Acta Obstet Gynecol Scand 56: 509–513, 1977

IMMEDIATE POST-PARTUM INSERTION OF THE ANTIGON

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Abstract. The results of intrauterine contraception using the Antigon inserted into 364 women immediately post partum are submitted. The patients were followed for 24 months, total number of woman months 5225. The follow-up was 96.7% after 3 months, 92.9% after 12 months, and 89.7% after 24 months. Four types of Antigon were used, having surface areas from 785 to 2740 mm². Type I and the wing model (type IV), which have the smallest surface area, proved best suited. The continuation rates for types I and IV after 12 and 24 months were 77.4–59.2 and 76.4–54.5 respectively. These rates are on a level with those for Antigon inserted 6–8 weeks post partum. It is notable that the expulsion rates (12.8 and 12.7 after 12 months) were no higher than those for Antigons inserted 6–8 weeks post partum. The incidence of puerperal complications was not increased, and no perforations occurred.

During and immediately after a pregnancy a woman is often well motivated for contraceptional guidance, but this motivation sometimes falls off soon after delivery, so that she does not keep the appointment for follow-up 6–12 weeks post partum (1, 2). It would be a help to these women to have an intrauterine device (IUD) inserted before they leave hospital after delivery. Owing to a fear that the insertion of an IUD immediately post partum might increase the risk of infection, bleeding, and perforation, it has previously been recommended to wait until 10–12 weeks post partum (3). However, a number of reports have shown that this fear is unfounded (4–10), and in a recent publication it was concluded by Rosenfield et al. (11) that insertion of an IUD soon after delivery is safe and demographically the potentially most effective form of contraception. The IUD most often used has been Lippes' loop D, generally inserted 2–4 days post partum.

In the Department of Obstetrics and Gynecology, section YB, Rigshospitale University of Copenhagen, the Antigon has been inserted in a number of cases since 1967 just after delivery of the placenta. The results are submitted below.

MATERIAL AND METHOD

During the period 1967–1972 patients delivered in the Department and who wished intrauterine contraception were offered insertion of an Antigon immediately post partum. 364 chose insertion at this time, whereas 914 preferred waiting until 6–8 weeks after delivery. Four different types of Antigon were used (Fig. 1). The original model (type I), first described by Osler & Lebech (12), is kite-shaped, made of polyethylene, measures 30×23 mm and has a surface area of 785 mm². In the bag model (type III) the original Antigon is placed in a plastic bag. Its surface area is 2740 mm². The wing model (type IV) is furnished on the inside with plastic wings connected by a cross. Its surface area is 1057 mm². In Antigon-F, studied by Fuchs et al. (13), the frame is filled with a thin plastic membrane with horizontal slits. Its surface area is 1725 mm². The antigon has a built-in magnet, so that it can be checked by a galvanometer.

Immediately after delivery of the placenta, and after it had been ascertained that the uterine cavity was empty, the Antigon was inserted manually up towards the fundus uteri which was at the same time supported from the outside. Methyl ergometrine was administered intravenously (Methergin, Sandoz, Basle), and when the uterus had contracted the hand was cautiously withdrawn, leaving the Antigon in the uterus. During the insertion a light nitrous oxide anaesthesia was occasionally given.

83 women had type I, 133 type III, 83 type IV, and 67 Antigon-F inserted. At discharge, 5–7 days post partum, gynecological examination was carried out, supplemented by a galvanometer test to check whether the Antigon was in situ. Moreover, follow-up examinations were performed at 3, 12, and 24 months. No other form of contraception was used. Tables I and II give the distribution by age and parity. The insertion as well as the follow-up examinations were in the hands of changing members of the obstetrical staff. The follow-up rate was 96.7% after 3 months, 92.9% after 12 months, and 89.7% after 24 months. Data were analysed by the so-called life-table method (14).

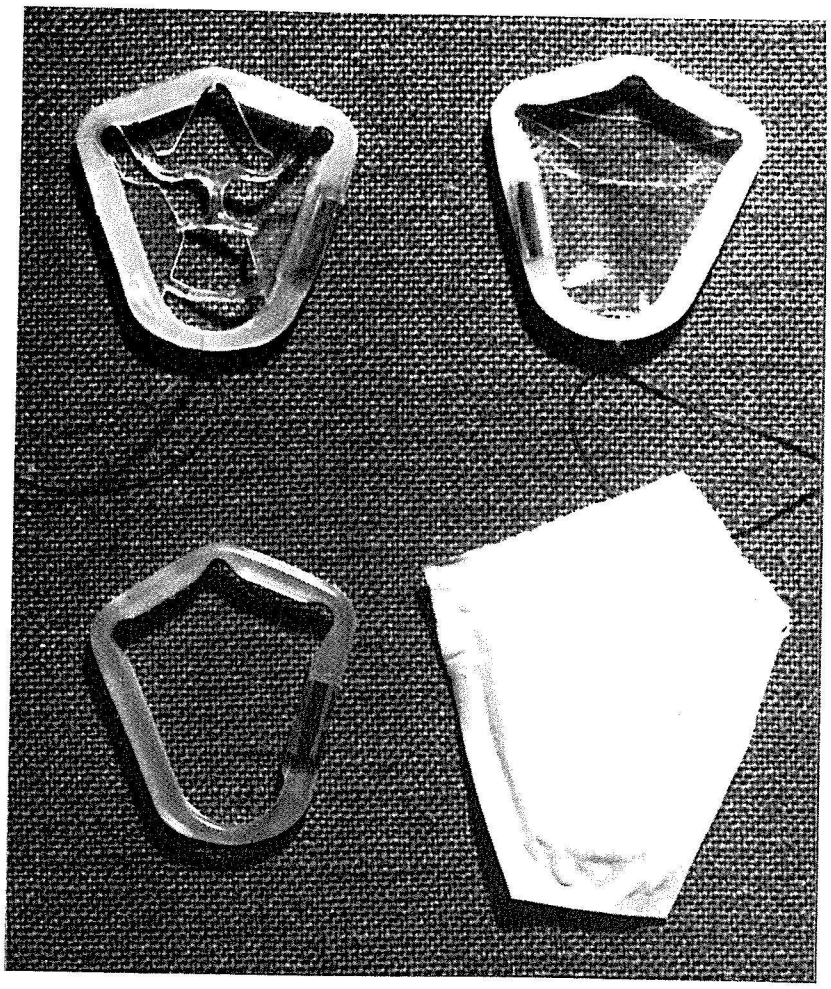

Fig. 1.

RESULTS

Table III presents the cumulative event rates after 12 and 24 months for the 4 types of Antigon. The 364 patients were followed for a total of 5225 months. Re-insertion of the Antigon was rarely done, as is apparent from the continuation rates as compared with the total event rates.

Pregnancies: Five women conceived during the first years. One with type I, none with type III, and two each with type IV and Antigon-F, making pregnancy rates of 1.4, 0, 3.1, and 3.8 respectively. The differences are not significant. Four conceived during the second year: Two with type I, one with type III, none with type IV, and one with Antigon-F, making cumulative pregnancy rates of 5.2, 2.2,

Table I. *Age distribution for 4 types of Antigon*

Years	Type I	Type III	Type IV	Antigon-F
<18	3 (3.7%)	2 (1.5%)	0	0
18–24	27 (33.3%)	67 (50.4%)	30 (36.1%)	13 (19.4%)
25–29	22 (27.2%)	33 (24.8%)	26 (31.3%)	24 (35.8%)
30–34	16 (19.8%)	18 (13.5%)	17 (20.5%)	23 (34.3%)
>35	13 (16.1%)	13 (9.8%)	10 (12.1%)	7 (10.5%)
Total	81	133	83	67

Table II. *Distribution by parity for 4 types of Antigon*

Parae	Type I	Type III	Type IV	Antigon-F
I	14 (17.3%)	44 (33.1%)	30 (36.1%)	19 (28.4%)
II	23 (28.4%)	41 (30.8%)	25 (30.1%)	24 (35.8%)
III	44 (54.3%)	48 (36.1%)	28 (33.7%)	24 (35.8%)
Total	81	133	83	67

3.1, and 6.6 respectively. The differences are not significant.

Expulsions: 73 Antigons were expelled during the first year, including 46 during the first month post partum, 15 during the second month, and 2 during the third month. From the 4th to the 12th month 10 Antigons were expelled. Of the expelled Antigons 48 were of type III, 10 each of types I and IV, and 5 of the Antigon-F type. The corresponding expulsion rates after 12 months were 39.1, 12.8, 12.7, and 7.9. The expulsion rate for type III is significantly higher ($P<0.05$) than for the other types, whereas no significant differences were found between types I, IV, and Antigon-F. Only 5 were expelled during the second year—1 each of types I and IV, 3 of type III, and no Antigon-F. There are no significant differences in the expulsion rates between the types during the second year.

Removals: 34 Antigons were removed because of bleeding/pain during the first year: 4 of type I, 11 of type III, 6 of type IV, and 13 of type Antigon-F, i.e. removal rates of 5.6, 14.0, 9.0, and 22.1. The removal rate for types I and IV is significantly lower ($P<0.05$) than for Antigon-F, but not for type III. During the second year 21 Antigons were removed: 4 of type I, 9 of type III, 5 of type IV, and 3 of type Antigon-F. This makes the cumulative removal rates after 24 months 12.8, 29.9, 17.7, and 28.8. The rate for type I is significantly lower ($P<0.05$) than for type III and Antigon-F, but otherwise there were no significant differences between the types. Only a few removals were done because of "other medical" or "personal" reasons, but 22 because of planned pregnancy, which gives cumulative removal rates at 24 months of 5.7, 15.9, 11.4, and 13.8 for types I, III, IV, and Antigon-F.

Continuation rates at 12 and 24 months were 77.4 and 59.2 for type I, 41.5 and 13.1 for type III, 76.4 and 54.5 for type IV, and 64.3 and 38.1 for Antigon-F. When deducting removal because of planned pregnancy, the acceptability rates after 24 months are 64.9, 29.0, 65.9, and 51.9 respectively.

Nine patients (2.5%) had either low-grade temperature, tenderness of the uterus, and/or foul-smelling discharge during the puerperium. This incidence is no higher than the ordinary incidence of puerperal infection. Five (1.4%) had increased vaginal bleeding. There were no instances of major

Table III. *Net cumulative event rates (±S.E.) per 100 women at 12 and 24 months for the 4 types of Antigon inserted immediately post partum*

	Type I		Type III		Type IV		Antigon-F	
Months of use ...	12	24	12	24	12	24	12	24
Pregnancy	1.4±1.4	5.2±3.0	0	2.2±2.2	3.1±2.2	3.1±2.2	3.8±2.6	6.6±3.8
Expulsion	12.8±3.8	14.5±4.1	39.1±4.1	43.1±4.7	12.7±3.8	14.5±4.1	7.9±3.4	7.9±3.4
Removals								
Bleeding/pain	5.6±2.7	12.8±4.3	14.0±3.9	29.9±5.8	9.0±3.5	17.7±4.9	22.1±5.4	28.8±6.2
Other medical	2.9±2.0	4.8±2.7	4.0±2.3	6.2±3.1	0	0	0	2.9±2.9
Planning pregn.	0	5.7±3.2	1.4±1.4	15.9±5.2	0	11.4±4.4	0	13.8±5.6
Personal reason	0	0	4.0±2.3	4.0±2.3	0	0	1.9±1.9	1.9±1.9
Total event rate	22.7	43.0	62.5	101.3	24.8	46.7	35.7	61.9
Continuation rate	77.4	59.2	41.5	13.1	76.4	54.5	64.3	38.1
Woman months of use	827	1437	876	1404	761	1357	624	1027
Number of first insertions	81		133		83		67	

Table IV. *Net cumulative event rates (±S.E.) per 100 women at 12 and 24 months for the 4 types of Antigon*

	Type I		Type III		Type IV		Antigon-F	
Months of use...	12	24	12	24	12	24	12	24
Pregnancy	3.8±1.3	9.6±2.1	2.5±1.4	2.5±1.4	5.0±1.6	5.7±1.8	3.1±1.2	3.1±1.2
Expulsion	10.3±1.9	11.4±2.1	24.8±3.7	27.6±3.9	11.3±2.3	11.9±2.4	8.9±2.0	9.6±2.1
Removals								
Bleeding/pain	8.3±1.8	12.2±2.2	11.1±2.8	19.8±3.9	15.7±2.6	24.9±3.3	14.4±2.4	26.1±3.3
Other medical	1.7±0.9	2.3±1.0	1.7±1.2	2.9±1.7	0.6±0.6	0.6±0.6	1.0±0.7	2.6±1.3
Planning pregn.	3.0±1.1	7.7±1.9	4.9±2.0	17.5±3.9	0.6±0.6	7.9±2.3	3.6±1.3	12.2±2.7
Personal reason	1.7±0.9	2.3±1.0	0.8±0.8	2.1±1.5	1.7±1.0	2.4±1.2	1.0±0.7	4.1±1.7
Total event rate	28.8	45.5	45.8	72.4	34.9	53.4	32.0	57.7
Continuation rate	73.9	59.6	59.7	38.8	66.0	47.6	68.3	42.5
Woman months of use	2 773	4 712	1 433	2 359	2 111	3 669	2323	3 865
Number of first insertions	278		161		227		248	

pelvic infection or bleeding disturbances, and no perforations occurred.

DISCUSSION

In accordance with a number of other investigations (4–10), the present study showed that insertion of an IUD immediately or soon post partum does not involve an increased risk of puerperal infection. We found increased bleeding in 5 patients (1.4%) during the puerperium. Previous authors have reported between 2% and 24% (11). Such a wide variation is presumably due to a difficulty in assessing the extent of the bleeding. Hingorani et al. (15) found no difference in hemoglobin level between two groups of women, with and without insertion of an IUD post partum. Davis (3) has recommended waiting until 10–12 weeks after delivery, at which time the risk of perforation is said to be least. His conclusion is based upon the data of Ratnam et al. (16). Their publication shows, however, that the risk of perforation is only 0.24% at insertion within 48 hours post partum against 1.8% 4–8 weeks later and 0.42% more than 8 weeks later. Moreover, the majority of the perforations were due to an incorrect technique of insertion (16). We did not observe perforations among the 364 patients who had Antigons inserted immediately after delivery of the placenta, and Banharnsupawat et al. (9) found no perforations among 7 172 women who had Lippes' loop inserted, in most cases 2–4 days post partum. Thus, there is nothing to indicate that the risk of perforation is increased by inserting an IUD immediately or soon post partum.

Of the four types of Antigon, I and IV had the highest continuation rates at 12 as well as at 24 months, 77.4–59.2 and 76.4–54.5 against 41.5–13.1 for type III and 64.3–38.1 for Antigon-F. The bag model (type III), which has the largest surface area, has a significantly higher ($P<0.05$) expulsion rate (39.1 after 12 and 43.1 after 24 months) than the other types and a very high removal rate after 24 months (29.9), which renders this model unsuited as an IUD immediately post partum. The removal rate for Antigon-F because of bleeding/pain at 12 and 24 months was 22.1 and 28.8 respectively, or significantly higher ($P<0.05$) than for type I and significantly higher ($P<0.05$) than for type IV after 12, but not after 24 months. The cause of the differences in removal rates may be partly a difference in surface area (Antigon-F has the largest surface area) and partly the fact that Antigon-F was used during a later period than types I and IV. Doctor and patient attitude may have changed, and this may have greatly influenced the removal rates (17). Despite marked differences in surface area (785 to 2740 mm²), there are no significant differences in the pregnancy rates between the four types of Antigon. This may be due partly to the small size of the series and partly to the fact that 3–6 months elapse before full fertility has been re-established after delivery (18). Therefore, any difference in the pregnancy rate will not be able to manifest itself, at least during the first year.

The continuation rate for types I and IV Antigons is on a level with that for Lippes' loop D inserted 2–4 days post partum (9, 11), but the expulsion rate (19.0 and 23.4 at 12 months) as well as the removal rate (21.1 and 23.0) are higher for Lippes' loop than for the Antigon. With Lippes' loop, however, the re-insertion percentage has been very high (85 and

76), which greatly reduces discontinuation because of expulsion. After insertion of Birnberg's bow (7) and the "safety filament bow" (10) immediately post partum, the expulsion rate has been at the same low level as in our study, but the expulsion rate for Lippes' loop D is higher on insertion immediately post partum than 2–4 days later (11). The difference in the expulsion rates may be due partly to differences in the technique of insertion and partly to the Antigon, bow, and safety filament bow adapting better to a uterus during sub-involution.

The results of inserting an Antigon immediately post partum are on a level with those of insertion 6–8 weeks later. This is apparent from Table IV which shows event rates at 12 and 24 months for the four types of Antigon inserted during the same period (1967–1972). It is noteworthy that except for type III the expulsion rates are not higher for the Antigons inserted immediately post partum than for those inserted 6–8 weeks later. There are also no significant differences in pregnancy or removal rates. The continuation rates were a little higher for types I and IV and a little lower for Antigon-F on insertion immediately post partum than 6–8 weeks later. The differences are not significant.

As insertion of an Antigon immediately post partum does not involve an increased risk of puerperal complications or perforations, and as the results are fully up to those on insertion 6–8 weeks later, insertion immediately post partum is preferable in general, since this is the time at which the patient is most interested in contraception. In the present study there was no difference in the results between types I and IV Antigon, but type IV is preferable, as previous investigations (19, 20) have revealed far higher pregnancy rates for type I.

ACKNOWLEDGEMENT

The data analysis and statistical comparisons were performed by the Statistical Department, University Hospital, Rigshospitalet, Copenhagen, Denmark. Aided by grant 512–5633 from the Danish Medical Research Council.

REFERENCES

1. Goldsmith, A., Goldberg, R., Eyzaguirre, H., Lucera S. & Lizana, L.: IUD insertion in the immediate postabortal period. Excerpta Med. Int. Congress Series *206:* 59, 1972.
2. Boria, C. M. & Gordon, M.: Complications from intrauterine devices: Postpartum and postabortal insertions. J Reprod Med *14:* 251, 1975.
3. Davis, H. J.: Intrauterine contraceptive devices: Present status and future prospects. Am Obstet Gynecol *114:* 134, 1972.
4. Phatak, L. V. & Viswanath, S.: The use of intrauterine contraceptive devices during the immediate postpartum period. Am J Obstet Gynecol *96:* 587, 1966.
5. Burnhill, S. M. & Birnberg, C. H.: Contraception with an intrauterine bow inserted immediately post partum. Obstet Gynecol *28:* 329, 1966.
6. London, D. G. & Anderson, V. G.: Immediate postpartum insertion of an intrauterine contraceptive device. Obstet Gynecol *30:* 851, 1967.
7. Zerzavy, M. F.: Use of intrauterine contraceptive devices in the postpartum period. Am J Public Health *57:* 28, 1967.
8. Ylöstalo, P., Nummi, S. & Rhen, K.: Experience with the use of Lippes loop inserted early in the puerperium for contraception. Ann Chir Gynaecol Fenniae *58:* 70, 1969.
9. Banharnsupawat, L. & Rosenfield, G. A.: Immediate postpartum IUD insertion. Obstet Gynecol *38:* 276, 1971.
10. Weinberg, G. & Bailin, C.: Postpartum insertion of the Safety Filament Bow. Obstet Gynecol *41:* 925, 1973.
11. Rosenfield, A. G. & Castadot, G. R.: Early postpartum and immediate postabortum IUD insertion. Am J Obstet Gynecol *118:* 1104, 1974.
12. Osler, M. & Lebech, P. E.: A new form of intrauterine contraceptive device. Am J Obstet Gynecol *102:* 1173, 1968.
13. Fuchs, F. & Risk, A.: The Antigon-F, an improved intrauterine contraceptive device. Contraception *5:* 119, 1972.
14. Tietze, C.: Intra-uterine contraception: Recommended procedures for data analysis. Studies in Family Planning *18:* 1, 1967.
15. Hingorani, V. & Bai, U. G. R.: Hemoglobin levels in women with postpartum IUD insertion. J Reprod Fertil *27:* 119, 1971.
16. Ratnam, S. S. & Tow, H. S.: Translocation of the loop in postpartum intra-uterine contraception in Singapore. Exc Med Amsterdam *134:* 157, 1970.
17. Bernhard, R. R.: IUD performance patterns. A 1970 world view. Int J Gynaecol Obstet *8:* 926, 1970.
18. Vorherr, H.: Contraception after abortion and post partum. Am J Obstet Gynecol *117:* 1002, 1973.
19. Snowden, R.: Social factors in the use and effectiveness of the IUD. Ph.D. Thesis, Exeter University, 1971.
20. Wiese, J.: A study of four Antigon models and factors in the use and effectiveness of the IUD. In press.

Submitted for publication Sept. 30, 1976

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