Postpartum Insertion of Modified Intrauterine Devices

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Abstract: *This study has been conducted to investigate and compare three postpartum IUDs insertion within 5 days after delivery, viz:1) Mod.LLD with LLD, 2) Mod. T Cu 380 A with T Cu 380 A and 3) Mod.LLD with Mod. T Cu 380 A. It showed that the expulsion rate of Mod.LLD was significantly lower than LLD; no statistical difference in the expulsion rate between Mod. T Cu 380 A and T Cu 380 A, and the expulsion rate of Mod.LLD was significantly higher than Mod. T Cu 380 A. Medical complications of either modified IUD were not increased. No pregnancy or perforation occurred in any of the group 12-months of use for any of these IUDs.(Thai J Obstet Gynaecol 1989;1:63-70)*

Key words: postpartum insertion, modified intrauterine devices

Postpartum insertion of intrauterine devices (IUDs) is easy insertion and convenient for mothers who have normal delivery in hospital. Expulsion rates are expected to be high, but the IUDs insertions are safe from infection and perforation.[1-3]

In 1977, Family Health International modified the standard Lippes Loop D and Copper T 220 C for postpartum use. The simplest design was the addition of chromic catgut sutured material to the upper arms of the two standard devices. The new devices were named the Delta Loop and Delta T. It was hoped that the free ends of the sutures (each 0.5 cm long) projected into the endometrium and secured the position of IUD. The suture projections biodegrate within six weeks of insertion, as the postpartum uterus is involuted. Its expulsion rate is then reduced to a minimal level.[4-6]

The purposes of this trial were to find out the expulsion rate of new modified Lippes Loop D and modified T Cu 380 A and to study complications of both modified IUDs.

Materials

Two modified IUDs were used in this study. The first was a Modified Lippes Loop D (Mod. LLD) (Fig.1) with chromic catgut materials No. 2 sutured on the upper three curves of the standard

Lippes Loop D (LLD). Each free end of the suture is 0.5 cm long, the length between each point to suture being more distant than its Delta Loop and at different levels. It is expected that Mod.LLD is better held in proper position of the uterine cavity than Delta Loop. The second was a Modified T Cu 380 A with chromic catgut materials No. 2 added to the upper arm of the standard T Cu 380 A. The T Cu 380 A can be used up to 5 years.

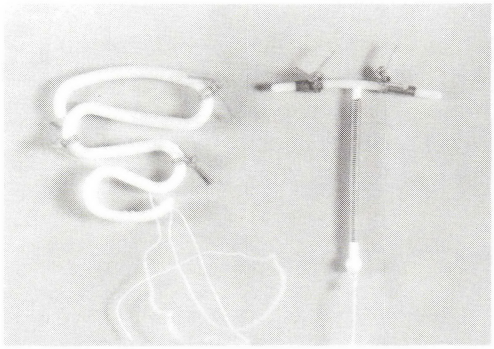

Fig 1. Modified Lippes Loop D and T Cu 380 A

Patients and Methods

The postpartum patients had no contraindication for this method of contraception. All had normal deliveries and postpartum status in the Rajavithi Hospital. They could be reached easily during 12 months of follow-up.

The first study comparing Mod. LLD and LLD had 110 postpartum women assigned to use each device. The second study comparing Mod. T Cu 380 A and T Cu 380 A had 200 postpartum women assigned use each device.

Time of insertion

In both studies, IUDs were inserted 6 hours to 5 days after delivery and all acceptors were observed 24-48 hours before discharge.

Insertion Technique

In the first study, Mod.LLD and LLD were grasped with Randall Kidney Stone forceps and placed at the uterine fundus by replacement technique (Fig 2).

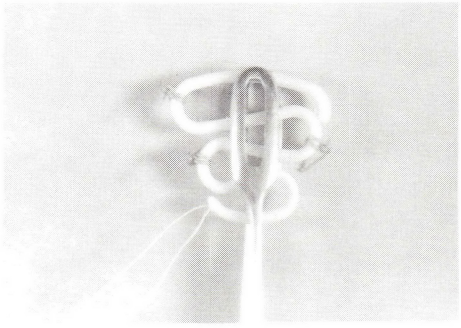

Fig 2. Modified LLD, grasped with forceps

In the second study, Mod. T Cu 380 A and T Cu 380 A were put in a plastic tube and inserted at the uterine fundus by withdrawal technique (Fig.3).

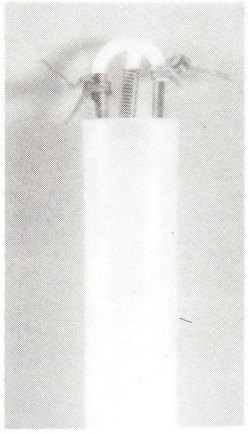

Fig 3. T Cu 380 A, put in the plastic tube

Follow-up

All acceptors were examined one month after delivery. Subsequent follow-up visits were scheduled at 3,6 and 12 months after insertion. The acceptors who did not come for routine check-up were visited at home.

Results

Mod. LLD vs LLD

Women in both groups were not significantly different with respect of age and parity ($p > .05$) (Table 1,2)

Table 1 Age distribution

Age	Mod. LLD		LLD		Mod. T Cu 380 A		T Cu 380 A	
	No	%	No	%	No	%	No	%
15 - 19	15	13.6	23	20.9	37	18.5	36	18.0
20 - 24	45	40.9	47	42.7	91	45.5	105	52.5
25 - 29	24	21.8	19	17.3	48	24.0	47	23.5
30 - 34	18	16.4	16	14.6	19	9.5	9	4.5
35 - 39	8	7.3	5	4.5	5	2.5	3	1.5
Total	110	100.0	110	100.0	200	100.0	200	100.0
Mean ± SD	25.1 ± 5.6		24.0 ± 5.5		23.0 ± 4.2		23.6 ± 4.8	

Table 2 Parity

Parity	Mod. LLD		LLD		Mod. T Cu 380 A		T Cu 380 A	
	No	%	No	%	No	%	No	%
1	36	32.7	47	42.7	111	55.5	109	54.5
2	41	37.3	42	38.2	61	30.5	65	32.5
3	24	21.8	10	9.1	21	10.5	20	10.0
4	7	6.4	7	6.4	5	2.5	5	2.5
5	2	1.8	4	3.6	2	1.0	1	0.5
Total	110	100.0	110	100.0	200	100.0	200	100.0
Mean ± SD	2.1 ± 1.0		1.9 ± 1.0		1.6 ± 0.8		1.6 ± 0.8	

At the Cumulative six month, Gross Life Table, the expulsion rate were 15.6 for Mod. LLD and 21.1 for LLD, the difference was significant for comparison ($P < 0.05$). After insertion during 7 - 12 months the expulsion rates of both groups were not different (Table 3).

There were relationships of the expulsion rates during 8 weeks after insertion and the time of insertion (Table 4). The expulsion rates of both IUDs insertion within 24 hours of delivery were higher than those after 24 hours of delivery.The expulsion rates of both groups were not related to parity, as shown in Table 5.

Table 3 Gross Cumulative Life Table Rates per 100 women : Expulsion

Month	Mod. LLD	LLD	Mod. T Cu 380 A	T Cu 380 A
1	11.4 ± 3.1	8.5 ± 2.7	4.1 ± 1.4	4.7 ± 1.5
2	12.4 ± 3.2	15.6 ± 3.5	7.2 ± 1.9	6.3 ± 1.8
3	13.5 ± 3.4	17.7 ± 3.7	8.3 ± 2.0	7.4 ± 1.9
6	15.6 ± 3.5*	21.1 ± 3.9*	8.8 ± 2.0	8.5 ± 2.0
12	17.9 ± 3.7	23.5 ± 4.2	9.4 ± 2.1	9.1 ± 2.1

*P < .05

Table 4 Relationship of expulsion rate (percentage) during 8 weeks after insertion with time of insertion

Time of insertion (hrs)	Mod. LLD n = 110	LLD n = 110	Mod. T Cu 380 A n = 200	T Cu 380 A n = 200
< 24	13.9	23.9	8.9	8.8
25 - 48	10.0	11.8	7.5	3.1
> 49	12.5	3.3	3.7	5.4

Table 5 Relationship of expulsion rate (percentage) and parity

Parity	Mod.LLD n = 110	LLD n = 110	Mod. T Cu 380 A n = 200	T Cu 380 A n = 200
1	16.7	23.4	9.5	7.5
2	17.1	19.0	9.4	10.1
≥ 3	18.2	23.8	7.3	7.9

Bleeding and/or pain at two months after insertion were encountered more frequent in the Mod.LLD than in the LLD groups (Table 6). However, at the six and twelve-months the Gross Cumulative Life Table bleeding and/or pain rates among both groups were not significant different.

Gross Cumulative Life Table of PID rates are shown in Table 6. At one month, PID rates were 1.0 per 100 women, equally for both IUDs, and no significant difference encountered between either device at six and twelve months.

Termination event rate of Mod.LLD was lower than LLD at 12 months (Table 7).

Table 6 Gross Cumulative Life Table Rates per 100 women : Medical complication

Month	Mod.LLD	LLD	Mod. T Cu 380 A	T Cu 380 A
Bleeding and/or pain				
1	2.0	0.0	0.5	0.5
2	4.3	2.3	2.7	2.2
3	4.3	2.3	3.3	4.5
6	6.6	6.1	4.4	5.1
12	10.4	10.5	6.7	8.4
Infection or PID				
1	1.0	1.0	0.5	1.6
2	1.0	1.0	1.1	1.6
3	1.0	1.0	1.1	1.6
6	2.2	2.4	1.1	1.6
12	2.2	2.4	2.3	1.6

Table 7 Net Cumulative Life Table Rates per 100 women at 12 months of use

Event	Mod.LLD	LLD	Mod. T Cu 380 A	T Cu 380 A
Pregnancy	0.0	0.0	0.0	0.0
Expulsion	18.0	22.7	9.2	8.7
Removal :				
Medical	7.5	9.5	4.6	4.1
Planning pregnancy	0.0	1.9	0.0	0.5
Personal	6.6	8.5	4.6	6.2
Termination	32.1	42.6	18.4	19.5
Continuation	67.9	57.4	81.6	80.5
Women - months	939.5	878.5	2023.5	1919.5

Mod. T Cu 380 A vs T Cu 380 A

Age and parity of women inserted with Mod. T Cu 380 A and T Cu 380 A were similar in both groups (Tables 1 and 2).

At six months, the expulsion rates of Mod.T Cu 380 A and T Cu 380 A were 8.8 and 8.5 per 100 women respectively, and there was no significant difference in the expulsion rates between two devices. After insertion during 7 - 12 months, the expulsion rates of both IUDs showed no difference(Table 3). A relationship was noted in the expulsion rates at 8 weeks after insertion to the time immediately after insertion (Table 4). The expulsion of both IUDs insertions within 24 hours of delivery were higher than after 24 hours of delivery. The expulsion rates of both IUDs insertion were not related to parity (Table 5).

Bleeding and/or pain rates from Mod. T Cu 380 A and T Cu 380 A at two months after insertion were equal (Table 6). At six and twelve months, bleeding and/or pain rates of both IUDs did not show significant difference in comparison. At the one month, PID rates of Mod.T Cu 380 A and T Cu 380 A were 0.5 and 1.6 per 100 women respectively (Table 6), and at six and twelve months, PID rates of both groups did not show significant difference in comparison.

Termination event rates of Mod. T Cu 380 A and T Cu 380 A were not different (Table 7).

Mod. LLD vs Mod. T Cu 380 A

At twelve months, the expulsion rate of Mod. LLD was significantly higher than Mod. T Cu 380 A ($P < .05$) (Table 3). Bleeding and/or pain rate of Mod. LLD was higher than Mod. T Cu 380 A, but it was not statistically significant (Table 6), and there were no significant difference in PID rates of either IUD.

Termination event rate of Mod. LLD was higher than Mod. T Cu 380 A at twelve months (Table 7).

Neither pregnancy nor perforation of the uterus occurred in any of the 4 groups during the 12-month period.

Dicussion

At six months, the various expulsion rates of Deltal Loop inserted within ten minutes after placental delivery ranged from 3.1 to 27.2 per 100 women [6-10]. In this study, the expulsion rate of Mod. LLD, inserted after delivery 6 hours to 5 days, was 15.6 per 100 women, and the expulsion rate in the previous study of Delta Loop with the same technique and time of insertion was 19.7 per 100. [11]

The expulsion rate of Mod. LLD was in the low rate of expulsions reported and the expulsion rate of Mod. LLD is significantly lower than LLD.

At six months, the various expulsion rates of Delta T Cu 220 C inserted within ten minutes after placental delivery ranged from 8.0 to 14.2 per 100 women. In this study, the expulsion rate of Mod. T Cu 380 A, inserted 6 hours to 5 days after delivery was 8.8, which is in the low range of other reports, and there was no significant difference between the Mod. T Cu 380 A and T Cu

380 A expulsion rates.

The expulsion rate of Mod. LLD was significantly higher than Mod. T Cu 380 A. This might be because they are different types of IUDs.

In developing countries, some patients do not attend antenatal clinics. Most patients would be highly motivated to accept IUD insertion after completing delivery and being admitted to a postpartum ward. Thus, the optimal time of postpartum IUD insertion would be within 2 - 3 days after delivery. During this time it is easy to perform insertion and convenient.

Factors which caused high expulsion rate of postpartum IUD insertion were related to the insertor's experience, the method of insertion, the type of devices and the time of insertion. Other factors of modified IUDs which may be important in causing expulsion are the film of blood clot covering the endometrial cavity which may be a barrier of projection for the free end of suture into the endometrium, the length between each point of suture being too close, and each point of suture being in the same level such as Mod. T Cu 380 A. The latters might cause the IUD not to be held firmly in the proper position in the uterine cavity.

The complication rates (bleeding and/or pain and PID) were not higher when compared with other reports. [7-10]

This study has shown that immediate postpartum IUD insertion is a perfectly safe procedure, and it may be useful for future research efforts for new types of IUDs and modified IUDs.

In summary, a comparison for each group of postpartum IUDs insertion within 5 days after delivery, the expulsion rate of Mod. LLD was significanlty lower than LLD, Mod. T Cu 380 A and T Cu 380 A showed no significant difference, and Mod. LLD was significantly higher than Mod. T Cu 380 A. The medical complications with either modified IUD were not increased. Neither pregnancy nor perforation of uterus occurred during 12 months of use.

Acknowledgments

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