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## OBSTETRICS

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# Postterm Pregnancy: Induction of Labor VS. Conservative Management

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### ABSTRACT

**Objective** To study the safety of conservative management for vaginal delivery of postterm pregnancy in the province and look for associated adverse outcomes in postterm births.

**Design** Descriptive study.

**Setting** Department of Obstetrics and Gynecology, Phaholpolphayusana Hospital, Kanchanaburi, Thailand.

**Subjects** 112 pregnant women with 41 weeks of pregnancy and beyond by LMP from antenatal care units during Jan.1997 - Dec.1998.

**Main outcome measures** APGAR score of fetus at birth and fetal death rate.

**Methods** All subjects were managed by the study program until delivery, fetal and maternal status was evaluated in all aspects.

**Results** 80 cases in our study were postterm and most of them delivered within 43 weeks of pregnancy. The longest duration was 48 weeks of pregnancy. During conservative management, unsatisfactory NST is the condition associated with poor fetal outcome. Induction of labor increased the risk of fetal distress and the cesarean section rate. Most fetuses had good APGAR scores at birth. There were one case of fetal death and one of fetal hypoxia.

**Conclusion** Induction of labor when the cervix is ripe decreases cost and time whereas conservative management when the cervix is unripe along with effective fetal testing, while waiting for vaginal delivery is mostly safe. Stripping of the membrane since 41 weeks pregnancy can reduce the incidence of postterm and oxytocic drug induction,

**Key words:** Postterm pregnancy, induction of labor , conservative management

Prolonged pregnancy can increase perinatal mortality and morbidity due to placental dysfunction and meconium aspiration.<sup>(1-9)</sup> Maternal complications are caused by fetal macrosomia as a consequence of difficult delivery.<sup>(1,2)</sup> The optimal management of postterm pregnancy comparing between conservative treatment and induction of labor has not been

resolved.<sup>(1,3,4)</sup> Induction of labor without cervical ripening increases perinatal mortality<sup>(1)</sup> but it should be performed before perinatal mortality and morbidity occur.<sup>(1,5)</sup> In some studies postterm pregnancy does not increase the risk of perinatal mortality or morbidity<sup>(1,3,6-8)</sup> especially when accompanied by effective fetal testing.<sup>(1,5,7)</sup> The incidence of prolonged

pregnancy is 4-14% (average 10%). In the Phaholpolphayuhaseana Hospital there were less incidence (2.1% postterm during the years 1997-1998). Our low incidence is probably due to early stripping of the membrane and early induction of labor. The gestational age was routinely evaluated by history of last menstrual period (LMP), ANC work up (series of body weight, uterine size, fetal size, quickening, lightening) and sometimes with ultrasound (U/S). Postterm pregnancy is one of a doubtful situation. Questionable fetal age due to unreliable LMP and poor ANC is still problem in diagnosis. It should be realized that some patient might not be actually postterm but rather the result of an error in estimating the gestational age.<sup>(1)</sup> The purpose of our study has been to assess the safety of conservative management waiting for vaginal delivery in postterm pregnancy (clinically well assessed as a real situation) in the province and also the factors associated with adverse outcomes in postterm births.

## Materials and methods

During the year 1997-1998 we studied women with pregnancies of 41 weeks and beyond from the antenatal care unit evaluated by a certain LMP or correlative U/S aging of uncertain LMP. The patients whose LMP were not correlated with uterus size in early ANC (before 20 weeks of pregnancy), without U/S confirmed, were excluded from the study.

All subjects were interviewed as to their histories, menstrual history, contraceptions, and examined by pelvic examination (PV). The fetuses were evaluated by non-stress test fetal monitoring (NST) and U/S. If the finger could pass through the cervix during PV stripping of the membrane (SM) was performed at once. All patients were informed with respect to problems of postmaturity, their prognosis between induction of labor and conservative management, and how to observe fetal movement (FM). They could choose their own therapeutic option at any time. In the patient with signs of fetal hypoxia labor was induced. The patient with large fetus and definite CPD was advised to C/S. The others who decided to continue

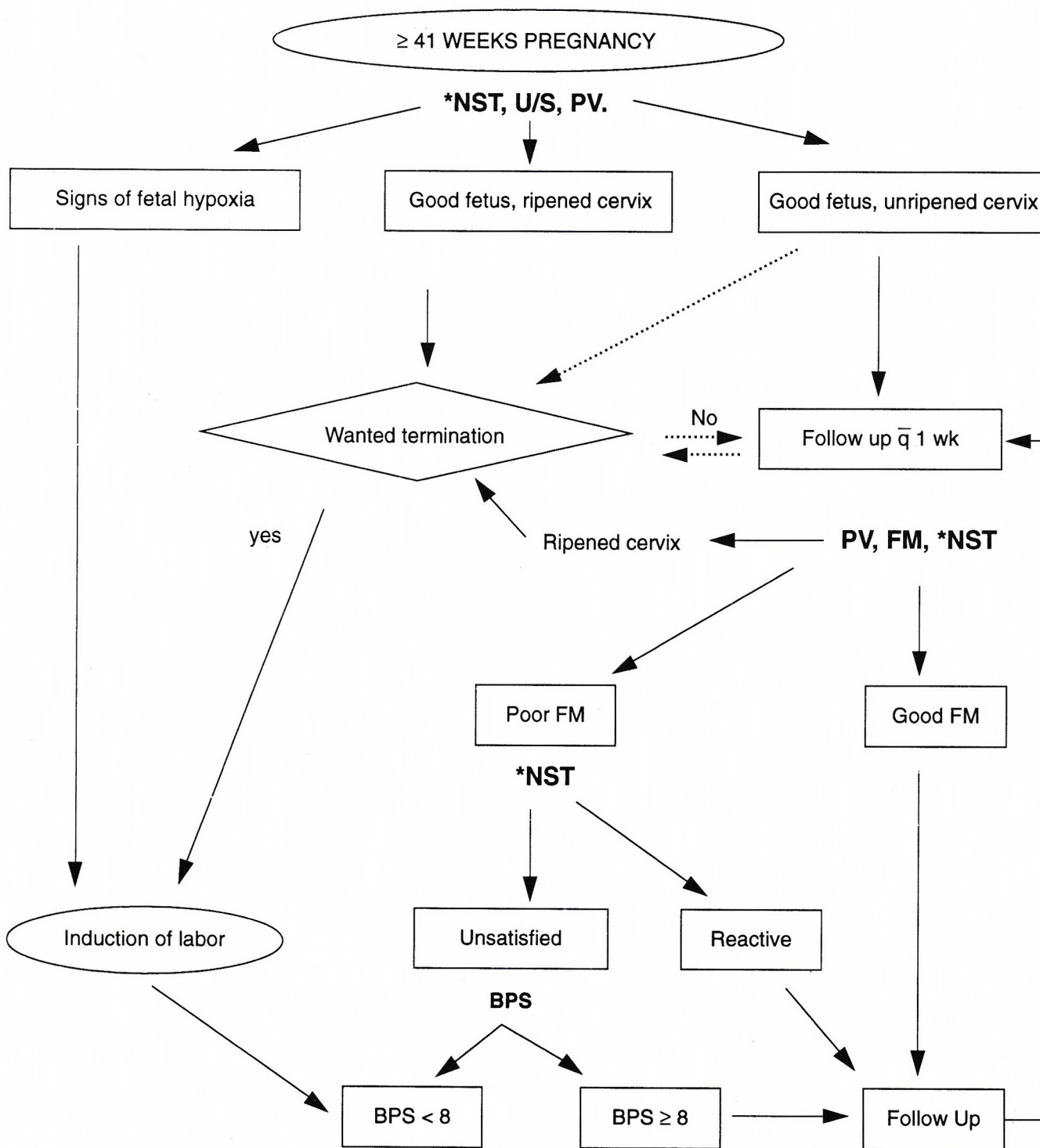
pregnancy were followed up every week or whenever poor fetal movement occurred (markedly decreased movement or less than 10 times per day). NST was the first investigation performed every week for fetal well being and routine check-up. An unsatisfied NST led to the use of U/S for the Biophysical Profile score (BPS). BPS 6 or BPS 8 with diminished amniotic fluid indicated labor induction. The patients were continuously informed about their situation to select the further procedure. Labor induction was done by oxytocin IV drip. Fetal monitoring was used to evaluate fetal hypoxia during the intrapartum period especially during early induction of labor (assumed contraction stress test). The procedure is shown in diagram 1. The same author performed SM and evaluation of fetal testing. A standing nurse recorded the APGAR scores at birth and 5 minutes later, as well as the fetal condition.

“Reactive NST” means two or more fetal heart rate accelerations of at least 15 beats/min. Lasting at least 15 seconds and associated with fetal movement within 20 minutes. Other conditions were considered “non-reactive NST”. “Unsatisfied NST” include non-reactive NST and combine type that fetal heart acceleration response less than non response.

“Signs of fetal hypoxia” were interpreted from twice non-reactive NST (Separated by 75 minutes or determined the following day) or BPS  $\leq 6$ .<sup>(1)</sup>

Ripened cervix means Bishop score  $>8$ .

**Diagram 1:** Follow-up program for postterm pregnancy



—————> Advise to, continue to  
 <-----> Patient decision

**Table 1.** Distribution of Gestational Age & Type of Labor

GA(week)	Cases	Spontaneous Labor pain $\bar{e} / \bar{s}$ SM	Induced labor	Type of Delivery		% C/S
			Oxytocic drip	Vaginal	C/S	
41 - 42	32	24	8	30	2	6.25
42 - 43	53	32	21	39	14	26.42
43 - 44	13	9	4	10	3	23.08
44 - 45	11	10	1	10	1	9.09
≥ 45	3	3	-	2	1	33.33

**Table 2.** Effect of Labor pain on fetal outcome in postterm pregnancy (exclude fetal dead in utero)

Labor pain	Cases	Type of delivery		Low APGAR		Fetal distress
		Vaginal	C / S	≤ 3	4 - 6	
Spontaneous LP ( $\bar{e} / \bar{s}$ SM)	53	45	8	—	1	—
Oxytocic drip	26	15	11	1	2	6

**Table 3.** Indication for Caesarean section

Spontaneous labor pain	Cases	Oxytocic drip	Cases
CPD	5	Prolonged labor	5
Prolonged labor	1	Cervical dystocia	2
PIH	1	Fetal distress	4
Breech in primigravida	1		

**Table 4.** APGAR at Birth of postterm fetus

APGAR	Cases	%	GA (week)
0 - 3	1	1.2	43.6
4 - 6	3	3.7	42 ± 43 (2) , 46 (1)
7 - 10	75	93.7	-
Dead Fetus	1	1.2	42.4

**Table 5.** Poor prognosis signs & results

Results Signs	Normal fetus	Low APGAR (3,5)	Fetal distress during oxytocic drug Adm.
1. ↓ Fetal movement	6	-	-
2. Unsatisfied NST	7	2	1
1 & 2	5	-	2
3. No weight gain	7	-	-
1 & 3	1	-	-

**Table 6.** Fetal birth weight

BW (kg) GA (weeks)	< 2.5	2.5 - 3	> 3 - 3.5	> 3.5 - 4	> 4
41 - 42	2	10	15	5	-
> 42 - 43	1	14	28	10	-
> 43 - 44	1	3	6	3	-
> 44	2	3	6	3	-

## Results

The data are shown in tables 1-6. From 112 cases studied only 80 cases were postterm (more than 42 weeks pregnancy). There were 59.8 % of primipara and 5.3% of repeated postterm. There seem to be a normal distribution in age, parity, occupation, and familial economic back ground, 91.1% had low to moderate familial income ( $\leq$  10,000 Bahts month). As to the menstrual history 17.8% had irregular menstrual cycles and 11.6 % their LMP were menstruations of the last contraception. 4.5% became pregnant while taking oral contraceptives. We found no patient with low BPS. Stripping of the membrane was performed in 53 cases, and labor pain occurred within 72 hrs in 28 cases (success rate 52.8%), there was one case complicated with slight vaginal bleeding of about 5 cc., 5 hrs after stripping the membrane.

Of the 80 postterm pregnancies, 66.2% delivered within 43 weeks gestation, 17.5% after 44 weeks, the longest duration was 48 weeks of pregnancy. Of fetuses at birth, 97.5% had APGAR

scores 10 at 5 minutes after birth. Among the babies 3.75% had low APGAR score at births<sup>(4-6)</sup> but all recover to score 10 in 5 minutes. One case of fetal hypoxia (APGAR 3) was found with low birth weights (2,350 GM) and history of maternal injection of pethidine within 2 hrs before delivery. The fetus had no postmaturity appearance. It was admitted to the neonatal care unit because of birth asphyxia. One case of intrauterine dead had reactive NST a week before labor and had good movement according to his mother's feeling until the day of delivery when FHS couldn't be detected. The umbilical cord was found around the fetal neck with a thick meconium stained amniotic fluid. The placenta was normal. The dead fetus had no postmaturity appearance and was signed intrauterine hypoxia as a cause of death. The patient whose pregnancy had proceeded beyond 44 weeks usually because of lost follow up. Likewise a 48 weeks of pregnant patient had attended her ANC at her rural area by the midwife 6 times since the 20th week of pregnancy. She came to the hospital with her ANC

book after 45 weeks of pregnancy. The fetus was evaluated a good fetus and her cervix unripe. She came again with spontaneous labor pain on the 48th weeks after gestation. The fetus had no postmaturity appearance, weight 3,400 gm., thick meconium stain with amniotic fluid, APGAR score at birth 8. There were no differences as to fetal mortality and morbidity between postterm and term pregnancy during the same period of time (mortality 1.25 & 1.27%; morbidity 1.25 & 3.32% respectively).

Cesarean section was performed in 19 cases (23.7%), 21% indicated by fetal distress during the oxytocic drip. No fetal distress resulted from spontaneous labor compared with 6 cases of fetal distress among 26 cases of induced labor. Induction labor also increased C/S rate (relative risk 4.1) especially when the cervix unripe. We found no maternal complications. All placenta were within the normal range. No fetus had any serious postmaturity syndrome. Half of them had long nails and 25% had rather dry skin.

## Discussion

Clinical evaluation of gestational age we had routinely done may not be exactly reliable. Of our patients, 33.9% had no definite LMP (irregular menstrual cycle, pregnant during or at the end of contraceptions). Postterm pregnancies decreased from 10% using the menstrual history to 3% when U/S criteria were used.<sup>(1)</sup> U/S used to evaluate gestational age should be done before 20th week of pregnancy not in late pregnancy when suspected postterm. In late pregnancy U/S can not evaluate definite gestational age or state "postterm" except in case of ligohydramnios, which is a clinically meaningful finding of fetal risk. The amniotic fluid indexes rather than the maximum pool depth can help estimate abnormality.<sup>(10)</sup> U/S also demonstrates fetal malformations such as 1° adrenal hypoplasia, anencephalus that usually occurring in pregnancies carried beyond term.<sup>(1)</sup> Because there is no method to identify pregnancies that are prolonged the obstetrician must manage all pregnancies judged to be 42 completed weeks as if abnormally

prolonged.<sup>(1)</sup> Among our patients we didn't find postmaturity syndrome that can be found in about 10% of pregnancies between 41-43 weeks and increases to 33% at 44 weeks.<sup>(1)</sup>

Optimal management of prolonged pregnancy has not been resolved. It was said that labor induction resulted in more favorable outcomes than fetal testing and at a lower cost.<sup>(1)</sup> A reviewed of 19 references has shown that routine induction has no advantage over expectant management, in which pregnancy is allowed to run its natural course.<sup>(3)</sup> The same as our data, many reports showed no significant difference in fetal mortality rates between postterm and term pregnancies,<sup>(1,6,7)</sup> they even appeared reduced in postterm.<sup>(8)</sup> Fetal distress, instrumental deliveries, low APGAR scores at 5 minutes occur less in postterm than in term.<sup>(6)</sup> Hence induction of labor may not necessary for postterm especially when the cervix unripe that was considered a greater hazard.<sup>(1)</sup>

Problems of labor induction in postterm such as the accuracy to assess postdates and induction of labor when the cervix was unripe. Our labor induction resulted in a higher incidence of fetal distress and low APGAR score of fetuses at birth (relative risk 27.5), and increased C/S rate (relative risk 4.1). Whereas patients with spontaneous labor pain (include after stripping membrane) had complication-free deliveries of healthy fetuses in most cases. But, problems of expectant treatment are as the followings.

1. Waste of time. Computerized FHR found that fetal oxygenation decreased after 41 weeks pregnancy.<sup>(9)</sup> Battaglia C et al found mild fetal growth restriction in postterm.<sup>(11)</sup> Postterm with good placental function results in a larger fetus which can increase maternal complications.<sup>(1,2)</sup>

2. A problem of expectant treatment in postterm is how to immediately detect fetal risk factors. The biophysical performance of a human fetus is characterized by a wide range of normal variations resulting in the difficulty to determine when such performance should be considered abnormal.<sup>(1)</sup> According to our study, the patient's age, parity and poor weight gain had no correlation to fetal well being.

Non-reactive NST resulted in low APGAR score of some fetuses at birth and a higher incidence of fetal distress during the oxytocic drip. We found no low BPS score at all. Three cases of unsatisfied NST turned to reactive NST on the following day and pregnancy was continued for weeks. Nevertheless, non-reactive NST is a sign to beware further fetal hypoxia. Many other programs performed fetal testing twice a week, which is burdensome so we chose fetal movement as the provisional observation and performed the routine NST only once a week. Some patients were still lost to follow-up as in the prolonged pregnancies over 44 weeks gestation, and some patient could not observe her fetus's movement as in the fetal dead case. The dead fetus might have been kept alive if the pregnancy had been terminated a week before.

3. Fetal testing is more costly.<sup>(1)</sup> Fetal monitoring and U/S are reliable tools to determine fetal well being.<sup>(1,5,12,13)</sup> Labor induction that result vaginal delivery is less costly than fetal testing from those tools.

4. Expectant treatment is a burden for caring physicians who have to be aware of fetuses at risk. The safety result depending on both the patient's awareness and effectiveness of fetal testing. Although our series did neither find increased fetal mortality and morbidity rates nor maternal complications, there still have been reports of postmaturity syndrome and fetal asphyxia resulting from postmaturity as well as maternal morbidity.<sup>(1,2,14)</sup> Even though only about 20% of infants with placental insufficiency syndrome are postterm,<sup>(14)</sup> we cannot know when and to whom they might occur.

We think that induction of labor in postterm pregnancies with the cervix ripe is the proper management of postterm in the province. But, with patients whose cervix is not ripe, expectant treatment with effective fetal testing can be chosen to decrease the risk of induction failure in expectation of vaginal delivery. Prostaglandin was used successfully to ripen a stubborn cervix and induce labor.<sup>(1,5,15)</sup> Up to now we have had no experience with this interesting procedure. We once tried Misoprostol 100 micrograms intracervical application to ripen cervix, then tetanic

uterine contraction occurred with fetal distress. As to the management of prolonged pregnancies, we strongly suggest careful stripping of the membrane after 41 weeks of pregnancy, and then to wait for labor for a few days. It can decrease the incidence of oxytocic induction and postterm pregnancy. Two thirds of those who underwent stripping entered spontaneous labor within 72 hours.<sup>(1)</sup> Complications found from SM are infection, bleeding from undiagnosed placenta previa, and accidental membrane rupture.<sup>(1)</sup> Our series found a 52.8% success rate of the procedure without complications.

The postterm patient should know to come to the hospital as early as they are in labor. FHR during uterine contraction should be monitored electronically to detect fetal distress when it occurs because intrapartum fetal distress was usually detected.<sup>(2,7)</sup> For that reason definite CPD should be managed by C/S at once. Identification of a thick meconium in the amniotic fluid is particularly worrisome<sup>(1)</sup> and, effective suction of the fetal pharynx to prevent meconium aspiration is also a goal of management in postterm.<sup>(1,13)</sup>

## Conclusion

Among the clinically diagnosed postterm patients we had studied, induction of labor is not necessary if effective fetal testing can be performed during antepartum and intrapartum periods. Conservative management waiting for vaginal delivery especially in patient with unripened cervix is mostly safe. But, there has been no indicator good enough to check fetal well being all the time while waiting. The patient should be able to observe fetal movement and undergo further examination as soon as it decreases significantly or else, the pregnancy should be terminated. We suggest pelvic examination in every 41 weeks pregnant woman, and stripping of the membrane as soon as possible to prevent some patients from going postterm and to decrease oxytocic induction. We think it is better to induce labor when the cervix is ripe in postterm pregnancy.

## Acknowledgement

The authors wish to thank Dr. Thongchai Buddhaboriwan, Director of Phaholpolphayuhasena hospital for the study permission.

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