Prolonged Pregnancy: Two Years Experience of Offering Women Conservative Management

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SUMMARY: A prospective study of 199 patients over a two year period, 1 Jun 90 to 31 May 92 at the Louise Margaret Maternity Wing, Cambridge Military Hospital, Aldershot was undertaken to audit the uptake of an offer of conservative management of prolonged pregnancy to women at 42 weeks gestation. The labour outcomes of patients opting for conservative or induction management plans were recorded and the increased workload introduced to the Ultrasound Unit measured. Of the 91/199 (45.7%) patients who chose to be managed conservatively, 20 (22.0%) developed an abnormal result of a test of fetal surveillance, 16 (17.6%) were electively delivered because of an abnormal result. There were no significant differences in labour performance or neonatal outcome between those women opting for conservative management or induction of labour. 201 new ultrasound scans were booked, 129 were performed (0.4 scans/week/1000 deliveries).

Introduction

The management of prolonged pregnancy is controversial. It has long been known that perinatal mortality rates rise as gestation advances past term (1). Doubt has been cast on the validity of the reported extent of the problem to present day practice wherein most "high-risk" factors are recognised and gestation is more accurately assessed (2). The currently accepted excess perinatal mortality associated with not attempting to induce labour at 42 weeks gestation is 1/1000. In a District General Hospital with 2000 deliveries/year, where 5% of pregnancies may be expected to reach 42 weeks gestation, an excess fetal death may therefore be expected every 10 years. Given this risk our initial experience with offering conservative management was that whilst the majority of women requested induction of labour, a sizeable minority did not, the extent of this minority varying with the gestation of the woman when the subject is broached (3). The primary benefits of not inducing labour may be an improved chance of a vaginal delivery by reducing the need for caesarean section (2) although other authors have described a reduction in Caesarean section rates when prolonged pregnancies are induced (4) using a surveil-

lance method that was extremely similar to ours. It was therefore necessary to audit the introduction of this form of management.

Subjects and methods

Prior to 1 June 1990 the routine management of prolonged pregnancy in the Louise Margaret Maternity Wing CMH was to induce labour at term +14 days. This was achieved by the use of prostaglandin E2 gel as illustrated in Table 1 unless the cervix was $\geq$ 3cms dilated when surgical induction by ARM was performed at 0900 on T+14, irrespective of parity.

From 1 June 1990 the conservative management of prolonged pregnancy was discussed with all women attending the antenatal clinic at 37 and 41 weeks gestation with a singleton pregnancy. Those having previously delivered by caesarean section or with a breech presentation were not necessarily excluded, other more relevant complications were. Conservative management was advocated by the obstetric staff, the potential benefits possibly lying in a shorter, less complicated labour. Conservative management surveillance consisted of twice weekly cardiotocography (CTG) and ultrasound scan measurement of

Table 1
Regime for the medical induction of labour with PgE2 gel

	Primigravidae	Multigravidae
Time of first dose	T+13 2200	T+14 0600
Dose	1 mg	1 mg
Time of second dose	T+14 0600	T+14 1200
Dose	1-2 mgs	1-2 mgs

amniotic fluid maximum column depth and continued use of fetal movement charts (used in all pregnancies in this unit after 32 weeks gestation).

Induction of labour was performed if

1. the CTG was considered to be sub-optimal
2. fetal movements decreased to below 10/day
3. the amniotic fluid maximum column depth (AFMCD) fell below 3 cms
4. another indication for induction (such as pre-eclampsia) arose
5. the woman requested induction
6. 44 weeks gestation was reached.

Labour details were recorded on a questionnaire, immediately after delivery, by the midwife in charge of the case. The measurement of venous umbilical cord blood pH was attempted but was not achieved in more than 30% of subjects and was abandoned 6 months into the study. Questionnaires were coded into a database and all obvious errors and inconsistencies resolved prior to analysis with Statgraphics Plus v5.2. Analysis was by intention to man-

Table 2

Comparison between the composition of those choosing conservative management of prolonged pregnancy and those choosing induction of labour

	Conservative Management N=91	Elective induction P of labour N=108	
Mean Age	27.6	25.5	0.001
(Range)	(17-37)	(15-42)	
[SD]	[4.3]	[4.5]	
No previous delivery after 28/40	50	54	0.5
Certain of dates	72	82	0.7
Labours with a breech presentation	1	0	N/A
Previous caesarean section	5*	5	>0.9

*1 woman twice previously delivered by Caesarean section

age. Qualitative variables were analysed using the Chi-squared test (incorporating Yates' continuity correction for 2X2 tables), quantitative variables were compared using the t-test when data was normally distributed and the Mann-Whitney rank test when it was not. Statistical significance was considered reached if $P \leq 0.05$.

Results

In the 2 years of the study, 3182 mothers were delivered of 3203 infants, 246 (7.7%) by instrumental vaginal delivery, 324 (10.2%) by caesarean section. One hundred and ninety nine (6.3%) pregnancies reached 42 weeks gestation. Of those 199; 91 (45.7%) chose conservative management, 108 (54.3%) induction of labour; the com-

Table 3
Indication for elective delivery in those initially choosing conservative management of prolonged pregnancy N=91(%)

	IOL	Pre-labour LSCS	Total
Sub-optimal CTG	1 (0.91)	1 (0.91)	2 (1.82)
AFMCD<3cms*	13 (11.83)	-	13 (11.83)
Other obstetric indication	1 (0.91)	-	1 (0.91)
Decreased fetal movements	-	-	-
Maternal request	8 (7.28)	-	8 (7.28)
44 weeks gestation	1 (0.91)	-	1 (0.91)
Total	24 (21.84)	1 (0.91)	25 (22.75)

*18 women developed an AFMCD <3cms (19.35), 13 were induced, 1 refused induction of labour, 4 were not offered induction.

position of the two groups is compared in Table 2. Intervention in the conservative management group is illustrated in Table 3, delivery outcomes are reported in Tables 4 and 5 and comparatively illustrated in Fig 1 with those women whose pregnancies were not prolonged. Only 73 women are recorded as having had ultrasound scan liquor assessment despite an additional retrospective search of medical records. The additional workload to the ultrasound department is shown in Table 6.

There was one adverse outcome Mrs H was seen for assessment at T+13 with a hitherto uncomplicated pregnancy having requested conservative management of pregnancy. Her fetal movement chart was normal, a cardiotachogram demonstrated a single unstressed short lasting deceleration in an otherwise normal trace. This was viewed with particular caution as the conservative management of prolonged pregnancy had recently been introduced. Labour was induced. In view of the decision to

deliver, an ultrasound scan was deemed superfluous. After two doses of Prostin a CTG demonstrated a fetal bradycardia of 60 bpm and an emergency caesarean section was performed. The neonate was hydropic and thrombocytopenic and died 3 days later. Mrs H has had two pregnancies since, both complicated by severe fetal anaemia and thrombocytopenia of obscure origin. One infant survived following delivery at 32 weeks gestation, one fetus died in utero at 19 weeks gestation from exsanguination following a cordocentesis.

Discussion

This report is an audit of what may be expected to happen when a policy of conservative management of prolonged pregnancy is introduced into a District General Hospital. The surveillance of the post-term fetus was primarily reliant upon a semi-quantitative assessment of amniotic fluid volume that is maximal at 24 weeks and remains constant until 37 weeks gestation after which it

screening test for fetal well-being in prolonged pregnancies (5).

The two groups of women were comparable barring statistically significant but nevertheless small difference in maternal age. As we expected, the fetomaternal outcome was good (barring a fetal loss unconnected with gestation) but we were unable to demonstrate any statistically significant benefit to the women choosing conservative management of prolonged pregnancy in terms of labour performance. There did appear to be a difference in the incidence of instrumental delivery between the two groups, but this did not reach significance. Neither group achieved the spontaneous vaginal delivery rate of those who delivered before 42 weeks gestation but this latter group contains all gestations and it is difficult to ascertain whether there is a true difference between our term and prolonged pregnancies.

There were two examples of protocol violations. It is of concern that only 73/91 of those aiming to allow conservative management had an ultrasound scan/CTG and 4/18 of those women whose amniotic fluid maximum column depth fell below 3 cms were not offered induction of labour. If this management plan is to continue, more care is required to ensure that the appropriate investigations are performed and acted upon. If 100% of patients were to receive an ultrasound scan at the appropriate time, the assessment workload would rise from 129 to 161 scans/week ((129x91)/73), equivalent to 3 scans/week/scan/week/1000 deliveries. This increase in scanning should be considered when instituting ultrasound surveillance of prolonged pregnancies but it is not great. It should be remembered that with our system a CTG is required after every scan, our CTGs were performed in the antenatal ward although access to a dedicated assessment unit would be more appropriate in a larger unit.

Since this method of management has been introduced, other authors have re-addressed the question of digital membrane stripping as a means of avoiding more "medical" methods of inducing labour. This is not a new idea and although undoubtedly known to midwives for generations was first reported by an obstetrician in 1958 (6). Two further publications (7, 8) also found the method useful but in all three articles the methods of randomisation were open to criticism of selection bias. El-Torky and Grant (9) have performed a correctly designed randomised trial and by performing a membrane strip between 41 and 42 weeks gestation they were able to reduce the incidence of patients reaching 42 weeks gestation from that point from 62% to 24% (OR 4.65, 95% CI 1.56 to 12.31, $P=0.002$).

As a further step in avoiding the need for relatively expensive and time consuming methods of induction of labour in those women who wish to be induced, it would be worth introducing a policy of membrane stripping between 41 and 42 weeks. This would potentially avoid 33 of the 54 women who would request induction each

Table 4
Outcome measures in both groups
(Qualitative variables)

	Conservative Management N=91	Induced N=108	P
Caesarean section			
Before labour	6/91*	3/91	0.3
During labour			
Fetal distress	2/85**	3/105***	1
Failure to progress	5/85	9/105	0.7
Other (face presentation)	1/85	0/105	—
Augmentation of labour required	27/85	32/105	0.97
Epidural anaesthesia in labour (not for caesarean section)	17/85	8/105	0.366
Prescribed Pethidine	41/85	49/105	0.9
Fetal blood sampling	13/85	19/85	0.75
Instrumental delivery	5/85	13/85	0.1
Infant admitted to SCBU	14/91	14/108	0.8

*Includes the one pre-labour LSCS reported in Table 1

** One case had FBS

*** All 3 cases had FBS

falls. Post dates pregnancies with a normal quantity of amniotic fluid have been found to be associated with a low risk of fetal compromise and amniotic fluid assessment by ultrasound scanning has therefore been used as a

Table 5
Outcome measures in both groups
(Quantitative variables)

Variable	Group	Mean	SD	Range	P
Gestation at delivery (days past term)	Conservative	17.57	3.17	14-28	
	Induced	14.86	1.46	13-22	
Length of first stage of labour in women who laboured (decimal hours)	Conservative	4.71	3.37	0.03-13.67	0.4
	Induced	4.35	3.46	0.08-15.53	
Length of second stage of labour Vaginal deliveries only (decimal hours)	Conservative	0.86	0.89	0.03-5.00	0.7
	Induced	1.01	1.22	0.03-6.08	
Apgar score (1 min)	Conservative	7.44	1.68	0-9	0.3
	Induced	7.3	1.55	2-9	
Birthweight*	Conservative	3711.3	432.5	2695-4750	0.5 (95%CI -170-89)
	Induced	3751.5	485.0	2510-5400	

*Because birthweight is sex dependent, infant sex distribution between the two groups was examined and no significant difference detected (P=0.3.)

Fig 1. Labour performance of those without a prolonged pregnancy, those conservatively managed and those induced.

year reaching 42 weeks at all. We would also avoid having to institute surveillance of those who wished to avoid formal induction i.e. 23 of the 40.5 cases arising each year.

Table 6

Increased ultrasound scanning workload

	Scans booked	Scans performed	DNA rate from deliveries
First scan	73	73	0.0%
Second	73	36	50.7%
Third	36	15	58.3%
Fourth	15	4	73.3%
Fifth	4	1	75.0%
Total	201	129	35.8%
Mean/week	1.9	1.2	
Mean/week /1000 deliveries	0.6	0.4	

In summary the introduction of conservative management of prolonged pregnancies has allowed women/year the ability to avoid induction of labour without excessive hazard. Neither benefit nor hazard to those women or their pregnancies was demonstrated within the parameters measured, although it should be borne in mind that to exhibit a significant difference in perinatal mortality numbers far in excess of those reported here need to be studied.

This audit should be continued with the introduction of membrane stripping between 41 and 42 weeks.

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