MALE CONTRACEPTION

THESIS

Submitted For Partial Fulfilment
of the Master Degree in
Obstetrics and Gynaecology

By
MOHAMED ASHRAF ABDEL FATTAH
M. B., B. Ch.

Supervised By

Dr. MOHAMED A. EL-MARAGHY
Assistant Professor of Obstetrics
and Gynaecology

Dr. MOHAMED N. EL-[illegible]
Lecturer of Obstetrics
and Gynaecology

Faculty of Medicine
Ain Shams University

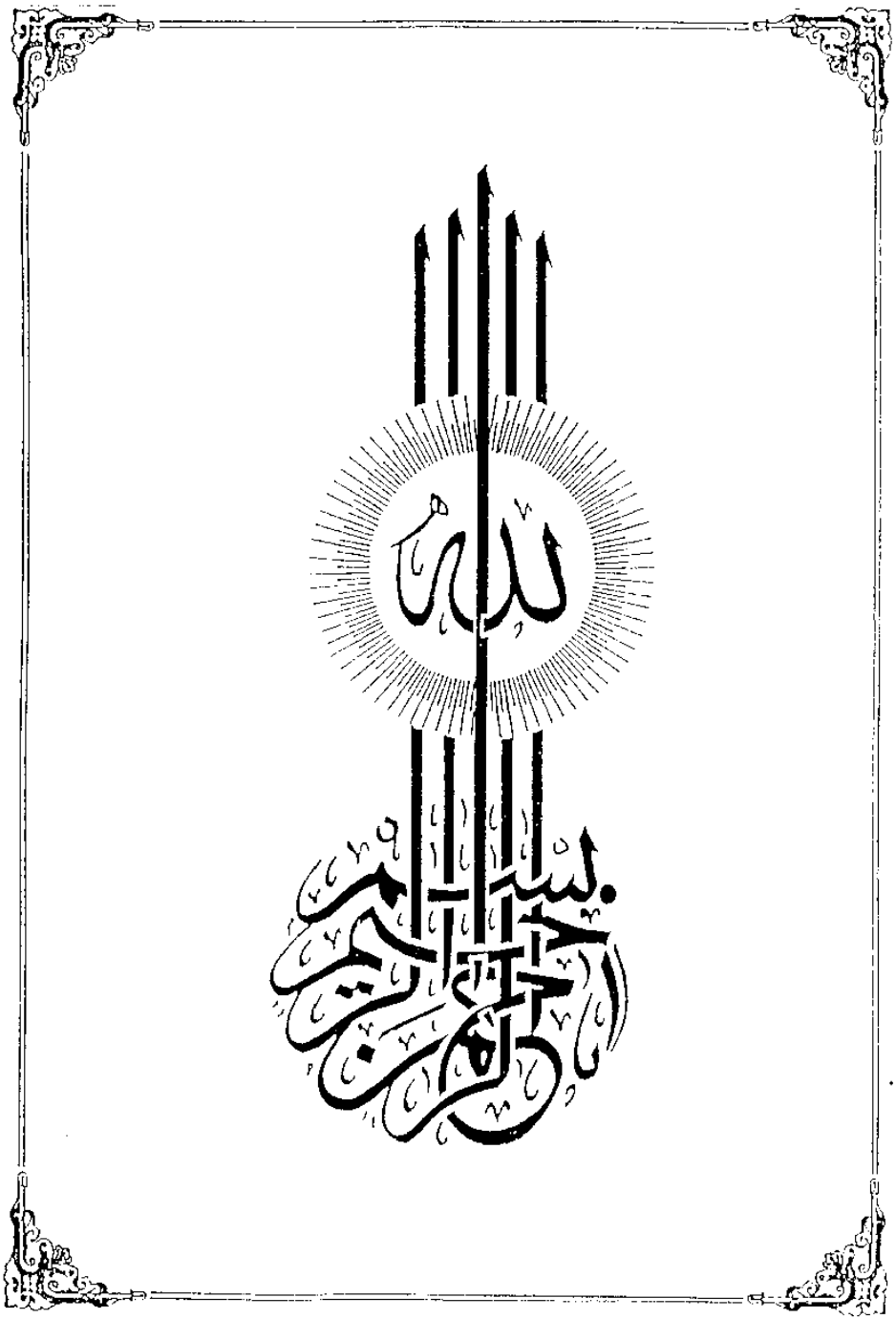
1982

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to Dr. Mohamed A. El-Maraghy, Assistant Professor of Obstetrics and Gynaecology, Faculty of Medicine, Ain Shams University for his helpful guidance and encouragement throughout the whole work.

I am much indebted to the great help offered by Dr. Mohamed N. El-Mahallawi, Lecturer of Obstetrics and Gynaecology, Faculty of Medicine, Ain Shams University who provided much of his time and offered me valuable assistance and sincere help.

My most sincere gratitude is also presented to the staff members of the Egyptian Fertility Care Society especially Prof. Dr. Ezzeldin Osman Hassan to whom I am deeply indebted for his valuable and great help.



Contents

INTRODUCTION

Introduction

Over the last two decades, there was a developing world trend among marrying couples to limit their family size. This drive is more needed for highly populated, low resource countries like ours. In addition to the socioeconomic motivation, family health is becoming another rationalizing and imposing factor.

Family size limitation can be attained by some form of fertility control once the desired number of offsprings is reached. Both partners, husband and wife, can be the target of control, hence there are male and female methods.

A perfect contraceptive which consistently prevents pregnancy, which is reversible, is easy to use and which is without any side-effects is not available up to the date. However, modern technology has developed contraceptive methods which are highly effective, and which are available for use by men and women in a variety of cultural, intellectual and enviromental circumstances.

The choice of a particular method of contraception for a particular couple is very important. It is now well established that the concept of the superiority of one method, in all places and at all times, is self-defeating.

For many years, almost all the effort was directed towards the female partner with the aim of finding a perfect

female contraceptive, while male contraception was lagging behind. Moreover, for many couples, the choice between male and female methods is presently optional and directed by the decision-maker partner, the male, who lacks any knowledge concerning the truth about male methods of contraception.

The oral contraceptive pills which used to be the most widespread method for female contraception, proved to be accompanied with a wide variety of side-effects that rendered nearly half the women to discontinue its use within twelve months of acception. Weight gain, breast troubles, headache, migraine, alopecia, hypertrophic gengivitis, corneal oedema, and vaginal discharge are examples of the side-effects of the pill use. More seriously are the thrombo-embolic phenomena, the nervous and metabolic alterations that are usually encountered with pill intake.

The intrauterine device (IUD) which is another major member of female contraceptives, may result in vaginal bleeding, pain, infection, perforation of the uterus or expulsion of the device.

Diaphragms and cervical caps represent another class of female contraception. These barrier methods, in addition to the need of perfect training to the wives for sound application, they proved to have a high percentage of failures. Moreover, these techniques are not accepted by a good number of couples.

The same situation is encountered when using locally applied chemical contraceptives, which must be used in conjunction with other barrier methods.

Even the surgical method of female contraception which is tubal ligation, is an intra-peritoneal operation needing a special skill and a well-equipped theatre room. This makes the procedure unapplicable as a mass measure for contraception in developing countries. In addition, many couples regard the operation as a dangerous one and the reversibility, if asked for, not within hand.

All the above may provide a real indication to search for a male contraceptive alternative with the final goal of establishing a perfect contraceptive which is readily acceptable by a wide base of couples.

Male methods may become mandatory if female ones are either unadvisable on medical grounds or ineffective because of neglect, memory or dissatisfaction. Moreover, the choice in recent years is becoming ethical with the advent of women liberation and growing equalitarian relationship between wife and husband indicating free choice based on shared family responsibilities.

Furthermore, with sound motivation and simple explanation, the advantages of male contraception including the simplicity, ease, safety and freedom from complications and side-effects will expectedly make the choice a determination.

Aim of the work

In this work, all the available literature dealing with male contraception will be reviewed, the different methods will be discussed, and the results of the different investigators will be compared with a recommendation for the most suitable method or methods for male contraception that can be successfully adopted in our country.

ANATOMY

Anatomy of the male genital organs

The male genital system is formed of the seminal gland or testis; the seminal tract including the epididymis, vas deferens, seminal vesicles, ejaculatory ducts and penis; and the accessory glands in the form of the prostate and Cowper's glands (Fig. I and 2).

The testes

The testes are the primary male sex organs. Each testis is oval in shape having 2 borders (anterior and posterior), 2 ends (upper and lower) and 2 surfaces (lateral and medial). It lies in the scrotum and measures 4-5 cm in length, 2.5 cm in breadth and 3 cm in the antero-posterior diameter. Its weight varies from I0.5-I4 gm.

The posterior border of the testis is related to the epididymis laterally and to the vas deferens medially, the head of epididymis lies on the upper end of the testis, while the vas is continuous with the tail of epididymis at its lower end.

Starting from inside, the testis is covered by the visceral and parietal layers of the tunica vaginalis, then the three coats of the spermatic cord which are the internal spermatic fascia, cremaster muscle and fascia, and external

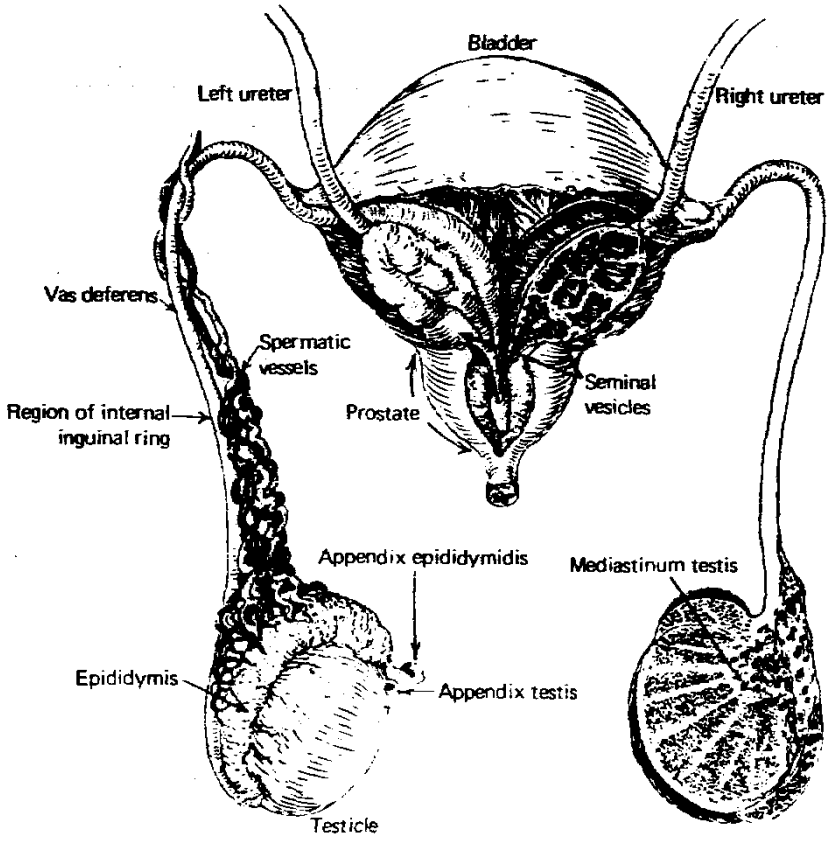


Fig. I.

Gross anatomy and relations of ureters, bladder, prostate, seminal vesicles, vasa deferentia, testes, and epididymis.

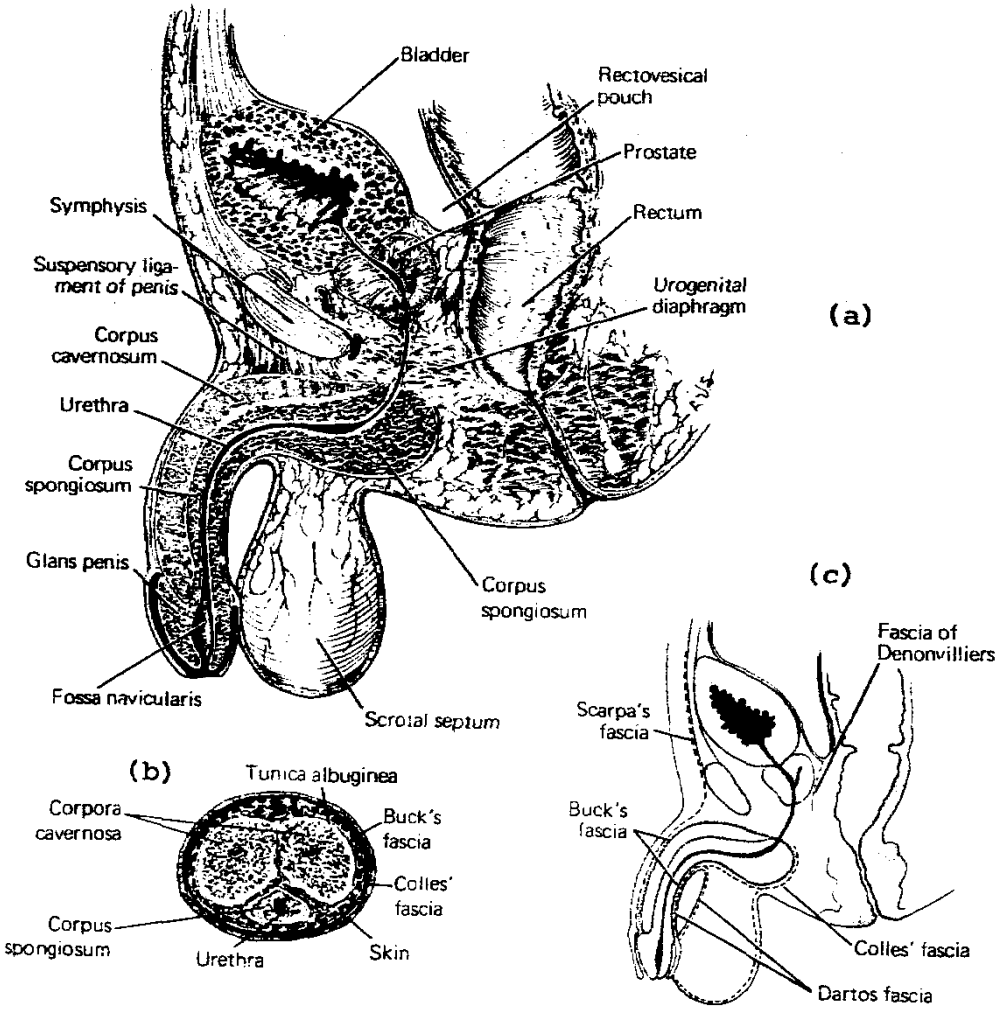


Fig. 2.

(a) Relations of the bladder, prostate, seminal vesicles, penis, urethra, and scrotal contents.

(b) Transverse section through the penis.

(c) Fascial planes of the lower genitourinary tract.

spermatic fascia. Contraction of the cremaster muscle draws the testis upwards (cremaster reflex).

The tunica vaginalis has a visceral layer fused with the surface of the testis and a parietal layer adherent to the wall of the scrotum and a cavity in between.

The two testes are seperated from each other by an incomplete septum extending from the floor of scrotum upwards and is formed by the dartos muscle (median septum scroti).

The appendix testis is a sessile cyst 2-3 mm in diameter attached to the upper pole of the testis, within the tunica vaginalis.

The upper pole of the epididymis is attached high up on the postero-lateral surface of the testis. From this area fibrous septa radiate into the testis and reach the tunica albuginea which is a fibrous capsule surrounding the testis and is thickened to form the mediastinum testis which is a fibrous mass containing the rete testis. The mediastinum sends septa that divide the organ into some 400 spaces, each of which contains two (sometimes three or four) highly convoluted seminiferous tubules. Each tubule is 2 ft (60 cm) long. The tubules lie rather loosely between the tunica albuginea and the fibrous septa so that the cut surface of the organ bulges with herniating tubules. The two ends of each tubule fuse forming the straight seminiferous tubule, which fuses with each other in the mediastinum testis forming

the rete testis. From the rete testis I5-20 vasa efferentia enter the commencement of the epididymis, thus attaching the head of epididymis to the testis. Each efferent tubule is coiled into a small lobule which unites forming the duct of epididymis which at the tail of epididymis forms the vas deferens.

The tunica vasculosa is the vascular layer of the testis, consisting of a plexus of blood vessels held together by delicate areolar tissue. It lines the tunica albuginea and clothes the septa, therefore forming an investment to all the lobules of the testis.

The testicular artery, from the aorta, runs in the spermatic cord, gives off a branch to the epididymis, and reaches the back of the testis where it divides into medial and lateral branches that penetrate the substance of the organ.

Venules reach the mediastinum, from which several veins pass upwards in the spermatic cord, and surround the testicular artery with a mass of intercommunicating veins, the pampiniform plexus. In the inguinal canal, they join to form two testicular veins. The right vein joins the inferior vena cava, the left the renal vein.

Lymphatics run back with the testicular artery to para-aortic nodes lying alongside the aorta at the level of origin of the testicular artery (L_2).