

Early Changes In Semen Parameters Post Varicocelelectomy

Thesis

*Submitted for Partial Fulfillment of Master
Degree in Urology*

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2017

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لسببائك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢



First thanks to **ALLAH** to whom I relate any success in achieving any work in my life.

I wish to express my deepest thanks, gratitude and appreciation to *Prof. Dr. Khaled Mokhtar Kamal*, Assistant Professor of Urology Faculty of Medicine Ain Shams University for his meticulous supervision, kind guidance, valuable instructions and generous help.

Special thanks are due to *Dr. Ahmed Ibrahim Radwan*, Lecturer of Urology Faculty of Medicine Ain Shams University for his sincere efforts, fruitful encouragement.

Abdel Rahman Mahdy

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List of Abbreviations

Abb.	Full term
<i>ABP</i>	<i>Androgen- binding protein</i>
<i>cAMP</i>	<i>cyclic adenosine monophosphate</i>
<i>DHT</i>	<i>Dihydrotestosterone</i>
<i>FSH</i>	<i>Follicle stimulating hormone</i>
<i>GnRH</i>	<i>Gonadotropin-releasing hormone</i>
<i>HPG</i>	<i>Hypothalamic-Pituitary-Gonadal</i>
<i>HPG</i>	<i>Hypothalamic-Pituitary-Gonadal</i>
<i>LH</i>	<i>Luteinizing hormone</i>
<i>PRL</i>	<i>Prolactin</i>
<i>PSV</i>	<i>Peak systolic velocity</i>
<i>RI</i>	<i>Resistive index</i>
<i>SPSS</i>	<i>Statistical Package for Social Science</i>
<i>T</i>	<i>Testosterone</i>
<i>TGF-β</i>	<i>Transforming growth factor-β</i>

Abstract

All patients were subjected to preoperative evaluation by history, physical examination and pre-operative laboratory investigations were done for all patients in the form of two semen analysis within 3 months before operation, pre-operative routine examination and Hormonal profile {FSH & Testosterone}. Preoperative radiological studies were done in the form of testicular Doppler ultrasound.

We ordered Semen analysis 2 weeks, 1 month, 3 months after operation to evaluate changes in all semen parameters and testicular ultrasound and Doppler 1 month after operation.

We reported Improvement in sperm concentration, forward progressive motility and sperm morphology after three months post varicocelelectomy, there were no detectable improvements of semen parameters in patients' results two weeks and there were slight improvements in progressive motility at one month after surgery.

Keywords: *Transforming growth factor- β - Peak systolic velocity - Luteinizing hormone- Hypothalamic-Pituitary-Gonadal*

INTRODUCTION

A varicocele is the pathological dilatation of spermatic veins and is found in 15% of all adult males and in 11.7% of men with a normal semen analysis and in 25.4% of men with abnormal semen values and it is considered to be the most frequent correctable cause in 14.8% of infertile men. Surgical ligation of the spermatic vein is the generally accepted treatment, when semen quality usually improves afterwards, as shown in a recent meta-analysis (*Jungwirth et al., 2012*).

Varicocele is characterized by abnormal tortuosity and dilatation of the veins in the pampiniform plexus of the spermatic cord caused by reflux of blood in the internal spermatic or gonadal veins. The incidence of varicocele is approximately 16 % in the young healthy male population. The prevalence of varicocele increases with age, reaching approximately 42 % in the elderly population (*Levinger et al., 2007*).

The etiology of primary varicocele is still unclear but believed to be multifactorial. Various theories have been proposed, including anatomical variations, congenital valvular absence or valvular incompetence, and venous obstruction. Anatomically, the left gonadal vein is longer than the right. In addition, the left spermatic vein inserts into the left renal vein while the right inserts directly into the IVC. These anatomical variations result in longer blood column and greater hydrostatic pressure in the left spermatic vein and this is the reason for

earlier and more common expression of varicocele in the left side (*Gat et al., 2005*).

Many patients with varicocele remain asymptomatic, varicocele can cause infertility, testicular pain and impaired testosterone production (*Schlegel et al., 2011*).

Varicocele has been associated with testicular dysfunction through several mechanisms, such as the retrograde flow of toxic metabolites from the adrenal glands or kidney, venous stasis with germinal epithelial hypoxia, alterations in the hypothalamic-pituitary-gonadal axis, and increases in testicular temperature. Sperm-bound immunoglobulins are present in a greater percentage of infertile men with varicocele than in infertile men with no varicocele. The testis needs a good blood supply to maintain its function. varicocele-impaired venous drainage and an increased venous pressure, the blood supply and microperfusion of the testes can be decreased by down-regulating arterial inflow to maintain the homeostasis of the intratesticular vascular pressure. The peak systolic velocity (PSV) and resistive index (RI) were found to be higher in patients with varicocele (fertile or not) than in fertile control men, and an increased RI might be suggestive of a pathological sperm count. Recent opinion suggests that varicocele is a cofactor associated with other genetic and molecular factors resulting in infertility (*Will et al., 2011*).

Varicocele is clinically diagnosed on physical examination and appreciated as a “bag of worms” on palpation. Patients are evaluated in the upright positions and asked to perform the Valsalva maneuver in order to accentuate venous dilatation. Based on the findings at physical examination, varicocele is classified as grade 0 (no palpable varicocele), grade I (palpable only during Valsalva maneuver), grade II (palpable at rest), or grade III (visible and palpable at rest) (*Diamond et al., 2011*).

Scrotal ultrasonography is the modality of choice for evaluating varicocele. Using a high-frequency transducer with pulsed and color Doppler capabilities, sonographic examination is performed with the patient in the upright position while performing the Valsalva maneuver. Scrotal ultrasonography provides objective measurement of the venous dilatation and real-time visualization of reflux in the pampiniform plexus. This enables accurate diagnosis with higher sensitivity and specificity than physical examination. routine sonographic examination is advocated in the workup of male infertility and varicocele. In addition, pre and post-treatment sonographic measurements provide determining the technical success of varicocele repair and Postoperative complications such as hydrocele formation or testicular atrophy from testicular artery ligation can be effectively evaluated (*El-Haggag et al., 2012*).

Varicocele treatment is indicated in patients with palpable varicocele and infertility with abnormal semen

parameters or abnormal sperm function tests. In adolescents, a 20 % differential in testicular volume that is persistent for over one year is indication for varicocele repair. Additionally, varicocele repair can be considered in patients with testicular pain or impaired testosterone production (*Jarow et al., 2002*).

There are several varicocele ligation techniques, including open or laparoscopic retroperitoneal (Palomo), macroscopic inguinal (Ivanissevich), and microscopic subinguinal varicocelectomy. Recently, infertile men after varicocele treatment utilizing various surgical and radiologic techniques 39 % of the patients achieved spontaneous pregnancy after varicocele repair. The highest spontaneous pregnancy rate of 42 % was seen in patients treated with microscopic subinguinal technique. Overall recurrence rates ranged from 1%to 15%and postoperative hydrocele formation rates from 0.4 % to 8.2 %. Lower recurrence and hydrocele formation rates were seen in patients treated with microscopic subinguinal technique (*Cayan et al., 2009*).

AIM OF THE WORK

The aim of this work is to evaluate Early Changes In Semen Parameters Post Varicocelelectomy.