

# ORAL CONTRACEPTIVES POSTDATISM AS A COMPLICATION

MICHAEL TEO YU KENG  
BIBIANA TEO SIEW ENG

## SUMMARY

*Women who conceived within 4 months of cessation of oral contraceptives have five times more postdatism (term plus 14 days or more) compared to the non pill users. Also postdatism is severe if they conceive within 4 months of cessation of oral contraceptives. In pill users, routine induction at term plus 14 days would result in unacceptably high induction rate, iatrogenic prematurity and possibly high caesarean rates. This is the conclusion of a prospective study of 186 pill users of which 37 were postdate out of 1496 pregnancies.*

## INTRODUCTION

It is the authors' experience that patients who conceived after having ceased taking oral contraceptive pills tend to go postdate. By postdatism, we mean the date of spontaneous labour and delivery is 14 days or more than the expected date of delivery calculated from the last menstrual period by adding 9 months and one week (Naegele's Rule). The aim of this prospective study is to find out if there is any truth in this experience and if there is, to propose some explanations and important clinical sequelae to this phenomenon. Some projections are done to see what would have happened at routine inductions for all overdue cases at term plus 14 days.

## MATERIALS AND METHODS

A prospective study was designed where all women attending the antenatal service in the Miri Hospital during a 7 month period had their oral contraceptive history taken. The duration and date of cessation of oral contraceptives use were taken together with other relevant routine antenatal data including date of first fetal movements. The women were seen monthly from the first booking till 28 weeks, then fortnightly till 36 weeks of gestation and thereon weekly till delivery. The women were asked if they had taken oral contraceptives between the last delivery and the present conception. If she was a primigravida, a pill history anytime before conception was taken. No pill history was recorded before the delivery of the last child in the multipara. In other words, attention was paid to the antecedent period before the conception of the present pregnancy. All hypertensives, preeclampsics and diabetics and those 'not sure of date of last menstrual periods' were excluded from the study. A twin delivery is counted as one delivery. No cases in the study were induced before term plus 14 days. If a case was induced before T + 14 days for some reason e.g. amniotic infection, this case is excluded from the study. All cases that cast doubt on the accuracy of the last menstrual period are excluded. A total of 1498 such case records were collected and followed-up.

## RESULTS

Total deliveries from 1, May 1981 to 30, November 1981 is 1496. In the pill users who went postdate, there was no perinatal mortality and the babies were not postmature on examination after birth. All the 37 babies were normal at discharge.

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Michael Teo Yu Keng, MBBS (Mal) MMED (S'pore)  
MRCOG (UK)

Miri General Hospital, Sarawak.

Bibiana Teo Siew Eng, MBBS (Mal)

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TABLE I  
NUMBER OF POSTDATISM IN PILL USERS  
COMPARED TO NON PILL USERS

	Postdate	Not Postdate	Total
Pill users	37	149	186
Non pill users	65	1245	1310
Total	102	1394	1496

Out of the 186 pill users, there were 37 postdate (term + 14 days) cases giving a rate of 19.9 percent i.e. 1 in 5. Out of the 1310 non pill users, there were 65 postdate cases giving a rate of 5.0 percent. In other words if induction were done routinely for both the pill users and non pill users at T + 14 days there would be 19.9 percent induction rate in the pill users and only 5 percent in the non pill users. The combined postdate (T + 14 days) cases of all pill and non pill users is 102 out of a total of 1496 cases, giving a rate of 6.8 percent. This is somewhat slightly lower than most other studies shown as quoted in the latter part of this paper. The number of pill users before this pregnancy was 186 out of 1496 deliveries i.e. 12.43 percent.

By induced we mean artificial rupture of membranes with or without pitocin. In the majority of cases, we use both. A case is not 'induced' if a sweeping of the membranes only is done. The criteria to induce any patient in both groups were based on a cervix that is soft and stretchable, Os 1½ cm or more or liquor is clinically felt to be much diminished. We also take into consideration the expected dates of delivery calculated from the first fetal movement date and from fundal heights of 16 - 22 weeks using the gestational calculator and obtaining the mean of 2 readings. There was no perinatal mortality in the 37 pill users. No attention is paid to weight loss.

From Table II, forty-three percent (16 out of 37) of postdatism in pill users are T + 28 or more whereas 27.69 percent (18 out of 65) in the non pill users are T + 28 or more.

In the pill users, there were 21.6 percent (8 out of 37) going beyond T + 35 days while in the non pill users there were 10.7 percent (7 out of 65) going beyond T + 35 days.

We noted that 5 percent of all non pill users went beyond term plus 14 days and five percent of all pill users would go beyond term plus 28 days. Thus if we routinely induce non pill users at term + 14

TABLE II  
SEVERITY AND NUMBER OF POSTDATISM  
DELIVERIES IN PILL AND NON PILL USERS

Days beyond term (T)	Pill Users (186)		Non Pill Users (1310)	
	Postdate n = 37		Postdate n = 65	
	Induced	Not Induced	Induced	Not Induced
T + 14 -	6	10	5	27
T + 21 -	3	2	3	12
T + 28 -	1	7	4	7
T + 35 -		4	1	4
T + 42 -		2		1
T + 49 -		1		1
T + 56 -				
T + 63 -				
T + 70 -		1		
	10	27	13	52

days, we should induce pill users at term + 28 days in order to give both groups a 5 percent postdate rate.

Also from Table II, if we routinely induce all pill users at term + 14 days, we would have 1 baby born at 30 weeks (1/37 = 2.70 percent) 1 at 33 weeks (2.70 percent) 2 at 34 weeks ( 5.40 percent) 4 at 35 weeks (10.8 percent) 7 at 36 weeks (18.9 percent) 2 at 37 weeks (5.40 percent), and 10 at 38 weeks (27 percent).

Similarly induction at T + 14 days in the non pill users would result in 1 baby born at 33 weeks (1/65 = 1.5 percent) 1 at 34 weeks (1.5 percent) 4 at 35 weeks (6.1 percent) 7 at 36 weeks (10.7 percent), 12 at 37 weeks (18.4 percent) and 27 at 38 weeks (41.5 percent).

Thus the pill users would not only suffer from higher induction rate but many of them would have unfavourable cervixes and a higher percentage would end up as failed induction requiring caesarean section. The babies would on the whole be more premature and a higher percentage would possibly not survive due to prematurity.

As seen in Table III the percentage of postdatism (term plus 14 days) is highest within the first four months, in diminishing order, of cessation of oral contraceptives. e.g. 28.5 percent postdate rate for pill users who conceived within the first month, 27 percent for those who conceived between 1 - 2 months and 25 percent between 2 - 3 months and 16 percent between 3 - 4 months. There were a total

TABLE III  
INTERVAL BETWEEN CESSATION OF ORAL  
CONTRACEPTIVES AND CONCEPTION, AND  
PERCENTAGE OF POSTDATISM

Interval between cessation of oral contraceptives and conception (Months)	Pill Users n = 186			
	No. of cases Postdate (294 days) n = 37	No. of cases not postdate n = 149	Total 186	Percentage of Postdatism
	(a)	(b)	(c)	a/c
1	12	30	42	28.57
2	8	21	29	27
3	4	12	16	25
4	3	15	18	16
5	0	6	6	0
6	1	13	14	7.14
7	1	4	5	20
8	2	2	4	50
9	0	4	4	0
10	1	2	3	33.3
11	0	0	0	0
12	1	19	20	5
13	1	2	3	33
14	0	0	0	0
15	0	0	0	0
above 16	3	19	22	15.8
Total	37	149	186	19.9

of 105 pill users who conceived within the first 4 months of oral contraceptives cessation; out of this 27 went postdate giving a rate of 25.7 percent. There were 81 pill users who conceived after the first 4 months of cessation of oral contraceptives. Out of this, 10 were postdate, giving a rate of 12.3 percent. This is still higher when compared to postdate rate for non pill users (5 percent).

As seen from Table IV, the mean postdatism in pill users conceiving within the first 4 months of cessation of oral contraceptives is roughly 29 days, 27 days, 25 days and 23 days respectively. Eighty-nine percent (i.e. 8 out of 9 cases) of postdatism in pill users conceiving after 4 months of cessation of oral contraceptives is within term plus 14 to term + 21 days. Thus the shorter of the cessation - conception interval, the more severe the postdatism.

TABLE IV  
RELATIONSHIP BETWEEN SEVERITY OF  
POSTDATISM IN PILL USERS AND CESSATION —  
CONCEPTION INTERVAL

Interval between cessation of oral contraceptives and conception in months	Postdatism (294 days or more) in days beyond Expected Date of Delivery (EDD)	Total	Mean postdatism (days)
1	30, 38, 30, 14, 22, 21, 34, 57, 37, 35, 16, 14	12	29
2	17, 24, 19, 39, 21, 39, 34, 19	8	26.7
3	32, 26, 20, 22	4	25
4	36, 18, 14	3	22.6
5		0	
6	14	1	14
7	14	1	14
8	14, 15	2	14.5
9		0	
10	43	1	43
11		0	
12		0	
13	14	1	14
14		0	
15		0	
above 16	19, 17, 21	3	19

## DISCUSSION

Similar results were obtained by Ratten.<sup>1</sup> He studied 151 women prospectively who had used an oral contraceptive up until the time of the last menstrual period before conception. Prolonged pregnancy (i.e. more than 42 weeks gestation) occurred in 37.4 percent and in 9 percent of these, gestations exceeded 44 weeks. The mean gestation was statistically different between these cases and controls ( $P < .001$ ). The results are consistent with the deduction that ovulation is delayed an average of 2 weeks after cessation of oral contraceptive therapy. He concluded that labour should not be induced for the apparently prolonged pregnancy in such patients.

A similar result was also obtained by Klinger *et al.*<sup>2</sup> The duration of pregnancy was determined for 308 women who became pregnant during the 1st, 2nd or 3rd months after discontinuing oral contraceptive (Ovosiston, Non-Ovlon) use. The data was compared with those from a control group

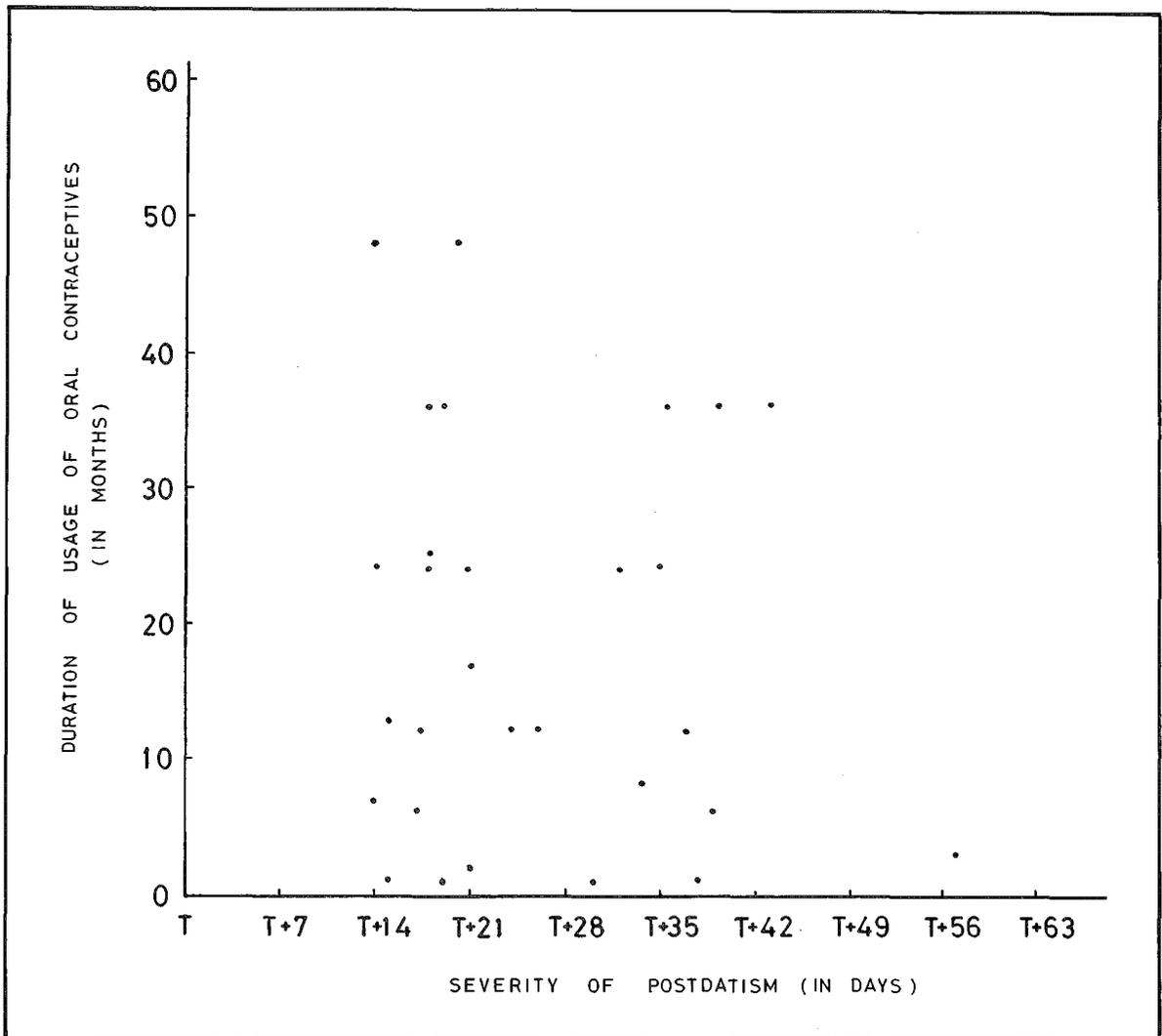


Fig. 1 Relationship between duration of consumption of oral contraceptives (Y axis) and Severity of Postdatism (X axis). From Fig. 1, there is no correlation between duration of consumption of oral contraceptives and severity of postdatism. Some patients are severely postdate in spite of a short duration of pill consumption.

of 43 women who had not used oral contraceptives prior to conception. An increase in the duration of pregnancy of each 3-5 days was observed among these who became pregnant during the first 2 months after discontinuing contraceptive use. The pregnancy duration for those who became pregnant in the 3rd month after discontinuing contraceptive use was similar to that of the control group.

Harlap *et al*<sup>3</sup> found there was a slight decrease of normal deliveries in former OC users, due to an increase in induction of labour. Whether this is due to increased rate of postdatism in former OC users is not stated.

Doering *et al*<sup>4</sup> in a study of 1000 women who became pregnant after discontinuing oral contraceptives use compared to 500 who had not used OC found birth more often had to be induced for women in the OC group and vacuum extraction was significantly more frequent in the OC group. Whether the increase in induction in the OC group is a result of increased rate of postdatism is not stated.

Much anxiety on the part of the obstetrician and expectant mother occurs when a woman goes postdate (294 days). From this study pill users who conceive within 4 months form a large number of

the postdate group. No harm or perinatal mortality occurred in the 37 postdate pill users who went past 14 days beyond term, although only 10 of this group were induced. No caesarian section due to failed induction occurred. The remaining 27 were allowed to have spontaneous deliveries without induction. No doubt the ripeness of the cervix, the expected date of delivery calculated from the first fetal movement (by adding 5 months to first fetal movement date) and the calculated date of delivery using the fundal heights at 16 - 22 weeks (using the gestational calculator) are useful data we use to select which patient should go for induction. We find this information (quickenning date and early fundal heights) extremely useful particularly in postdate group in pill users as invariably the expected date of delivery by Naegele's rule is not so accurate in determining the spontaneous delivery dates. If the expected dates of delivery by fundal height and that by first fetal movement tally closely with that by last menstrual period (Naegele's rule) then we would induce. This we needed to do in only 10 out of 37 cases. Also the amount of liquor present and clinical estimation of fetal weight also played a part. We do not pay any attention to weight loss as we find it too variable. We have no access to ultrasound or Lecithin/sphingomyelin ratio. It is remembered that while the L/S ratio is to be positive (i.e. > 2:1) if the fetus is 35 weeks or more, it does not indicate if it is 36, 40 or 44 weeks by gestation. Obviously induction at 36 weeks is less desirable than at 40 weeks as the fetal survival rate is less at 36 weeks and cervix less favourable. Similarly the biparietal diameter by ultrasound would not give an accurate definitive maturity as the error during second trimester estimation is roughly plus or minus 2 weeks. A comparison by Duff<sup>5</sup> of the accuracy of ultrasonic and last-menstrual period based estimations of the delivery date revealed that there is no significant increase in accuracy for ultrasonic estimations when the biparietal diameter is less than 9.0 cm but when the diameter is greater than 9.0 cm the accuracy of delivery date estimation is significantly less than that based on the last menstrual period. However he stated that in pregnancies complicated by uncertain dates, recent hormonal contraception, bleeding in early pregnancy or an irregular or prolonged menstrual cycle, ultrasound is significantly more accurate in predicting the delivery date.

The other 27 cases were allowed to proceed much

beyond term + 14 days as the dates by first fetal movement and fundal heights showed the delivery date to be much beyond term + 14 days. No perinatal mortality or caesarian section resulted from this policy in the 27 cases.

Vessey *et al*<sup>6</sup> showed a delay in fertility in pill users. That is pill users after cessation of oral contraceptives take much longer to conceive — as long as 48 months in the nulliparous. This is explained by the continued suppression of ovulation by oral contraceptives for a number of months. Failure of menstruation to occur due to anovulation after the pill is stopped is called post pill amenorrhoea which is preferably called post pill anovulation (PPA) since menses occur as scanty or irregular losses without ovulation. Similar phenomenon has been also seen in the women receiving injectables.<sup>7,8</sup>

To quote Fotherby:<sup>8</sup> "These results indicated that the drug, medroxyprogesterone acetate, the usual dose being 150 mg every 90 days, was slowly released from the injection site over a prolonged period and that normal ovarian function would not return for a considerable period after the 90 day injection interval."

This study also shows that the rate of postdatism is also increased following cessation of oral contraceptives and can be explained similarly in terms of delayed ovulation. If this delayed ovulation is fertilized there would be a delay in spontaneous delivery calculated from the last menstrual period. Vessey's<sup>6</sup> observations also lend support to the above view. "Parous women who have been on the pill equalize with those who have not at 27 months after stopping the method and nulliparous women at 48 months. Furthermore the delay only affects a small proportion — approximately 5 percent of previously parous women at 18 months and nil at 30 months; and 12 percent of nulliparous women at 18 months and 6 percent at 30 months."<sup>6</sup>

## CONCLUSION

One in 4 women will become postdate (294 days) if they conceive within 4 months of cessation of oral contraceptives as against 1 in 20 in the non pill users. In other words, there is 5 times more postdatism in pill users who conceive within 4 months of cessation of oral contraceptives. After 4 months the rate of postdatism is double that of the non pill users although the numbers in this latter

group are rather small in this study.

Pill users who conceived within 4 months of cessation of oral contraceptives and become postdate, tend to deliver spontaneously roughly 25 days later than the E.D.D. by Naegele's Rule. The shorter the cessative - conception interval, the more severe the postdatism.

There is no correlation between the severity of postdatism and the duration of consumption of oral contraceptives (although there is a correlation between the cessation - conception time and severity of postdatism).

Therefore while routine induction (at Term plus 14 days) for non pill users may be justifiable, this in pill users would result in unacceptably high induction rate (20 percent of all pill users) and worse, high iatrogenic low birth weights. From this study, 43 percent of the induced group with a cessation - conception interval of less than 4 months would be below 40 weeks of gestation if induced at T + 28 days. As failed induction leads invariably to caesarean section, section rate would be higher if pill users are induced at term + 14 days. Many of these would be due partly to an unripe cervix.

Severity of postdatism and rate of postdatism in pill users could be reduced if pill users conceive after 4 months of cessation of oral contraceptives.

Expected dates by fundal heights and by first fetal movements are useful particularly in pill users to indicate when spontaneous delivery is due and the fetus mature.

Ultrasonic measurements of crown-lump length in the first trimester, and biparaetal diameter in the second would be especially useful in estimating the dates of delivery particularly in pill users who conceived within 4 months of cessation of oral contraceptives.

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## REFERENCES

- <sup>1</sup> Ratten G J. Prolonged pregnancy after oral contraceptive therapy *Medical Journal of Australia* 1981 Jun 13: 1(12) 641-2.
- <sup>2</sup> Klinger G, Fritzsche H: Kunath H. Determination of pregnancy duration following terminated hormonal contraception *Zentralblatt Fur Gynaekologie* 1977: 99(26), 1629-32.
- <sup>3</sup> Harlap S, Davies A M, Baras M. Complications of pregnancy and labour in former oral contraceptives users *Contraception* 1981 JUL: 24(1). 1-3.
- <sup>4</sup> Doering G K, Fresenius K J. Further results about pregnancy and childbirth after use of oral contraceptives. *Geburtshilfe Und Frauenheilkunde* 1979 May: 39(5), 369-71.
- <sup>5</sup> Duff G B. Routine Fetal Maturity Estimation by ultrasound. *Aust. NZJ Obstet Gynaec* (1979) 19, 77.
- <sup>6</sup> Vessey M P, Wright N H, Mcpherson K, Wiggans P. Fertility after stopping different methods of contraception. *British Journal of Hospital Medicine* Feb 1978.
- <sup>7</sup> Ortiz A, Heroi, Stanczyk F Z. Goebelsmann U and Misheel Dr: Serum MPA concentration and ovarian function following intramuscular injection of Depo - MPA. *J. Clin. Endocr. metab.* 44, 32-38 (1977).
- <sup>8</sup> Fotherby, Geraldine Howard, K Shlimanker, Elder and Bye. Occurrence of ovulation in women receiving the injectable contraceptive Norethisterone oenanthate. *Contraception* 18, 5 PP535 (1978)