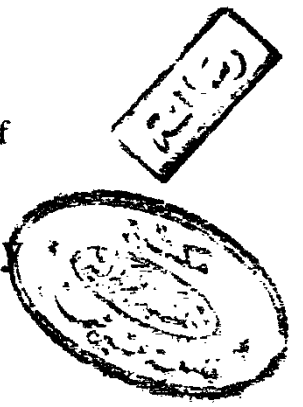
THE VALUES OF HYSTEROSCOPY WITH INTRAUTERINE CONTRACEPTIVE DEVICES



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Requirements of the Degree of M.D.

in **Obstetrics and Gynaecology**

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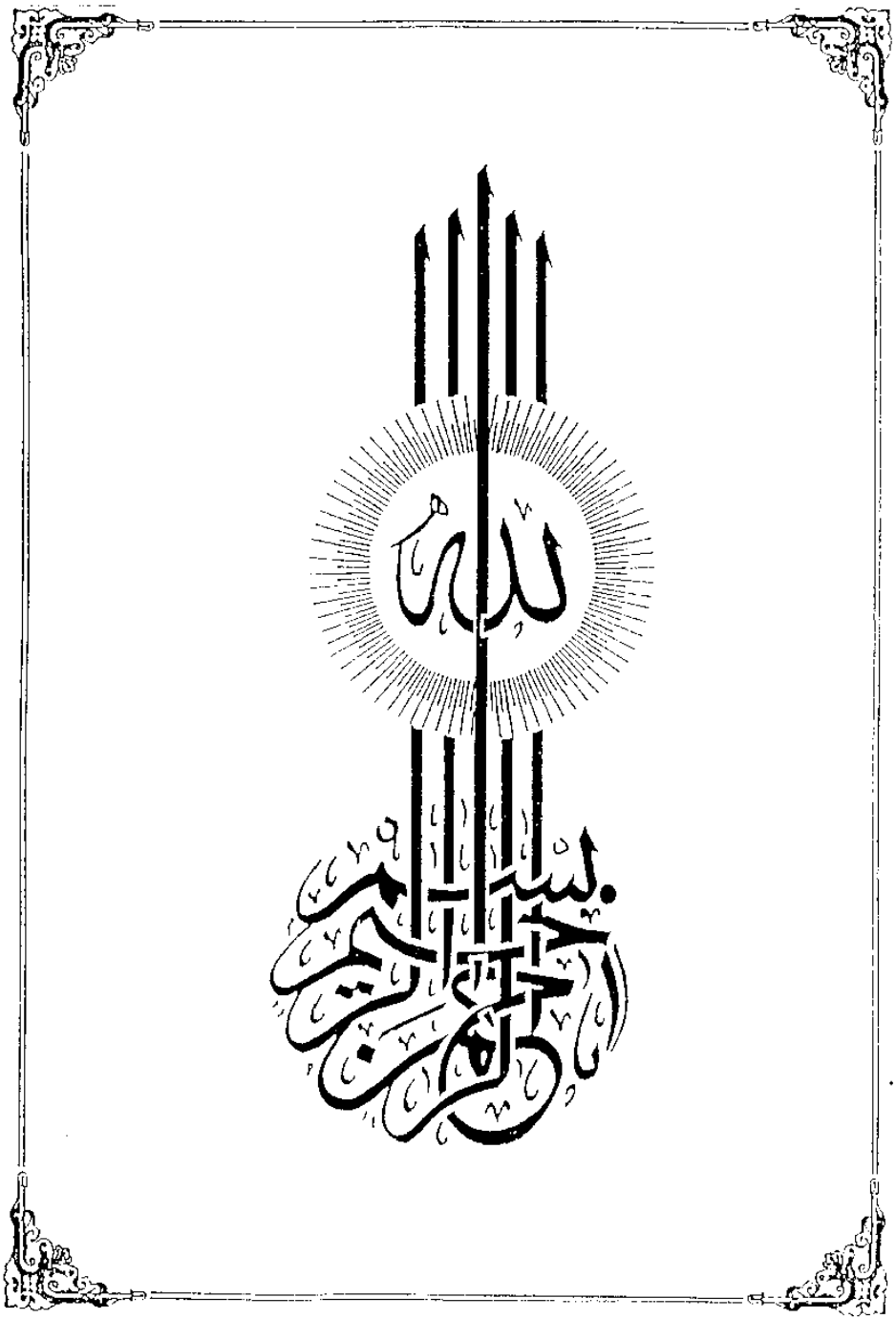

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INTRODUCTION

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INTRODUCTION

The use of IUCDs as a method of contraception is getting more popular every day because of being highly effective in preventing unwanted conceptions, having no undesirable systemic effects, being independent of coitus, having readily reversible effect when removed together with their cost being much lower than with any other method of contraception when used over the long term ***(Moyer and Shaw, 1980).***

However, instead of all these advantages, a great deal of women still refuse or are afraid of using the IUCDs as a method of contraception because of their side effects as abnormal uterine bleeding.

For these reasons, different types and shapes of IUCDs are produced every day in a trial to design an ideal device with the least side effects and the longer duration of use.

Hysteroscope is the term for an endoscope used for direct visualization of the uterine cavity, and although it sounds to be a comparatively new instrument, trials have been carried out long ago for visualization of the intrauterine cavity as those of Pantaleoni in 1869, Max Nitze in 1879, Rubin in 1925, Schroeder in 1934, Palmer in 1957, Lindemann in 1971 and Hamou in 1979 ***(Taylor and Hamou, 1983).***

Although the hysteroscope has been used on a wide scale in the near past, it is

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proving itself as a highly valuable instrument every day, up to replacing the blind dilatation and curettage ***(Brooks and Serden, 1988)***. This is because the hysteroscope is the only diagnostic tool that allows direct visualization of the uterine cavity, hence accurate and decisive informations about intracavitary lesions can be obtained.

Besides the diagnostic values of the hysteroscope, it is also proving itself as an operative instrument being used for the removal of missed intra-and partially extrauterine IUCDs, intrauterine polyps, myomas, septum and adhesions together with its role in the process of sterilization through the application of intratubal materials and devices ***(Taylor and Hamou, 1983)***.

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AIM OF THE STUDY

This study aims at using this valuable endoscope (the hysteroscope) in identification of the possible causes of the side effects that might associate with the IUCDs use, mainly those of abnormal uterine bleeding whether in the form of menorrhagia or intermenstrual spotting, missing of the IUCDs, and pain related to IUCDs use.

Hence knowing the exact causes of such problems and trying to avoid them, if possible, it will help in decreasing the side effects of the IUCDs, thus, increasing their use as ideal contraceptives.

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REVIEW OF LITERATURE

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REVIEW OF LITERATURE

INTRAUTERINE CONTRACEPTIVE DEVICES

A desirable means of preventing pregnancy is the modification of the intrauterine environment. During a normal pregnancy the uterine cavity provides an adequate environment for all the events occurring in gestation. The ascent of spermatozoa, the pre-implementation nourishment of the embryo, the implantation, and the nourishment of the embryo occur in the uterine cavity under normal conditions. Alterations of the intrauterine physiology may interrupt any one or more of the essential stages in the development of the embryo.

The intrauterine device initiates a series of events in the endometrial tissues that modify both the cells and the secretions within the cavity. The subsequent tissue and biochemical responses resulting from the IUD creates a milieu that is responsible for the antifertility phenomenon as well as the side effects that may result. It has been shown that the insertion of inert materials produces an antifertility action even though the devices are composed of vastly different

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substances. The introduction of silver, gold, nickel, rubber-coated rings, rubber strips, silk worm gut and celluloid thread by ***Carleton and Phelps in 1933*** produced an antifertility effect in rabbits.

The IUDs have had an increasing popularity among physicians and patients during the past two decades because of their advantages since they are highly effective in preventing pregnancy, have no undesirable systemic effects, are independent of coitus, are available in a form that is readily acceptable to the patient, their contraceptive effect is readily reversible after their removal as well as their low cost compared to other contraceptive methods if used over a period of years. Thus, in 1965, married women in the United States chose an IUD between 1% and 2% of the time as compared to all other methods of contraception. Five years later, 7% of the married women were using the IUD. By 1974, 14% of the women in the family planning programs in the United States were using the IUD. The rate of increase was more rapid than that of any other reported method of contraception during this period ***(Westoff, 1972, Speidel, et al., 1974)***. The use of the IUD in developing countries has been even more rapid than its acceptance in the United States.

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HISTORICAL ASPECTS

Medical history reports that early intrauterine devices were pebbles, placed by ancient Arabs (2000 B.C.) in the uteri of their female camels, in order to protect them against pregnancy during their long journeys across the desert ***(Gauvet, 1975)***. The pebbles apparently prevented the camels, in some manner, from mating. Hippocrates wrote about IUDs, and women were believed to have used contraceptive pessaries as early as the 11th century, according to the Islamic scientist Avicenna. Over the centuries, such pessaries have been made from pewter, ebony, glass, wood, rare metals, and even diamond-studded platinum. They were used for treating uterine descensus, for correcting abnormal uterine positions, and for inducing abortion as well as for their contraceptive effects***(Finch and Green, 1983)***.

The first totally intrauterine device was designed in ***1909*** by a German physician, ***Richard Richter***. It was made out of silk worm gut and was ring shaped. In ***1923, Pust*** combined this type of device with the older stem pessary and made a cervicouterine device. The first major introduction of intrauterine contraception, however, occurred in ***1928,*** when ***Ernest Gräfenberg*** developed

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his rings made out of silk worm gut and silver wire. In ***1934, Tenrei Ota*** of Japan reported on the use of his gold and gold-plated silver IUDs. Although these new IUDs generated a great deal of enthusiasm, it was short lived. Fears among the medical profession about the induction of infection led to their rapid disappearance.

Little was heard about intrauterine contraception thereafter until the late 1950s, when the pressures of rapid population growth stimulated a re-evaluation of all forms of fertility control.

During the ensuing years, major changes were made in IUD design. These came about mainly because of the discovery of biologically non-medicated plastics. They proved to be a tremendous innovation since devices could be given a memory, stretched out in a straight, narrow, hollow inserter, introduced into the uterus, and then extruded. Once within the uterine cavity, they reassumed their original contours. Following that, various types of IUDs were produced, having different shapes and materials as shown in *Figure (1)*. However, most of these devices have been discontinued mainly because of problems with embedment and removal.

During this period, an intense study on a large number of IUDs have been made and certain generalizations were formulated. Small IUDs were found to have lower rates of cramping and bleeding. However, they had higher rates of

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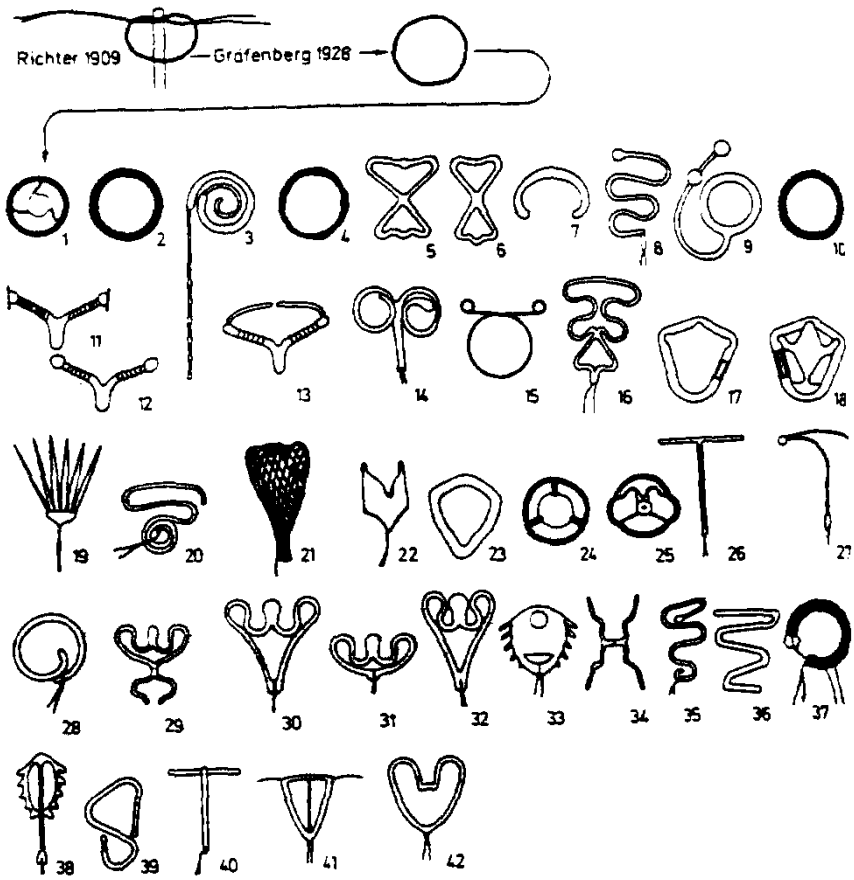

Fig. 1. Intrauterine devices

1 Ota ring (A. Ishihama 1959)
2 Steel ring (H.H. Hall and M.L. Stone 1962)
3 Margulies IUD (L.C. Margulies 1964)
4 Silk ring (K. Fuchs, S. Grünstein, and A. Peretz 1964)
5 Birnberg bow (C. Birnberg and M.S. Burnhill 1964)
6 Birnberg bow (C. Birnberg and M.S. Burnhill 1964)
7 Birnberg bow (C. Birnberg and M.S. Burnhill 1964)
8 Lippes loop (J. Lippes 1965)
9 Comet (J. Schwartz and F.C. Reyner 1966)
10 Intraband (H.H. Hall 1966)
11 Wing IUD (A. Naim and H.M. Hasson 1966)
12 Wing IUD (A. Naim and H.M. Hasson 1966)
13 Wing IUD (A. Naim and H.M. Hasson 1966)
14 Saf-T-coil (R.C. Seymour 1967)
15 Silent protector (H.M. Knoch 1967)
16 Dana Super (J. Sracek 1967)
17 Antigon (M. Osler and P.E. Lebech 1968)
18 Winged Antigon (M. Osler and P.E. Lebech 1972)
19 Solish-Majzlin-Feather (G.I. Solish and G. Majzlin 1968)
20 Coiled loop (S.F. Rifai 1969)
21 Corolle (J. Cohen 1969)
22 M (E. Silbermann, M.L. Stone, and E.B. Connell 1969)
23 Incon (E.B. Leerich, L.L. Doyle, and D.L. Barcley 1969)
24 Japanaise ring (C.L. Armstrong and P.S. Anderson 1969)
25 Yusei ring (Y. Hata, Y. Ishihama, N. Kudo, Y. Nakamura, Z. Miyai, T. Makino, and T. Kagabu 1969)
26 Copper-T (T-Cu 200) (J.A. Zipper, H.J. Tatum, L. Pastena, M. Medel, and M. Rivera 1969)
27 Copper-7 (J.A. Zipper, H.J. Tatum, L. Pastena, M. Medel, and M. Rivera 1969)
28 Open ring (S. Rozin and A. Adoni 1970)
29 OM-GA GBBI (S. Espagno 1970)
30 OM-GA 1 (S. Espagno 1970)
31 OM-GA 2C (S. Espagno 1970)
32 OM-GA 0 (S. Espagno 1970)
33 Dalkon shield (H.J. Davis 1970)
34 Petal or LEM (W.K. Rashbaum and R.C. Wallach 1971)
35 Organon A (F. Subeck, R. Belsky, R. Lardner, W.J. Shack, and P.Y. Tam 1971)
36 Organon B (F. Subeck, R. Belsky, R. Lardner, W.J. Shack, and P.Y. Tam 1971)
37 Spiral loop (N.N.)
38 Multiload (Cu 250) (Van Os 1972)
39 Soonawala (H.P. Soonawala 1972)
40 Biogravipian*
41 *Butterfly* (H. Massouras 1972)
42 Cairo heart (N.N.)

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pregnancy and expulsion. Conversely, larger devices were more effective in preventing pregnancy and were not expelled as readily as the smaller ones. However, they produced higher rates of cramping and bleeding and therefore more medical removals ***(Tietze and Lewit, 1970).***

In an attempt to reduce the frequency of the most troublesome side effects, cramping and bleeding, ***Zipper and Tatum*** began working on the first of the medicated devices in ***1969.*** They added copper wire to small, plastic T-shaped platforms with small surface areas based on their observation that the uterine cavity at the height of a contraction was T-shaped ***(Zipper et al., 1969; and Tatum, 1972).*** The plastic alone had a pregnancy rate of 18%, but the copper raised the level of effectiveness to 97-98%. Following that, many copper medicated IUDs with different shapes and sizes have been produced such as the Cu-7, TCu 220C, Multi-load Cu 250 and 375 and the Nova-T.

Several years later, after the development of the T copper device, progesterone was added to similar T-shaped devices (the Progestasert) with the same goal in mind, achieving the same degree of effectiveness ***(Pharriss et al., 1974).***

Starting in 1974, five major IUDs were removed from the market in the United States for varying reasons. The Dalkon shield was the first to go when it

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