

GRAFENBERG'S RING AS A CONTRACEPTIVE DEVICE

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Intrauterine devices for preventing conception may be divided into:

- (1) Those which are inserted into the cavity and project outside the external os.
- (2) Those which lie completely above the internal os.

The older devices which used to project outside the external os did produce many inflammatory troubles. Some of the recent workers, (Lazar Margulies of Mount Sinai, New York and Jack Lippes of Buffalo, New York) with the plastic devices which protrude from the external os, claim that they are harmless. Wilson and Bollinger report 2 cases of salpingitis out of 37 using spirals; 5 cases who had negative cultures became positive after introduction of spirals. They also state that in 41 out of 80 specimens positive cultures were obtained, mostly in the first 14 days of the cycle; whether normal cases would never give positive cultures is doubted. In the end Wilson argues strongly in considering family planning as a mass movement and not

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from the view point of a doctor seeing individual cases and suggests ignoring small numbers of inflammatory reactions.

Graafenberg, Norman Haire, Mary Halton, Oppenheimer, Atsumi Ishihama, Ota, Hall and Stone, Jackson, Jesson, Peng, Razak, Zipper, Nash, and others have used devices which are kept above the internal os and remain completely in the uterine cavity. Silk worm, silver, gold, stainless steel, nylon, polythelene of different types are the material of which they are made.

Mode of Action

The usual belief is that these devices prevent nidation of the fertilized ovum.

Dr. Margulie suggests that tubal peristalsis may pass on the ovum to the uterus too early to be able to implant. Lippes suggests the possibility of delay in sperm migration.

Silver salts formed in the uterine cavity with the silver ring are said to be likely to kill spermatozoa. As equally good results are obtained with other more inert substances this possibility is less likely.

Infections are rare in the modern days. Where it occurs, it probably existed before, hence it is necessary to exclude infection by all possible

means before insertion of the ring. Most workers remove the device when infection is noted but some prefer to leave it and treat infection with anti-biotics.

The most important contraindication is any evidence of infection. We do not use the ring whenever the patient has already got menorrhagia, and if we use it in milder cases we warn the patient about it.

Whilst most people agree that the ring should be introduced just after menstruation, there are individuals who disagree.

As for the puerperium and lactation amenorrhoea most people agree it may be kept in 8 weeks after delivery, but people claim they have had no trouble even when they kept the ring within forty days after delivery.

made sure by x-ray that the ring is inside.

It is said that the silver ring may get embedded if left long and we would agree with this. However, plastic devices or stainless steel or gold, it is claimed, may be left indefinitely.

This is a retrospective study of 319 (S.B.A. 99 + 220 D.S.A.) patients who had an intrauterine device—silver ring, introduced for prevention of conception, gathered from the records of our private clinic out patient. In 212 cases (a): S.B.A. 42 + D.S.A. 170 it was definitely introduced by one of the two authors. In 74 cases (b): S.B.A. 36 + D.S.A. 38 by the authors or some other person; and in 29 cases (c): S.B.A. 21 + D.S.A. 8 it was introduced by some other person.

TABLE I

		Total	A	B	C
	S.B.A.	99	42	36	21
	D.S.A.	220	170	38	8
Menorrhagia after G.R.	S.B.A.	18	4	7	7
	D.S.A.	35	22	10	3
Discontinued due to menorrhagia	S.B.A.	11	3	3	5
	D.S.A.	17	5	10	2
Menstrual Irregularities	S.B.A.	4	1	3	0
	D.S.A.	4	3	1	0
Dysmenorrhoea	S.B.A.	7	2	3	2
	D.S.A.	3	1	2	0
Patient conceived after dropping G.R. without her knowledge	S.B.A.	3	2	1	0
	D.S.A.	8	4	4	0
Dropping out and reintroduction of G.R.	Once	Twice	Could not be retained		
	S.B.A.	5	0	2	
	D.S.A.	33	4	1	

Whilst some people allow coitus soon after insertion, and with a device which can be detected by the finger it may be different, we usually do not allow intercourse till after the first period after insertion and we have

Menorrhagia after Introduction of the Ring

As is seen in the table, 4 out of 42 (S.B.A.) i.e. 9.57% and 22 out of 170 (D.S.A.) i.e. 13% of the patients in whom the authors had introduced the

rings had menorrhagia. In the cases in which the ring might have been introduced by the authors or others 7 out of 36 (S.B.A.) i.e. 19.4% and 11 out of 38 (D.S.A.) i.e. 28.9% had this complaint. In the cases in which the ring was definitely introduced elsewhere 6 out of 21 (S.B.A.) or 28.6% and 3 out of 8 (D.S.A.) or 37.5% had this trouble. This does not mean any proficiency of the authors. The patients who came after introduction of the ring elsewhere consulted the authors because of their troubles and a large majority who had the insertions and no trouble would naturally not come to the authors. However, a fair number of the patients who complained of this excessive bleeding did not require removal, as the bleeding, though more than the patient's usual amount, was not so excessive or could be relieved by drugs and did not require removal. Naturally again, the authors' cases required removal in much smaller numbers than the patients from other persons.

Discontinuation of the Ring Because of Excessive Bleeding

Only 3 out of the 4 from 42 cases (S.B.A.) required removal of the ring: 7.4% against 9.57% having menorrhagia. Only 5 out of the 22 cases (D.S.A.) from a total of 170 required the removal of the rings: 2.9% against 13% having menorrhagia.

Out of the probable cases of the authors 3 of the 7 (S.B.A.) out of 36 i.e. 8.3% against 19.4% having menorrhagia, required removal. In the other authors group (D.S.A.) all the 10 out of 38 had menorrhagia enough to require removal.

Of the patients who had rings introduced outside, 5 of the 6 in the group of 21 (S.B.A.) i.e. 23.8% against 28.57% having menorrhagia, required removal and 2 out of 3 in the other group of 8 i.e. 25% against 37.5% having menorrhagia, required removal.

Age Incidence in Cases of Menorrhagia

An interesting feature of the occurrence of menorrhagia is their incidence according to age. In 286 out of 319 patients the age was properly recorded. Out of 171 patients between 20 and 30 years, 24 patients had menorrhagia i.e. 14%. Out of 67 patients between 30 and 35 years 15 patients had menorrhagia i.e. 21.43% and out of 44 patients between 35 and 40 years 13 patients had menorrhagia 29.54%. Unless we have accurate data from the population at large showing percentage of women who develop menorrhagia even without any interference, it is not correct to blame the silver ring for all cases. Some of them might have developed menorrhagia even if the ring was not introduced.

Another interesting feature is the time after insertion of the ring when the patients had the bleeding.

Soon after insertion	21
Within 3 months after insertion	1
Within 6 months after insertion	6
Within 1 year after insertion	7
Within 2 years or after that	14
Total	49

Thus there is possibly some abnormality which is perhaps unnoticed which makes nearly 42% (21 out of 49) of menorrhagia cases bleed soon

after the introduction; 12% (6 out of 49) bleed within 6 months and 14% (7 out of 49) within 1 year. In nearly 28% (14 out of 49) of the bleeding cases the ring was kept longer than 1 year.

Menstrual Irregularity and Dysmenorrhoea

As can be seen from the table these troubles occurred in a much smaller number and were not sufficiently severe to require removal of the ring.

Conception after Dropping out of the Ring

Conception after dropping out of the ring occurred in 2 out of 42 (S.B.A.) i.e. 4.7% and 4 out of 170 (D.S.A.) i.e. 2.35% of the patients without the patient's knowledge. One out of 36 (S.B.A.) and 4 out of 38 (D.S.A.) i.e. 6.6% conceived from the cases which were perhaps of the 2 authors or from others.

Time of Insertion after Delivery

After 2 months	..	..	..	12
" 3 "	..	..	..	10
" 4 "	..	..	..	8
" 5 "	..	..	..	9
" 6 "	..	..	..	20
" 7 "	..	..	..	10
" 8 "	..	..	..	12
Total	..	..	..	81

Total Period of the Use of the Ring

In this series the ring was left as such or by regular changes was totally left in for the following period.

One year	..	..	..	68
Two years	..	..	..	50
Three years	..	..	..	33
Four years	..	..	..	16
Five years	..	..	..	12
Six years	..	..	..	3

Seven years	..	..	..	6
Eight years	..	..	..	1
Nine years	..	..	..	2
Ten years	..	..	..	7
Total	..	..	..	198

The authors do not keep the rings for more than one year at a time but we have seen rings left as long as even ten years and one of us removed such a ring without much trouble. However it is noticed that when the ring is removed after more than 1 year very often it comes out by the wire of the spring pulling out rather than the ring coming out as such.

However, we have cases who have had rings repeatedly introduced once a year for as long as 7 years and one who used it for 10 years with a child in between.

Dropping out of the Ring and Reinsertion

The ring dropped out once in 38 cases, twice in 4 cases and in 3 cases it could not be retained at all.

At this stage we may briefly state the procedure we follow.

A careful history and thorough examination is carried out to avoid using the ring in patients having menorrhagia or who might have had it. Only after a strong warning, to come up to us, if there is any trouble, may it be introduced in patients who might have had menorrhagia before, but who are not bleeding now.

With the history and thorough examination any evidence of inflammation is looked into carefully and the ring is not introduced if there is a doubtful discharge or any mass or adhesions showing presence of in-

flammation. We do not insert rings if there be any tumour in the pelvis.

The ring is introduced soon after the complete stoppage of menstruation.

The patient is asked to watch carefully for the dropping out of the ring and called just after the next menstrual period. After inquiry about any excess of bleeding a careful vaginal examination is done to check up for any abnormality and the patient is screened or an x-ray plate taken to ensure that the ring has not dropped out. It is our strong feeling that if this is done, we rarely find a case of unnoticed drop out, because the ring very rarely drops out if it has not dropped out by the first menstrual period after insertion of the ring. The patient is then called at 6 months, 9 months, and 1 year. The ring is removed and reinserted latest by one year and, if there be any disturbance, even at 6 or 9 months. If the patient is keen not to wait for even one month without the ring then we may remove it just before a period and reinsert it just after the period is over. However, usually it is our practice to allow one month to elapse before reinsertion.

As can be seen, though menorrhagia occurs in 9.57% to 13% of the authors' personal cases, it is severe enough to require removal in only 2.9 to 7.4%.

Though the ring may drop out unnoticed in 2.37% to 4.7% of cases and lead to conception, it is possible that even this may be considerably reduced by routine screening or x-ray just after the next period.

Thus the simple device, of a silver ring left inside the uterus, would

prove to be the cheapest and most suitable method of preventing conception in over 90% of women who are not bleeding excessively, who have no evidence of inflammation or tumour in the pelvis. It is not claimed that it is infallible. It is prepared locally and costs about 75 np.

We have very little experience with the plastic devices, but whilst one may grant that a plastic device may be less irritating, one is not able to concede that a device which is allowed to create a direct communication from the external os up to the uterine cavity, is absolutely safe and advisable.

At the outset, a very brief review is given of intrauterine devices and as the proceedings of the conference on Intra-Uterine Contraceptive Devices of April, May 1962, in New-York, have been already published by the Excerpta Medica Foundation the readers can get all details from the same. The brief review is from the same publication.

It appears that a plastic device, which may use a metallic spring ring inside, if left completely in the uterine cavity, might work better. Besides if one could magnetize the metal in the spring and be able to detect it without resort to x-rays that may also avoid repeated x-ray exposures.

However these are matters for further study.

Summary and Conclusions

1. A retrospective study of 319 cases of silver rings used for preventing conception is reported.

2. In the 212 cases of the two authors themselves, though the menorrhagia rate was 9.57% (S.B.A.)

and 13% (D.S.A.); only in 7.4% S.B.A. and 2.9% D.S.A. did the ring need removal because of sufficiently severe bleeding.

When the age groups are studied it is found that only 14% of 20 to 30 years, 21.42% of 30 to 35 years and 29.54% of 35 to 40 years patients had menorrhagia.

In those who develop menorrhagia 42% get it soon after, only one out of 49 bleed in 3 months, 12% bleed by six months, 14% within one year and 28% bleed after one year.

3. In 4.7% and 2.35% the ring was known to have dropped out without knowledge and thus led to concep-

tion. If routine screening or x-ray plates are taken just after the first menstrual period, this may be considerably reduced.

4. The authors have some patients who have used silver rings repeatedly put in for more than 5 years and up to 8 or 10 years and have had a child in between without any serious disturbance.

References

1. Intra-uterine contraceptive Devices.
2. Proceedings of the Conference April 30 — May 1, 1962, New York City Excerpta Medica Foundation.