a prospective study," *Journal of Urology*, vol. 158, no. 3, pp. 1128–1132, 1997.
7. L. Okeke, O. Ikuero, I. Chiekwe, B. Etukakpan, O. Shittu, and O. Olapade-Olaopa, "Is varicocelectomy indicated in subfertile men with clinical varicoceles who have asthenospermia or teratospermia and normal sperm density?" *International Journal of Urology*, vol. 14, no. 8, pp. 729–732, 2007.
8. A. Mancini, E. Meucci, D. Milardi et al., "Seminal antioxidant capacity in pre- and postoperative varicocele," *Journal of Andrology*, vol. 25, no. 1, pp. 44–49, 2004.
9. A. Maciejko, P. Kim, T. Jang, R. E. Brannigan, and W. W. Lin,

"Isolated teratospermia: is varicocelectomy indicated?" *Journal*

of Urology, vol. 173, supplement 4, p. 369, 2005.

10. A. Agarwal, F. Deepinder, M. Cocuzza et al., "Efficacy of

varicocelectomy in improving semen parameters: new metaanalytical

approach," *Urology*, vol. 70, no. 3, pp. 532–538, 2007.

11. C. G. Blumer, A. E. Restelli, P. T. D. Giudice et al., "Effect of

varicocele on sperm function and semen oxidative stress," *BJU*

International, vol. 109, no. 2, pp. 259–265, 2012.

12. A.-F. Abdel-Maguid and I. Othman, "Microsurgical and nonmagnified

subinguinal varicocelectomy for infertile men: a comparative study," *Fertility and Sterility*, vol. 94, no. 7,

pp. 2600–2603, 2010.