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Scrotal Veins Contribution To Varicocele And Effect Of Its Ligation On Results Of Subinguinal Varicocelectomy

Thesis

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ABSTRACT

The objective of this study was to evaluate scrotal veins contribution to varicocele and the effect of its ligation on the results of subinguinal varicocelectomy. Sixty patients with clinically detectable varicocele grades II and III, abnormal semen, a preoperative diameter of veins of more than three millimeter, and time of regurge more than one second through Valsalva's maneuver, together with dilated and regurging scrotal veins, were randomly divided into 2 groups: Group I: Subinguinal varicocelectomy only (30 cases). Group II: Subinguinal varicocelectomy with additional scrotal veins ligation (30 cases). Both surgical techniques showed significant improvements in semen parameters (count and motility), clinical grades of varicoceles and Duplex parameters (diameter of veins, time of venous reflux and testicular volume). However, the postoperative improvement in sperm count, time of venous reflux and testicular volume was significantly higher in group II. Postoperative pregnancy rates, recurrence and complications were comparable with no significant difference between both groups.

Key Words:

Varicocele – scrotal Duplex – semen analysis - subinguinal varicocelectomy – scrotal veins.

CONTENTS

LIST OF ABBREVIATION

ASA	**Antisperm antibodies**
CDU	**Color Doppler ultrasonography**
CT	**Computerized Tomography**
DNA	**Deoxyribonucleic acid**
EO	**Ethanolamine Oleate (Ethamolin ®)**
FSH	**Follicle-stimulating hormone**
GnRH	**Gonadotropin releasing hormone**
HCG	**Human chorionic gonadotropin**
HS	**Hypertonic sodium chloride solution**
ICSI	**Intracytoplasmic sperm injection**
ISA	**Internal spermatic artery**
ISV	**Internal spermatic vein**
ITC-DSB	**Interventional therapeutics- Detachable silicon balloon**
IVC	**Inferior vena cava**
LA	**Linear array**
LH	**Luteinizing hormone**
MDA	**Malondialdehyde**
MHz	**Mega Hertz**
mIU	**milli international unit**
MRI	**Magnetic resonance imaging**
ng	**nanogram**
OS	**Oxidative Stress**
PG	**Prostaglandin**

POL	**Polidocanol (Aethoxysclerol ®)**
PRL	**Prolactin hormone**
RIA	**Radioimmuno-assay**
RNA	**Ribonucleic acid**
ROS	**Reactive Oxygen Species**
SM	**Sodium morrhuate (Scleromate ®)**
STS	**Sodium tetradecyl sulfate (Sotradecol ®)**
SX	**Sclerodex ®**
TGF- β1	**Transforming growth factor beta1**
WHO	**World Health Organization**

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

Varicoceles are found in approximately 15% of the male population, in 35% of men with primary infertility and up to 80% of men with secondary infertility ***(Hopps et al, 2003).***

The ideal method for treatment of varicocele is still controversial ***(Gulino et al, 2011).*** There are several therapeutic proposals for varicocele treatment, but all of them present a certain number of relapses **(*Armellino et al, 1999).***

The clinical outcomes of open surgical technique of varicocele repair compared to results derived from microsurgical series were assessed. Positive clinical outcomes were found using the technique of subinguinal surgical ligature of varicocele without using microsurgical techniques or instruments of optical magnification. The operative time, complication and relapse rates, Doppler flow parameters and semen parameters were not significantly different from those reported in the literature of microsurgical techniques, with the advantage of such a simple surgical technique combined with cost savings and patient's comfort ***(Gulino et al, 2011).***

Delivery of the testis assures direct visual access to all possible routes of venous return, including external spermatic, cremasteric, and gubernacular veins ***(Goldstein et al, 1992).***

Subinguinal interruption of dilated veins in adolescent varicocele is an effective treatment and should be considered a gold standard technique ***(Yaman et al, 2000; Cimador et al, 2003).***

AIM OF WORK

To determine scrotal veins contribution to varicocele and the effect of its ligation on the results of subinguinal varicocelectomy.

ANATOMY OF TESTES AND SPERMATIC CORD

Anatomy of Testes:

Testes are suspended in the scrotum by scrotal tissue including dartos muscles and spermatic cords. Testicular dimensions average are 4-5 cm in length, 2-3 cm in width and 3cm in antero-posterior diameter and the weight varies from 10-14 gm. Each testis is obliquely set in the scrotum, its upper pole tilted anterolaterally. Medial, lateral and anterior surfaces and both poles are convex, smooth and coverd by visceral layer of tunica vaginalis. The posterior aspect is nearly straight and partly coverd by tunica vaginalis; the epididymis adjoins its lateral part ***(Williams and Dyson, 1989 ; Peter and Matthew, 2002).***

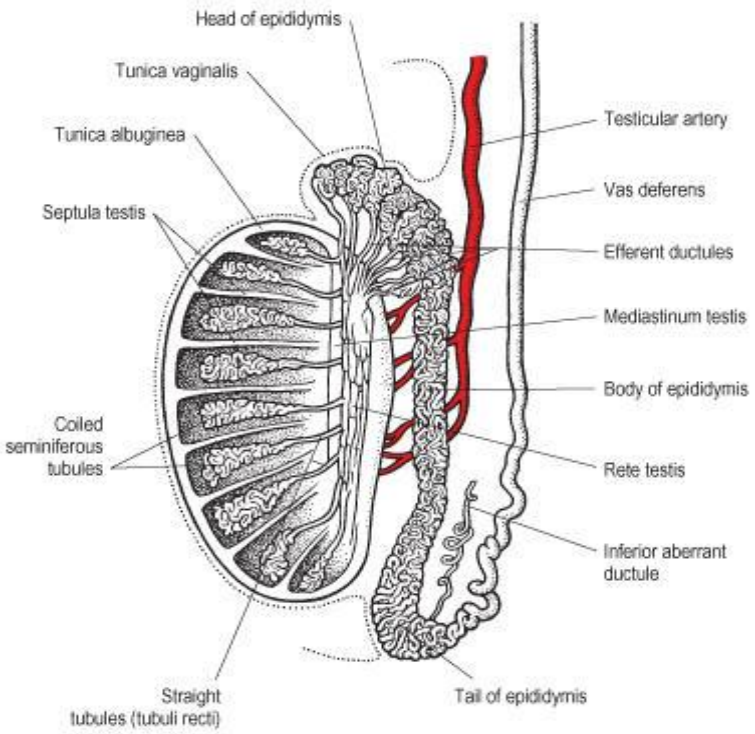

Fig. 1: Vertical section through the testis and epididymis, showing the arrangement of the ducts of the testis and the mode of formation of the vas deferens (Standring et al, 2005).

The testis is covered by three coats from outside inwards: tunica vaginalis, tunica albugina and tunica vasculosa ***(Williams and Dyson, 1989)***. Tunica vaginalis lies within the spermatic fasciae and covers the anterior, medial, and lateral surfaces of each testis. It is the lower expanded part of the processus vaginalis; normally, just before birth, it becomes shut off from the upper part of the processus and the peritoneal cavity. The tunica vaginalis is thus a closed sac, invaginated from behind by the testis ***(Snell, 2009).***

Epididymis:

The epididymis, a tortuous canal and the first part of the efferent route from the testis, is much folded and tightly packed to form a long, narrow mass attached posterolaterally to the testis. Its overall length is 6-7cm, with the coils unraveled, the tube measures more than 6 meters. It has a central body, a superior enlarged head and an inferior pointed tail. The head is connected to the upper pole of the testis by efferent ductules and the tail to the lower pole by loose connective tissue and the reflected tunica vaginalis. The lateral surfaces of the head and tail are covered by the tunica vaginalis and are hence 'free'; the body is also so invested, except on its posterior aspect. The tunica vaginalis is recessed between the epididymal body and the lateral surface of the testis, as the sinus of the epididymis (***Standring et al, 2005).***

As the seminiferous tubules reach the lobular apices, they are less convoluted, assume an almost straight course and unite into 20-30 larger but short straight ducts (tubuli recti), about 0.5 mm in diameter. Straight seminiferous tubules enter the fibrous tissue of the mediastinum testis, ascending backwards as a close network (the rete testis, Fig. 1) of anastomosing tubes lined by a flat epithelium. At the upper pole of the mediastinum, 12-20 efferent ductules (ductuli efferentes) perforate the tunica albuginea to pass from the testis to the epididymis. They are at first straight, becoming enlarged and