LONG TERM FOLLOW UP OFPREGNANCY RATES AFTER SUBINGUINAL VARICOCELE REPAIR FOR INFERTILE MEN

Thesis

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List of Abbreviations

CA	Control arm
CI	Confidence interval
DNA	Deoxyribonucleic acid
FSH	Follicle-stimulating hormone
GnRH	Gonadotropin-releasing hormone
INSL3	Insulin-like factor 3
ITT	Intention-to-treat
LH	Luteinizing hormone
MDA	Malondialdehyde
OR	Odds ratio
PR.....	Pregnancy rate
RCTs	Randomized control trials
ROS.....	Reductive oxygen species
STDS	Sexually transmitted diseases
TA	Treatment arm
TMCs	Total sperm motility counts

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*First of all, all gratitude is due to **Allah** for blessing this work, until it has reached its end, as a part of his generous help, throughout my life.*

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I would like to Dedicate this thesis to my Father, my Mother, my Sister and my Brother; to them I will never find adequate words to express my gratitude.

Mahmoud Hamed Ali

بسم الله الرحمن الرحيم

{وَأَنزَلَ اللَّهُ عَلَيْكَ الْكِتَابَ وَالْحِكْمَةَ وَعَلَّمَكَ مَا لَمْ تَكُن تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا}

صدق الله العظيم

سورة النساء آية (113)

Introduction

In ***1970, Dubin and Amelar*** confirmed that varicocele in infertile men is associated with bilateral spermatogenic abnormalities and Leydig cell dysfunction. The histopathology of the testis in men with infertility due to a male factor is variable, but most studies reported reduced spermatogenesis (hypospermatogenesis).

It is reported that 35–40% of infertile men have clinically palpable varicocele. In 1998 Matthews and Goldstein reported a 15% incidence of varicocele in the general male population ***(Matthews et al., 1998)***.

In 2002, Lue et al. ascribed the increase in germ cell apoptosis to hyperthermia and a decreased level of total serum testosterone within the testicle. The level of serum testosterone is lower in patients aged >30 years than in younger men with varicocele, a trend which is not seen in men without varicocele, this suggested a progressive adverse effect of varicocele on Leydig cell function.

In ***2004***, **the National Institute for Health and Clinical Excellence's clinical guideline on fertility** declared that varicocele repair should not be offered as a form of fertility treatment because it did not improve pregnancy rates. Varicocele ligation is the most common operation for male infertility.

Gorelick and Goldstein (2005) showed that the relationship between male infertility and varicocele has not been conclusively established ***(Gontero et al., 2005).***

In the same year ***Steckel et al., (2005)*** showed that the postoperative effect of varicocele ligation on male fertility was controversial. In a large series of patients with varicocele, ligation (either unilateral or bilateral) lead to significant improvements in semen quality and improved the hormonal function of Leydig cells.

In***2008,*** **the Practice Committee of the American Society for Reproductive Medicine and the American Urological Association's Male Infertility Best Practice Policy Committee** suggested that repair of the male partner's varicocele should be considered in patients with clinically palpable disease and abnormal semen parameters for infertile couples in which the female partner has no proven or a potentially treatable cause of infertility.

Also in ***2008Elghandour et al.*** studied the prospective effect of varicocele repair on pregnancy rate during a period of one year post operatively. The study revealed improvement of semen parameters and a pregnancy rate of 51.7 %.

In 2009Cayan et al. reported that varicocele (dilated testicular veins) is the most common contributing factor to male infertility and varicocele ligation for a clinically palpable

varicocele has a confirmed positive effect on the fertility and pregnancy rate.

In ***2012***, the updated ***European Association of Urology's guidelines*** on male infertility recommended the treatment only in the case of a clinical varicocele, oligospermia, duration of infertility of at least 2 years and otherwise unexplained infertility in the couple.

Aim of the Work

This work aims to evaluate the post subinguinal varicocele repair pregnancy rate in a long term retrospective study.

1- Varicocele

1-1 Anatomy

1-1-1Anatomy of the testis:

Adult testes are paired, ovoid organs that hang from the inguinal canal by the spermatic cord (which is composed of a neurovascular pedicle, vas deferens, and cremastric muscle); they are located outside the abdominal cavity within the scrotum. The left testis hangs lower in the scrotum than the right in about 60% of men, and the right testis hangs lower in approximately 30% of men. Each testis has a volume of 15 to 30 ml and measures 3.5 to 5.5 cm in length by 2.0 to 3.0 cm in width ***(Matsumoto, 2001)***.

The testis parenchyma is divided into compartments separated by septa. Each septum divides seminiferous tubules into lobes that each contains a centrifugal artery. Individual seminiferous tubules harbor developing germ cells and interstitial tissue. Interstitial tissue is composed of Leydig cells, mast cells, macrophages, nerves, and blood and lymph vessels. In humans, interstitial tissue comprises 20% to 30% of total testicular volume. Seminiferous tubules are long, highly coiled, and looped they empty into the straight tubuli recti that enter into the mediastinum testis to form the rete testis. Finally, the efferent ductules emerge from the rete testis to enter the head of

the epididymis where they form epididymal lobules that coalesce to form the single epididymal duct ***(Hinman, 1993).***

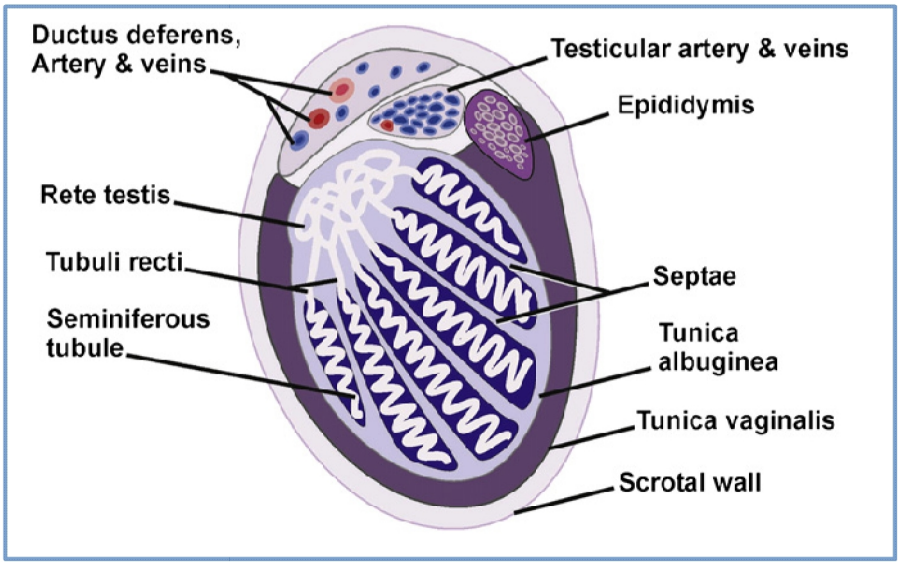

Figure (1): Diagrammatic cross section of a normal testis. ***(Matsumoto, 2001)***.

1-1-2-Arterial supply:

The arterial system is classified into superficial and deep***(Mirilas, 2012).***

1-1-2-1-Deep Arteries:

The blood supply to the testis, epididymis and vas deferens is accomplished by the following arteries (Figure 2):

1. The internal spermatic artery (gonadal or testicular artery), which is a branch of the aorta. Slightly below the level of the external ring, it gives off a branch to the coverings of the spermatic cord. The epididymis is supplied by a branch