

A CLINICAL STUDY ON THE MODE OF ACTION OF I.U.D.

by

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The widespread use of an I.U.D. as a contraceptive has attracted world-wide attention on its mode of action. A study was undertaken in which an I.U.D. was inserted in a group of women with low ovarian function. The object was to note any changes in the menstrual flow or pattern, to compare the incidence of post-insertion bleeding with the normal group, and to note changes, if any, in the vaginal smears and endometrium.

Material and Methods

The Lippes loop, size 27, was inserted in a group of 29 non-parous women (sterile) with scanty, irregular or absent menstruation. The age group varied from 22-38 years.

Table I describes the type of cases in which the I.U.D. was inserted. The 4

TABLE I
Types of Cases

Hypomenorrhea	4
Oligomenorrhea	8
Secondary Amenorrhea	17
Total	29

cases grouped under hypomenorrhea complained of very scanty bleeding or spotting for an hour or so every month. There were 8 cases who got spontaneous periods at intervals of 3-6 months and are grouped under oligomenorrhea. The last group is that of secondary

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amenorrhea. These 17 cases had amenorrhea for 6 months or more when first seen. Sixteen of them could respond to cyclic hormone therapy but one was resistant. The device was inserted for a period varying from 4-12 months.

Table II describes the incidence of post-insertion bleeding in this group.

TABLE II
Incidence of Post-insertion Bleeding

Type of cases	Total No	Bleeding
Hypomenorrhea	4	2
Oligomenorrhea	8	4
Secondary Amenorrhea	17	10
Total	29	16

No follow-up in 2 cases

Follow-up regarding this symptom was available in 27 cases. Out of these, 16 had post-insertion bleeding of varying intensity. It was severe enough to cause removal in one instance.

Table III gives a comparative incidence of post-insertion bleeding in the 3 groups

TABLE III
Comparative Incidence of Post-insertion Bleeding

1. Group under study (low ovarian function)	59.2%
2. Lactational amenorrhea	54.5%
3. Normal fertile group (I.U.D. for contraception)	66.0%

of subjects. In the group under study this incidence was 59.2%. The lactational amenorrhea series was a group of patients where the I.U.D. was inserted as a contraceptive before the onset of menses

since delivery and the incidence was 58.3%. In the last group, women with regular menses, the I.U.D. was inserted as a contraceptive. It seems that the incidence of post-insertion bleeding is somewhat lower in the amenorrhic than in the normal group.

Table IV describes the incidence of cyclic spontaneous bleeding in our series. It was found that out of 25 cases, spontaneous cyclic bleeding episodes were initiated in 15 cases. This incidence is similar to the one found in cases of lactational amenorrhea (14 out of 24). Spontaneous cyclic menses were induced in 52 out of 93 recorded cycles in these 15 subjects after the insertion of I.U.D. No hormone therapy was given during this period.

The cyclic activity was usually initiated soon after insertion but later on either stopped or lost its cyclic manner, as was the case in 12 out of 15 patients. Out of the remaining cases, amenorrhea conti-

nued in 5, there was irregular bleeding in 4 and in one the bleeding pattern was not known. Regarding hypomenorrhea cases, the menstrual flow improved in all with the insertion of I.U.D.

The I.U.D. was removed after a duration of 4-12 months and an attempt was made to follow-up their subsequent menstrual pattern.

It was noted that cyclic menses continued in only 6 cases out of 15. In 4 the amenorrhea recurred and in 5 no further follow-up was possible.

Table V describes the vaginal smears taken before and after insertion of I.U.D. in 19 cases.

The karyopyknotic index was taken to assess the estrogenic status of this group. It seems that there was an improvement in the estrogenic index after the insertion of I.U.D. Before insertion the vaginal smear showed low estrogenic index in 12 cases, whereas after I.U.D. the low estrogenic smears were found in only 3 cases,

TABLE IV
Incidence of Spontaneous Bleeding During and After I.U.D.

Type of cases	Nos.	Spontaneous bleeding episodes			
		During I.U.D.	After removal of I.U.D.		
			Cyclic Bl.	Cont.	Reverted to pre-I.U.D. pattern
Oligomenorrhea	8	6	2	2	2
Secondary amenorrhea	17	9	4	2	3
Hypomenorrhea		4	-	4	-
		(improved)			

TABLE V
Vaginal Smears Before and After Insertion of I.U.D.

Smears	Estrogenic Index		
	L.E.I.	M.E.I.	H.E.I.
Before insertion	12	7	-
After insertion	3	12	4

while 16 cases showed moderate to high estrogenic index in smears reported in various cycles.

Table VI describes the endometrial histological changes before and after insertion of I.U.D. In 15 cases biopsy reports were available before and after the I.U.D.

it would be too presumptuous to draw any definite conclusions on the effect of I.U.D. on endogenous estrogen production. In cattle, the I.U.D. has been known to produce cystic ovaries (Marston *et al*, 1966).

It may be speculated that in the humans also it has some estrogenic action which

TABLE VI
Endometrial Changes Before and After Insertion of I.U.D.

Endometrial biopsy	Histological changes		
	Atrophic	Proliferative	Secretory
Before insertion	6	8	1
After insertion	3	10	2

It is difficult to assess slight improvements in hormonal activity by changes in endometrial histology. However, post-insertion biopsies showed highly proliferative endometria and fewer atrophic changes than in the pre-insertion samples. In many pre-insertion biopsies there was no tissue, only blood and mucus was obtained.

Discussion

The initiation of cyclic menstrual activity in a group of amenorrhic women is an interesting finding and calls for a great deal of speculation on the mode of action of an I.U.D. The improvement in the karyopyknotic index in vaginal smears after I.U.D. is suggestive of an estrogenic action. The changes in endometrial biopsy also seem to suggest similar effect (Janakiraman *et al*, 1966).

From this small number of cases which may be considered a pilot study,

becomes more evident by contrast in cases of lower ovarian function.

It may be suggested that more sensitive assays on estrogen secretion may be done in I.U.D. users and an attempt made to find out its exact level of action at the hypothalamopituitary ovarian axis.

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