Early amniotomy in nulliparous: Is it effective?

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وصل من سلالة الإنسان خلقنا وقديماً،
ومع ذلك نشأنا، ثم خلقنا。
ثم خلقنا المعقل، فخلقنا النطفة.
ثم خلقنا العظام، فكرسانا الأعضاء.
والله أكبر، فتكبوري. { الآيات المؤمنون سورة 12-14 (14-12) ظهير زيد نور}
Dedication

To

the soul of my father,

all member of my family who gave me supports and motivations to create this work,

my merciful mother, who always supports and motivates me for further creation,

my senior and junior colleagues,

&

my friends
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ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<tr>
<td>ARM</td>
<td>Artificial Rupture of Membranes</td>
</tr>
<tr>
<td>CM</td>
<td>Centimeter</td>
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<tr>
<td>C/S</td>
<td>Caesarean section</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>--------------</td>
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<tr>
<td>CX</td>
<td>Cervix uteri</td>
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<tr>
<td>Kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>KTH</td>
<td>Khartoum Teaching Hospital</td>
</tr>
<tr>
<td>mU/min</td>
<td>Mili Units per minutes</td>
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<td>NCU</td>
<td>Neonatal Care Units</td>
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ABSTRACT

This Cohort study conducted in the period from October 2002 to August 2003 in 208 nulliparous patients attending labour ward in KTH in latent phase of first stage of labour to address the effects of early amniotomy (at 3 cm cervical dilatation on fully effaced cervix during the latent phase) on the progress of labour including the effects in the duration of first and 2\textsuperscript{nd} stage of labour, the need for oxytocic drug and analgesia, the caesarean section rate, the instrumental deliveries and perinatal outcome. The patients fulfilling the inclusion and exclusion criteria of the study were classified randomly into amniotomy group (103) and conservative group (105).

ARM was done in amniotomy group as soon as they were admitted. In conservative group we attempted to avoid amniotomy unless there is medical indication such as to assess the colour of liquor in suspected foetal distress, an arrest of cervical dilatation for at least 3 - 4 hours. Oxytocin was given to the amniotomy group if there was no efficient contractions after 1-2 hours of ARM or if there was arrest in cervical dilatation or uterine contraction beyond that. In the conservative group oxytocin was also allowed if there was poor progress of labour. The statistical analysis showed decrease in C/S rate in amniotomy group compared to conservative group, but this was not significant (P=0.51). Again instrumental deliveries were less in amniotomy group in
comparison to conservative group, but again this was not statistically significant (P =0.5). The duration of the first stage of labour was statistically significantly reduced by two hours in the amniotomy group in comparison to the conservative group (P = 0.0001).

The need for oxytocic drugs was also not statistically significant between the two groups (P = 0.196), but there was significant difference in the dose of oxytocin used by the two groups as majority of patients (>50%) who need oxytocic drugs in amniotomy group required small dose (4-8 ml U/min). More patients in the amniotomy group (60.3%) needed pethidine in comparison to (24.8%) in the conservative group (P=0.0001). There was no statistically significant difference in the Apgar scores <7 at 5 minutes between amniotomy group (9.7%) and conservative group (12.4%) (P=0.57). Regarding admission to NCU, two neonates (1.9%) in the amniotomy group were admitted due to meconium aspiration in comparison to only one neonate (1%) in the conservative group. All of them were discharged in good condition after 48-72 hours.

In conclusion early amniotomy was associated with significant reduction in the duration of the first stage of labour by two hours and the need of small doses of oxytocic drugs. In the other hand although C/S rate and
instrumental delivery rate were reduced in the amniotomy group, but these were not significant.
التعليم قبل ذي
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Amniotomy or artificial ruptured of membranes was one of the first things the early midwives of 1700s figured out that they could do to intervene in the process of labor. Then as now, breaking the waters of laboring women was an effective means of making it appear that physician assistance is essential in the process of labour (Wertz and Wertz 1989). When performed for the purpose of speeding up labor, rupturing the membranes of laboring woman reinforces and intensifies the urgency of institution's massage. Early amniotomy is of great help in condensing the women experience of labor and birth into discrete, measurable unit of time. When amniotomy performed an internal foetal monitor can be inserted. Artificial rupture of membranes further intensifies the massage of birth machine. In both cases the underlying massage is clear: culture not nature knows best.\(^{(1)}\)

What is amniotomy?

Amniotomy is artificial rupture of the amniotic sac with tool called the amniohook (along crohet type hook with pricked end) or an amniocot (aglove with small picked end on one finger). One of these will be placed inside the vagina where the caregiver will rupture the amniotic sac or membranes.

Why amniotomy performed?

Amniotomy said to be done for three reasons.

- To induce or augment labor.
- To check for meconium (baby 1\(^{st}\) stool).
- To place internal foetal monitor on the baby scalp.

Does amniotomy have any disadvantage?

Amniotomy has several disadvantages:

- This is the only cushion baby's head has.
• The increase pressure differential around the foetal head may lead to deformities of the skull
• The reduction in the amount of amniotic fluid may increase compression of the umbilical cord, which would show as foetal distress during labor.
• There is increased possibility of a cord prolapse
• There is increase likelihood of infection (from vaginal exams and probes placed into the vagina.
• This may cause the patient to restrict to bed and to the use of tab or bath.\(^2\)

**Does amniotomy has any advantages?**

The advantage of amniotomy can outweigh the disadvantage when used appropriately.
• It enables the condition of amniotic fluid to be viewed
• It can possible, if done early in first stage of labor (approximately \(\geq 3\) cm) is speed progress.\(^2\)

**Active Management of Labour:**
O'Driscoll and colleagues at National Maternity Hospital in Dublin pioneer standardized labor management protocol reduced caesarean deliveries for dystocia. The protocol was consisting of early diagnosis of labor, routine amniotomy within one hour after admission, administrating of high doses of oxytocin when progress of labor was poor, continuous personal attention, and active participation by senior obstetrician in management of labour. It was intended to reduce the duration of labor and to minimize the rate of cesarean section for dystocia among nuliparous women. It's component or at least two of them – amniotomy and oxytocin were widely used specially in English speaking countries outside the United States. (Thernton and Lilford 1994).\(^{(3)}\)

During the past 30 years at National Maternity Hospital in Dublin the active management of labor in nulliparous women has consistently been associated with rate of caesarean section below 10% and duration of labor among nuliparous less than 12 hrs.

Recently Impey and Boylan (1999) observe that active management of labor was never intended to reduce C/S rate. They noticed that the C/S rate in fact been low (about 5%) at National Maternity Hospital at Dublin prior to implementation of active
management. In their view active management did serve, however, to prevent the escalation of C/S deliveries in Dublin than that occurred in United States and elsewhere.\(^{(4)}\)

More recently, however, the C/S rate for nulliparum women delivered at National Maternity Hospital in 1997 has more than doubled to 11.6%. This increase is attributed to induction of labor, cesarean delivery for breech presentation and changing maternal attitudes.

Investigators in Canada and United States have been able to reduce the frequency of caesarean section for dystocia and the duration of labor in nulliparas using the principles of active management of labor, without increasing either maternal or perinatal mortality at the University of Texas obstetrical service at Hermann Hospital in Houston, amniotomy has been part of active management of labour in nulliparous women since July 1985. This approach has reduced the frequency of C/S for dystocia by one third and produced a consistent rate of approximately 10 to 12% for primary C/S. The average duration of labor in nulliparous women has also been reduced from 11.5 hrs to 7.5 hrs.

Lopez-Zeno and colleagues (1992) prospectively compared active management with traditional approach to labor management practiced at Northwestern Memorial Hospital in Chicago. They randomized in an unbalanced fashion, 705 uncomplicated nulliparous in spontaneous labor at term. The C/S rate was 10.5% with active management and 14.1% with the traditional approach.\(^{(5)}\)

Frigoletto and co-workers (1995) also reported a randomized trial of active management in 1934 nulliparous women delivered at Brigham and women's Hospital in Boston although they found that
such management somewhat shortened labor, it did not affect the C/S rate.\(^6\)

Similar results were reported by Robert's and colleagues (1997).\(^7\)

Fraser and co-workers (1991) studied elective amniotomy compare with no interventions in term pregnancies with spontaneous labor. Almost 60% of the non-intervention groups each 8 cm dilatation or more before the membranes ruptured spontaneously. It is likely that an even greater proportion of women would have entered second stage of labor with intact membranes because amniotomy for labor was performed in 38%.\(^8\)

**Elective amniotomy:**

Artificial membrane rupture with intention of acceleration labor is among the most commonly performed procedure in obstetric. Whether this procedure confers more benefits than harm has been the focus of controversy. There have been three investigations addressing this controversy recently. In all the three studies, amniotomy at about 5 cm dilatation accelerated spontaneously labor 1-2 hours without increasing the overall rate of cesarean delivery or need for oxytocin stimulation.

In the study by Garite and associates (1993) oxytocin use was decreased when early elective amniotomy was performed. Importantly there was no adverse prinatal outcome.\(^{10}\) It is common practice to perform amniotomy when spontaneous labor or
abnormally slow. Given the evidence that available from trials in establish spontaneous labor and from labor induction, it is likely that amniotomy would enhance progress in dysfunctional labor. Rouse and co-workers (1994) performed a randomized study and found that addition of amniotomy to oxytocin augmentation of arrest of labor in active phase shortened labor by 44 minutes. It is also significantly increase the incidence of chorioamnionitis. Amniotomy as an adjuvant to oxytocin infusion, did not affect the route of delivery compared with oxytocin alone.\(^{(11)}\)

Other studies show that amniotomy may increase the incidence of maternal discomfort and the incidence of variable decelerations. As with all interventions ARM should be performed for an indication (assessment of amniotic fluid for meconium and most commonly acceleration of labor) as this procedure carries with it some, all but a small, risk for cord prolapse and development of abnormal FHR. To prevent these complications elective ARM in setting of normal labour should be performed only when the presenting part is well applied to the cervix and preferably during the contraction to minimize the chance of dislodging the baby's head.\(^{(12)}\)

**Amniotomy and Dystocia:**
The routine use of amniotomy to hasten labor has engendered controversy in obstetrical community since its introduction into clinical practice by Kreis in 1928. The foetal membranes and uterine decidua produce large quantities of prostaglandin E2 and F2-α and it is now recognized that both digital manipulation (stripping or sweeping) and amniotomy cause prostaglandin synthesis, which initiating labour and mediating cervical dilatation.

During past 30 years at National Maternity Hospital the active management of labor in nulliparous women has consistently associated with C/S below 10% and duration of labour < 12 hours. This approach has also reduced frequency of C/S for dystocia by one third and duration of labor from 11.5 hrs to 7.5 hours at Hermann Hospital in Hauston (USA) since July 1985.

Despite continued interest in the effect of amniotomy on the course of labour the previous studies of amniotomy were followed by their lack of power. The inclusion of both nulliparous and multiparous women and the lack of stratification according to extent of cervical dilatation at the time of entry into the study. In this issue of the Journal, Fraser et al report the results of the Canadian Early Amniotomy Study, which was designed to address the flaws of the previous studies and to address specifically the likelihood of dystocia as strictly defined by the Canadian Consensus Panel on Cesarean Birth (Dystocia defined as cervical dilatation < 0.5 cm/hour). The results of this study truly reflect the relation between amniotomy and the development of abnormal labour among women with different degrees of cervical dilatation and at different phases of labour. The women in the amniotomy group had a significantly lower
incidence of dystocia, both overall (34% versus 45 percent) and in the active phase of labour, when initial cervical dilatation was 5 cm or more (13 percent versus 18 percent). Findings that suggest that early amniotomy reduce the incidence of abnormal progress of labour in the active phase. In addition the stratification of women according to the degree of cervical dilatation on admission made possible the observation that the incidence of dystocia in the amniotomy group was lower only when the degree of initial cervical dilatation was 3 cm or more. The finding that routine amniotomy in women with dilatation less than 3 cm neither shortened labor nor decrease the incidence of dystocia is of great importance because it supports a alternative method of managing early labor.\textsuperscript{(14)}

These results also support the observations of other than amniotomy alone has no effect on the rate of cesarean section. The author state that their results contrast with those of Lopez-Zeno, \textit{et al}, and agree with those of Cohen with regard to the rate of cesarean section. The former report was of a study of the active management of labor and not of amniotomy alone, and the methods in latter study bear little resemblance to the active management of labor and not of amniotomy alone, and the methods in latter study bear little
resemblance to the active management of labour or to the protocol of the study by Fraser. The results of these earlier studies therefore can not be compared with those of Fraser. Although the incidence of cesarean section for foetal distress in this study was higher in the amniotomy group than in the conservative management group, the foetal heart rate tracings and cord blood gases at delivery in the two group were similar considering the potential risks of amniotomy, including cord prolapse, abnormal foetal heart rate patterns and infection it is gratifying to note that non of these events were increase in frequency. An additional benefit of amiotomy that required further evaluation was the decreased used of oxytocin, particularly among women who enter the study with cervical dilatation of 3 cm or more.

Of the women who were eligible for this study only 27% participated. Twenty nine percent declined and 25% of those who were eligible were not offered participation. In the majority of the remaining women labour progressed too rapidly for them to be randomly assigned to treatment group. One must wonder about the bias that may have been introduced by the low rate of acceptance among those asked to participate and by the failure to try to enroll all eligible women. It is also curious that the time from admission to
randomization was so long (three to four hours) and that it differed by approximately one hour between the groups. Despite these reservations, this study makes an important contribution to our understanding of the role of amniotomy in labour. The effects of routine amniotomy and its relation to dystocia in nuliparous women have been clearly delineated. The stratification of women according to degree of initial cervical dilatation strengthened the results, which provide important data for use in counseling women who question the efficacy and safety of amniotomy. The demonstration by Fraser the potential of amniotomy to reduce the duration of labour and the incidence of dystocia is very valuable. The lower rate of use of oxytocin with amniotomy in intriguing, but required further study. Finally, the documentation of the safety of this common procedure for mothers and for foetuses and neonates is major contribution, particularly because subgroups of women most likely to benefit from this intervention could be identified.\(^\text{(15)}\)

**Amniotomy and the need for oxytocin:**

The elect of amniotomy on the need for oxytocin drugs depend on the initial dilatation of the cervix at the time of amniotomy. A multicentre controlled trial carried out in 11 universities affiliated teaching hospitals (10 in Canada and one in USA) from
October 1989 through April 1991, the annual number of births per hospital varied from approximately 2000 to 8000, women who were admitted to hospital in labor were eligible to participate in the study if they were nulliparous at or beyond 38 weeks and in spontaneous labour, if they had single foetus in cephalic present and intact membranes and if the foetal heart rate was normal on the basis of auscultation or electronic monitoring. Women were excluded from the study if IUGR (FFW < 5th centile) was suspected or if severe pre-eclampsia, insulin dependent diabetes mellitus or cervical dilatation ≥ 6 cm. Written consent was obtained from each woman.

Randomization was took place when women had painful uterine contractions every five minutes for at least a period of at least one hour and had either cervical dilatation of 3 cm or more, or if cervical dilatation was < 3 cm, an increase dilatation of at least 1 cm after admission to the hospital. In addition, the foetal head had to be firmly applied to cervix. Randomization into two groups according to degree of cervical dilatation at the last examination before randomization (< 3 cm dilatation vs ≥ 3 cm dilatation). The women were assigned to one of two treatment groups. Those in amniotomy group (n=462) underwent artificial ruptured of the membranes by
physician using sterile plastic hook as soon as possible after randomization, for those assigned to conservative management group (n= 463) care giver attempted to avoid amniotomy unless there medical indication, such as the need for internal monitoring of foetal heart rate, an arrest of cervical dilatation for at least two hours or dystocia. Administration of oxytocin was permitted in both groups in the presence of dystocia defined according to the study criteria (women in whom, at least 4 hours elapsed after cervical dilatation had reached 3 cm during which time the average rate of dilatation < 0.5 cm per hour). During the study period 19% of the 18, 200 nulliparous women who gave birth in participating hospital were eligible to participate in the study. The most reasons for exclusion were ruptured membranes at time of hospitalization (43%), gestational age < 38 weeks (26%), cervical dilatation >5cm at admission (8%), and malpresentation (5%).

Among eligible women 27% were studied. The reason for non-participation were refusal by the women (29%), failure of medical personnel to request participation (25%), labour that was too active permit consent (7%) and other miscellaneous reasons.

A total 925 women entered the study, 464 in each group among these 152 had cervical dilatation < 3 cm at randomization and 773 had cervical dilatation of 3 cm or more.
The median length of time from randomization to full dilatation was 227 minutes in amniotomy group and 413 minutes in the conservative management group (P < 0.001).
For women with >3 cm initial cervical dilatation early amniotomy was associated with reduction of 125 minutes in this interval (260 minute vs 385 minutes; p < 0.001). However, for women with < 3 cm initial dilatation, the difference was smaller (442 minutes in amniotomy group vs 515 minutes in conservative management group; P = 0.06). The median duration of 2\textsuperscript{nd} stage of labor was similar in the two groups (amniotomy 68 minutes conservative management, 70 minutes).

Oxytocin was administered less frequently in amniotomy group (36\%) than in conservative management group (41\%) but this difference was not statistically significant. When administration of oxytocin was assessed according to the initial degree of cervical dilatation, amniotomy was associated with reduction in the rate among women with greater initial dilatation (amniotomy 34\% conservative management 41\% but not among those with < 3 cm initial dilatation (amniotomy 51\% conservative management 41\%).

The distribution of types delivery was similar in the two groups. Fifty six women (12\%) in the amniotomy group and 50 (11\%) in the conservative management group under went cesarean section (relative risk, 1.1 ; 95 percent confidence interval, 0.8 to 1.6). In the analysis, the indication for caesarean section was that recorded on the women's hospital discharge summary sheets.

Dystocia was the sole indication for caesarean section for 26 women in the amniotomy group and 29 in the conservative management group. Foetal distress was the sole indication for 12 women in amniotomy group and
6 in management group. Both foetal distress and dystocia were given as indication for cesarean section in cases of 16 women in amniotomy group and 9 in the conservative management group. The rates of caesarean section according to degree of initial cervical dilation were as follows: for women with < 3cm initial cervical dilatation-amniotomy 14 of 72 women (19 %), and conservative management, 10 of 80 women (12 %); for women with > 3 cm initial cervical dilatation-amniotomy 42 of 390 women (11%) and conservative management 40 of 353 women (10%).

The groups were similar with respect to occurrence of abnormal foetal heart rate tracings, during both first and second stage of labour. The groups were also similar with respect to indication of neonatal status. Meconium aspiration syndrome was diagnosed in six babies born to women in the amniotomy group and two born to women in conservative management group. Two of these babies, both from amniotomy group, required intubation and ventilation for 48 hours. Both were discharged from hospital at less than one week of age in good condition. Cephal haematoma was diagnosed slightly more frequently in babies born to women in amniotomy group than those in conservative group. Four fractures were noted, all clavicular: three in amniotomy group and one in the conservative management group.
In conclusion despite the reduction in frequency of dystocia for women with greater initial cervical dilatation (3 cm) who assign to early amniotomy group, the rate of caesarean section was affected. Women in conservative management group were likely than these in amniotomy group to receive oxytocin. They are also frequently underwent amniotomy for delay in progression of labour, thus, the medical treatment of establish dystocia appear to have concealed any excess risk of caesarean section in the conservative management group.

A recently published randomized study compared the effects of two elements of active management (early amniotomy and early administration of oxytocin) with that of routine care on the risk of cesarean section. After adjustment for several confounding variables, the analysis suggested that, active management may reduce the risk of caesarean section.\(^{(16)}\)

Another meta analysis study design was published, the objective to this study is to estimate the effects among the nulliparous of early augmentation with amniotomy and oxytocin on caesarean delivery and on other indicators of maternal and neonatal morbidity including transfusion, Apgar score <7 at 5 minutes and admission to the special care nursery.

Publish studies were identified through manual and computerized searches. Two unpublished studied were identified through
direct communication with investigator. Twelve trials were identified, which compared a policy of early labour augmentation including amniotomy followed by oxytocin with less active form of management, two methodologically unacceptable studies were excluded. Studies were group according to whether they admitted only women with abnormal progress (therapy trial: n=3) or accepted women with normal labour (prevention trial: n=7). The results through unstratified analysis did not provide support for the hypothesis that early augmentation reduce the risk of caesarean section (typical odd ratio (OR) 0.9, 95% C.I, 0.7 –1.2). Although only small number of women have been randomized in therapy trials, a trend toward a reduction in the rate of cesarean section with early intervention was seen in this group (typical O.R 0.6, 95% CI 0.2 –1.4). Conclusion, early augmentation does not appear to provide benefit over a more conservative form of management in the context of care of nulliparous women with mild delay in the progress of labour. In the context of establish delay in labour, an active policy to augmentation may reduce the risk of cesarean section. However, only three small trials have been performed in this context, and they do not have adequate power to allow firm conclusion to be drawn.(16)

Another study with objectives to evaluate whether active management of labour lowers
cesarean section rate, shortened the length of labour and overcomes any negative effects of epidural analgesia on nulliparous labour was conducted in 405 low risk term nulliparous patients, they were randomly assign to either an active management group (n=205) or as usual were control group (n=200). Patients who were undergoing active management of labour were diagnosed as being in labour on the basis of having painful palpable contractions accompanied by 80% cervical effacement, underwent early amniotomy and were treated with high dose oxytocin for failure of progress adequately in labour. The results show that, the caesarean section rate in the active management group was lower than that of controls, but not significantly so (active management group, 7.5%, controls, 11.7%; P = 0.36). The length of labour in the active management group was shortened by 1.7 hours (from 11.4 to 9.7 hours; P = 0.001). Fifty-five percent of patients received epidural analgesia; a reduction in length of labour persisted despite the use of epidural analgesic (active management 11.2 hours vs control 13.3 hours; P = 0.001). A significant greater proportion of active management patients were delivered by 12 hours compare with controls (75% vs 58%; P= 0.01), this difference also persisted despite the use of epidural an analgesia (66% v 51%; P = 0.03). In conclusion patients undergoing active management had
shortened labours and more likely to be delivered within 12 hours, different that persisted despite the use of epidural analgesics. There were trend towards a reduce rate of cesarean section.\(^{(18)}\)

Another study (randomized clinical trial) conducted in labour ward of City University Hospital. The objective is to compare two management policies, rupture of membranes when the women are in normal labour or leave them intact as long as feasible. 1540 women in uncomplicated labour participate. The main outcome measures including the duration of labour, Apgar score, foetal morbidity and maternal morbidity including perineal injuries, mode of delivery, epidural rates and the total numbers of vaginal examinations in the first stage of labour after amniotomy. The results show that a routine policy of amniotomy in labour has no measurable advantage over selective amniotomy for parous women (difference = 4 min), but shortened labour in nulliparous women by one hour (Mann Whitney U test; P <0.05). There was suggestion of higher caesarean section rate (OR 1.9; 95% CI 0.9 –3.5) and there were more vaginal examinations after membrane rupture in the group allocated routine amniotomy. There were no measurable differences in the oxytocin use, pain or analgesia requirements. The conclusion, routine amniotomy may shorten the first labour, but not
the subsequent ones. There is suggestion that routine surgical interference may be harmful by increasing the risk of caesarean section and this agrees with data from other trials (common odds ratio 1.2; 95% C.I 0.92 –1.6). (19)

Amniotomy and foetal heart abnormalities:

Secondary analysis study design of the result of multicentre randomized trial of early versus late amniotomy was carried out. The objectives of this analysis is to determined whether early amniotomy, when practiced as an isolated intervention, increases the hourly rate of foetal heart rate record abnormalities. Intervention: Early amniotomy versus an attempt to conserve the amniotic membranes. Main outcome measures: the hourly rates of early, mild variable, severe variable and late decelerations; cesarean section rate. The results: severe variable deceleration, when classified as categorical events (≥ 1 hour to 2 hours; ≥ 2 hours and < 4 hours, ≥ 4 hours); were more frequent in the amniotomy group (chi 2 for trend = 5.7; P = 0.017). The mean hourly rates of severe variable and late foetal heart rate decelerations were increased in amniotomy group (severe variable: amniotomy group 1.4 hours, control 0.7 hours, P = 0.021; late: amniotomy group 3.3 hours, control 2.3 hours; P = 0.011). Although the overall rate of caesarean section was similar in the two groups (OR 1.2,
95% C.I 0.8 –1.8) there was an increase in caesarean for foetal distress (OR 2.3; 95% C.I 1.1 – 4.5) associated with amniotomy. The conclusion suggest that, early amniotomy increases the hourly rate of severe variable foetal heart rate decelerations without evidence of an adverse effects on neonatal outcome in settings where the diagnosis of foetal compromise is based primarily on electronic monitoring, caesarean section for foetal distress may be increased by early amniotomy.\(^{(20)}\)

Another study involve 39 consecutive patients with no fluid observed at amniotomy were prospectively enrolled in this study to determine the rate of pathological foetal acidaemia in the absence of fluid observed at amniotomy. Ultrasound measurement of amniotic fluid index was performed. Umbilical cord gases were performed on arterial and venous samples at time of delivery. Patients name and medical record number were noted and delivery data were extracted from review of the medical record. The median gestational age at admission was 41 weeks (range 38-42 weeks). Sixteen patients (41%) were subsequently noted to have meconium at time of delivery, the median amniotic fluid index was 2.0 cm with a range of zero to 9.0 cm. Thirty patients (76.9%) had amniotic fluid index of less than 5 cm, the median umbilical artery pH in this patient population 7.21 with range of 6.75 of 7.42. Only one infant had an
umbilical arterial pH less than 7:00. The rate for caesarean section for documented foetal distress was 2.6%. The absence of observed fluid at amniotomy, while commonly associated with meconium at delivery, is not predictive of foetal acidaemia or operative delivery for foetal distress.\textsuperscript{(21)}

Women response to amniotomy:

Some women found amniotomy as effective as acceptable method of acceleration of labour while other react adversely towards it.

Darlen Abney said that, when the doctor came in and examined me, and said “That if he broke my waters the baby would come in no time. So I said okay. And he was right. Three contractions later, I felt like pushing.

Lana said that, some guy came in, broke my waters with long hook, you know. Apparently they said that would help. Well, that for me was one of the worst moments of the whole experience, it was like all of my hopes and dreams of how it was going to be just sort of floated out with the waters. I well never forget that it was just an awful feeling warm and sad, it was like tears flowing out, you know.\textsuperscript{(22)}
Carol said that, I had my water broken after 8 hrs of labour “to get things going faster”. I was under the impression that my labour was doing just fine. I had not stopped once I started (unlike my first baby) and I had just started getting the urge to push. I was completely unmedicated I was checked when I told them the urge was starting. I was almost completely dilated. Apparently I had a very small “lip” on one side still. So they broke my water, like, said earlier “to get things moving faster”. This was at 4:11 am. One contraction later my daughter was born at 4:16 am! I had been waiting at home for my husband to arrive from two weeks business trip with my contraction 3 minutes apart. I was almost 4 weeks early and had no idea anything was happening until he stepped out of the cab. If I had known that she would born 5 minutes after my water broke I would not have waited for him to get home.

Margaret said that, For my first child, I had PROM (waters broke on their own at 36 weeks). For my second, I arrived at birth center at 4-5cm with my bag of water bulging the midwife asked if I wanted them broken. I knew things could hurt a lot more after words, but that it could also speed things up a lot. I thought about it for 15 minutes, and after I was assured that I could still go in the Jacuzzi, I said OK. It did not hurt at all for the actual procedure, and though the contraction change in character they didn’t really hurt any more those before. I went immediately into the Jacuzzi, and stayed there for ½ hour. Another hour or so later, and I was fully dilated. The pushing stage only lasted 13 minutes. On the whole, I was pleased with my decision to have my membranes ruptured.
Amanda said that my labour was augmented by breaking the waters. After which they told me that the baby’s head was really high and I would kill the baby if I got out of bed with cord prolapse. I really feel that this lead to every other intervention that I received, including forceps and episiotomy. Not to mention the fear of thinking my baby was dying I found out later that they knew the baby was high up, so it was really their fault that I was in any danger, but my doctor said that had he been there he never would have broken my water. I would do every thing different if I could.\(^{(22)}\)

**OBJECTIVES**

The objectives of the study was to address the effects of early amniotomy on nulliparous patients regarding the followings:

1. The effects of early amniotomy on the duration of the first stage of labour.

2. The need for oxytocic drugs and analgesia.
PATIENTS AND METHODS

Study design and period:
This is hospital based prospective cohort study conducted on primigravidae attending the labour ward in the latent phase of the 1st stage of labour in Khartoum Teaching Hospital in the period from October 2002 to August 2003.

Study area:
This study was carried out in Khartoum Teaching Hospital, which received patients not only from Khartoum city, but also from area surrounding Khartoum State. It accepts booked, referred and causality patients. This hospital consist of six units each covered by a senior and a junior consultants from both Ministry of Health and from Faculty of Medicine, University of Khartoum. The labour ward covered by resident registrar and house-officers.

Study population:
The study population including 208 nulliparous women attending the labour ward in the early latent phase of labour fulfilling the criteria for the study design.

These nulliparous divided into two groups; the amniotomy group (103 patients) and the conservative group (105 patients) at the
time of presentation, the patients were randomly distributed either in the amniotomy group or on conservative group.

Verbal consent was taken from those patients in the amniotomy group. In the conservative group we attempt to avoid amniotomy unless there is medical indication such as to assess the colour of liquor in suspected foetal heart abnormalities, an arrest of cervical dilatation for at least 3-4 hours or dystocia (cervical dilatation <0.5 cm 1 hour). Administration of oxytocin was permitted in the two groups in the presence of dystocia.

Inclusion criteria:
1. The patient should be a primigravida.
2. The pregnancy should be term (37-42 weeks).
3. The patient should be in spontaneous labour.
4. The cervix should be fully effaced and 3 cm dilated.
5. The contraction should be 1-2 per 10 minutes.
6. The foetus should be single with vertex presentation.

Exclusion criteria:
1. Patient with pre-labour rupture of membranes.
2. Patient with malpresentation (face, Braw and breech).
3. Patient with multiple pregnancy.
4. Patients that has contra indication before ARM.

Data collection:
The data were collected by questionnaire, which was filled by resident registrar in labour ward at after checking the patient’s fulfilling the inclusion and exclusion criteria.

Data analysis:
Information were entered into the computer system for analysis using SPSS software.
RESULTS

Two hundred and eight nulliparae patients attending the labour ward in Khartoum Teaching Hospital in early labour were enrolled in the study after fulfilling the inclusion and exclusion criteria. They were randomly divided into amniotomy group and conservative group without matching for the age, weight and height. The demographic variables of the study population including age, height and weight were presented in Figures 1, 2 and 3.

Regarding the age, 38.8% of amniotomy group versus 48.3% in conservative group, 37.9% in the amniotomy group versus 27.6% in the conservative group, 18.4% in the amniotomy versus 24.8% in the conservative group and 4.9% versus 3.8% were respectively distributed in the age groups (17-21), (22-26), (27-31) and (32-39) (Fig. 1).

The mean age in amniotomy group was 23.3 years compare to 23.5 years in conservative group. The statistical analysis shows no
significant difference between aminotomy and conservative group (P = 0.156) regarding age distribution.

The distribution of nulliparae according to their height in amniotomy and conservative groups is seen in (Fig. 2). 15.5% of patients in amniotomy group versus 17.1 in conservative group, 55.3% vs 41.9%, 26.2% vs 37.1% and 2.9% vs 3.8 are respectively distributed in height groups (145-157), (158-164), (165-171) and > 172 cm. The mean height in amniotomy group is 162.4 cm, while in conservative group is 162.75 cm. There was no statistically significant difference in height between the amniotomy group and conservative group (P= 0.251).

Concerning weight distribution, 22.6% of amniotomy group compare to 24% in the conservative group weighing between 50-60 kg, 22% versus 19.7% and 3.4% versus 6.7% were weighing respectively between (61-70) kg and (71-80) kg. There were 3 cases above 81kg in amniotomy group compared to none in conservative group (Table 5).

The mean weight in amniotomy group was 61.9 kg compared to 62.7 kg in conservative group. There was no statistically significant differences (P= 0.127) (Fig. 3).
Regarding the mode of delivery, 90 of patients (87.4%) in amniotomy group delivered vaginally comparing to 89 patients (84.8%) in conservative group, 4 patients (3.9%) delivered by assisted instrumental vaginal delivery and 9 patients (8.7%) by emergency caesarean section compared respectively to 6 cases (5.7%) and 10 cases (9.5%) in the conservative group (Fig. 4).

The statistical analysis shown in Table 1 comparing the mode of delivery in amniotomy and conservative groups show no significant difference \( p = 0.803 \).

Although the C/S rate in amniotomy group was 9 cases (8.7%) was less than in conservative group, 10 cases (9.5%), but this difference was not statistically significant \( P=0.51 \).

Regarding the indication of C/S in amniotomy group, 6 cases due to arrest of head in 2nd stage, of these 4 cases due to malposition including persistent occipto-posterior and a syncititism and two due to cephalopelvic dispropertities, 2 cases due to dystocia in 1st stage (dialtation of CX < 0.5 cm/hrs for at least 4 hours) and one case due to foetal distress in 1st stage of labour. The indication of C/S in conservative group including, 5 cases due to
dystocia, 2 cases due to foetal distress and 3 cases due to arrest in 2nd stage.

The instrumental vaginal delivery in amniotomy group was 4 cases (3.2%), one ventouse delivery due to foetal distress and 3 outlet forceps due to prolonged 2nd stage and poor maternal efforts, while in conservative group there is 6 cases (5.7%), all of them were outlet forceps delivery, 2 due to poor maternal efforts and 4 due to prolonged 2nd stage.

Regarding the need for oxytocin, 69 patients (67%) in amniotomy group needed oxytocin drug, while only 34 patients (33%) did not need oxytocin, while in conservative group 79 patients (75.2%) needed oxytocin drug and 26 patients (24%) did not use oxytocin, so there was no significant differences in the two groups (P = 0.196) (Fig. 3).

Of those patients who needed oxytocin in the amniotomy group, 56(54.4%), 12(11.7%) and 1(1.0%) received respectively (4-8), (9-16) and (17-32) mU/min of oxytocin, while those in conservative groups, 22 patients (21%), 48(45.7%) and 9 patients (8.6%) received respectively (4-8), (9-16) and (17-32)mU/min of oxytocin (Table 2).
Although there was no significant statistical difference in the need of oxytocin between amniotomy group and conservative group, however, more than half (54.4%) of patients in the amniotomy group need small dose (4-8mU/min) compared to conservative group (21%), which is statistically significant (P = 0.001) (Fig. 5).

The need of analgesia: 41 patients (39.8%) in amniotomy group did not need analgesia compared to 79 patients (75.2%) in the conservative group. Sixty-two patients (60.3%) in amniotomy group used pethidine, 50 –100 mg once, compared to 26 patients (24.8%) in the conservative group. This need in analgesia was statistically significant (P = 0.0001) (Table 3).

Of those in amniotomy group, which need pethidine, 40 patients (38.8%) received 100 mg of pethidine compare to 12 patients (11.4%) in conservative group. The remainder, 22 patients (21.3%) in amniotomy group received 50mg pethidine compared to 14 patients (13.3%) in conservative group (Fig. 6).

The duration of 1st and 2nd stage, the mean duration of 1st stage of labour in the amniotomy group was 7.56 hours compared to 9.81 hours in conservative group, which is statistically significant (P = 0.0001). The majority of patients in amniotomy group (101 patients
“98%”) delivered within 10 hours compared to 65 patients (61.94) in the conservative group. Only 2 patients (1.94) of amniotomy group delivered in 10-12 hours compared with 35 patients (33.3%) in the conservative group. No patient reminded un delivered after 12 hours in amniotomy group compared to 5 patients (4.761) in the conservative group.

Regarding the 2nd stage of labour the mean duration in the amniotomy group is 32.8 minutes compared to 40.6 minutes in conservative group. This difference was statistically significant (P = 0.012), only 10 cases (9.7%) in amniotomy group take more 60 minutes in 2nd stage compared to 22 cases (20.95%) in the conservative group.

The neonatal outcome: 93 neonates (90.3%) in the amniotomy groups cried immediately and have Apgar score > 7 in 5 minutes, this in compare with 92(87.6%) in conservative groups, 10 neonates (9.7%) in the amniotomy groups had Apgar score < 7 in 5 minutes in amniotomy group, of these 8 neonates responded to resuscitation by suction, oxygen and did not need admission to NCU, while 2 neonates (1.9%) diagnosed as meconium aspiration and were admitted to NCU for 48 hours. One of them delivered by forceps and
the other by C/S due to foetal distress. Both of them were discharged after 48 hours in good condition.

In the conservative group, 13 neonates (12.4%) had Apgar score < 7 in 5 minutes, out of these 12 (11.4%) response to resuscitation by oxygen, suction and only one neonate (1%) need admission to NCU, this neonate also delivered by forceps delivery and fortunately discharge from Nursery Unit in a good condition after 48 hours (Figures 8 and 9).

However, there is no statistically significant difference in perinatal outcome between the amniotomy and conservative group (P= 0.571) (Table 4).

<table>
<thead>
<tr>
<th>Mode of delivery</th>
<th>Cases</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous vaginal delivery</td>
<td>90</td>
<td>89</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>43.5%</td>
<td>42.8%</td>
<td>86.1%</td>
</tr>
<tr>
<td>Instrumental delivery</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>1.9%</td>
<td>2.9%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Emergency Caesarean section</td>
<td>9</td>
<td>10</td>
<td>19</td>
</tr>
</tbody>
</table>
Table 2: Distribution of oxytocin need in study population

<table>
<thead>
<tr>
<th>Dose (mU)</th>
<th>Cases</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>34</td>
<td>26</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>16.3%</td>
<td>12.5%</td>
<td>28.8%</td>
</tr>
<tr>
<td>4 – 8</td>
<td>56</td>
<td>22</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>26.9%</td>
<td>10.6%</td>
<td>37.5%</td>
</tr>
<tr>
<td>9 – 16</td>
<td>12</td>
<td>48</td>
<td>60</td>
</tr>
</tbody>
</table>
Table 3: The need for analgesia in study population

<table>
<thead>
<tr>
<th>Analgesia</th>
<th>Amniotomy group</th>
<th>Control group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>41</td>
<td>79</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>19.7%</td>
<td>38.0%</td>
<td>57.7%</td>
</tr>
<tr>
<td>Pethidine</td>
<td>62</td>
<td>26</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>29.8%</td>
<td>12.5%</td>
<td>42.3%</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>105</td>
<td>208</td>
</tr>
<tr>
<td>Perinatal outcome</td>
<td>Amniotomy group</td>
<td>Control group</td>
<td>Total</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>-------</td>
</tr>
<tr>
<td>Cried immediately</td>
<td>93</td>
<td>92</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>44.7%</td>
<td>44.2%</td>
<td>88.9%</td>
</tr>
<tr>
<td>Resuscitated</td>
<td>8</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3.8%</td>
<td>5.8%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Admitted to NCU</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1.0%</td>
<td>0.5%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
Table 5: Weight distribution in study population

<table>
<thead>
<tr>
<th>Weight (Kg)</th>
<th>Amniotomy group</th>
<th>Control group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-60</td>
<td>47</td>
<td>50</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>22.6%</td>
<td>24%</td>
<td>46.6%</td>
</tr>
<tr>
<td>61-70</td>
<td>46</td>
<td>41</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>33.1%</td>
<td>19.7%</td>
<td>41.8%</td>
</tr>
<tr>
<td>71-80</td>
<td>7</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>3.4%</td>
<td>6.7%</td>
<td>10.1%</td>
</tr>
<tr>
<td>&gt; 81</td>
<td>3</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>1.4%</td>
<td>0.0%</td>
<td>50.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>105</strong></td>
<td><strong>208</strong></td>
</tr>
</tbody>
</table>
DISCUSSION
This study was conducted to evaluate the effects of early amniotomy at first stage of labour in nulliparous women regarding the caesarean section rate, instrumental delivery rates, the effects of early amniotomy on the duration of first stage of labour and the risk of dystocia (dilatation < 0.5cm/hr). Other aspects studied included the need for analgesia, the need for oxytocic drugs and the neonatal mortality and morbidity in the first 24 hrs following delivery.

The results showed that caesarean section rate was reduced in the amniotomy group compared with the conservative group (8.7% vs 9.5%). This difference was not statistically significant. These results were compatible with results formulated by Thoronton and colleagues in 1994.\(^{(3)}\) It was also compatible with the results reached by Lopez Zeno and colleagues (1992) when they noticed that C/S rate was 10.5% with active management and 14.1% with the conservative group.\(^{(5)}\) However, the results were not compatible with those of Frigoletto and Co-workers (1995) and with those of Robert's and colleagues (1997) which noticed that although active management shortened labour, it did not affect the caesarean section rate.\(^{(6,7)}\) Also these results were completely in contrast to those of
Johnson N (1997) where there was suggestion of higher caesarean section rate in patients in whom early amniotomy was performed.\(^{(19)}\)

This insignificant statistical difference may be due to small sample size and the biased effects of late amniotomy in the conservative group when it was needed for acceleration of dystocia and assessment of the colour of liquor.

The caesarean section rate due to dystocia (cervical dilatation <0.5cm/hr) in amniotomy group include two cases (1.94%) compared to 5 cases (4.7%) in the conservative group which was statistically insignificant. These results were compatible with those of Fraser (1993) who found that amniotomy in women with dilatation <3cm rather shortened labour nor decrease the incidence of dystocia.\(^{(14)}\) However, these results were not consistent with those of the investigator in Canada and United States who noticed that, early amniotomy reduced the frequency of C/S for dystocia by one third and produced consistent rate of approximately 10-12%. Again this can be explained by the reduced sample size and the use of oxytocin when slow progress in labour was observed in the conservative group.
Regarding the instrumental delivery, there were 4 patients (3.2%) in amniotomy group in comparison to 6 patients (5.7%) in conservatoire group in whom either forceps or ventouse were applied. The difference was not statistically significant. These results were compatible with those of UK amniotomy group\textsuperscript{(11)} and with those of Fraser\textsuperscript{(8)} and lopez-Zeno.\textsuperscript{(5)} This insignificant difference may be explained by the biased effects of free use of oxylocic drugs in the second stage in both amniotomy and conservative groups.

Sixty-nine patients (67%) in the amniotomy group needed oxytocic drug in comparison to seventy-nine patients (75.2%) in the conservative group. This difference is not statistically significant (P = 0.196) which is compatible with the results of the Canadian early amniotomy group\textsuperscript{(14)} which noticed that the rate of oxytocin administration was reduced in women with initial dilatation >3 cm but not among those with \( \leq 3 \) cm dilatation. Also this may be explained by early performance of amniotomy (in the early latent phase) when uterine contractions were not efficient (<3 contractions per 10 minuets). Although the need of oxytocin was not different between the two groups, small dose of oxytocin (4 - 8 mu/min) were needed in amniotomy group (26.9%) in comparison to conservative group.
(10.6%). This difference was statistically significant (P = 0.001). Only one patients in the amniotomy group (0.5%) needed high dose of oxytocin (17-32 μg/min) in comparison to nine patients (4.9%) in the conservative group. These results were compatible with those of Garite and Associates (1993).\(^{(10)}\)

The need for analgesia is statistically significantly reduced in the amniotomy group in comparison to the conservative group (P = 0.0001). Of the 62 patients (60.3%) in the amniotomy group, 40 patients (38.8%) needed 100 mg pethidine and 22 patients (21.3%) needed 50 mg pethidine in contrast to 26 patients (24.8%) in the conservative group, which needed analgesia, 12 of them (11.4%) needed 100 mg and 14 of them (13.3%) needed 50 mg. These results were compatible with those of Roger's and colleagues (1997) who formulated that early amniotomy increase the need for analgesia.\(^{(18)}\)

All patients who received analgesia in both amniotomy and conservative groups had received pethidine only. No other forms of analgesia like epidural or inhalation analgesia were used by any member in the study population. This is explained by the non-
availability of enough number of anesthetist to cover all labour wards and the lack of epidural catheters and inhalational analgesia.

The mean duration of the first stage of labour in the amniotomy group was 7.56 hours and it was statistically significantly shorter than that in the conservative group (9.8 hours) by approximately 2 hours. These results were compatible with those of Fraser (1991) who showed that amniotomy will accelerate spontaneous labour by 1-2 hours (for women with > 3 cm initial cervical dilatation, early amniotomy was associated with reduction of 125 minutes in the interval). Also these results were compatible with those of Reger's R and colleagues (1997) who noticed that the length of labour in the amniotomy group was shortened by 1.7 hours. However, these results were in contrast to those of Rause (1999) who showed that addition of amniotomy to oxytocin augmentation in active phase only shortened labour by 44 minutes. Also these results were incompatible with those of the Canadian Early Amniotomy Group which formulated that amniotomy in the women with dilatation < 3 cm neither shortened labour nor decrease the incidence of dystocia.
All patients in the amniotomy group were delivered within 12 hours in comparison to 5 patients in the conservative group who remained undelivered by that time. Even those who delivered by C/S in the amniotomy group due to arrest in 2\textsuperscript{nd} stage of labour still delivered within 12 hours from the time of amniotomy.

The mean duration of 2\textsuperscript{nd} stage of labour in the amniotomy group was 32.4 min in comparison to 40.6 min in the conservative group. This difference was of statistical significance ($P = 0.012$). These results were in contrast with the studies carried out by Fraser, Lopez-Zeno, Impey and Roberts\textsuperscript{(4,5,7,8)} who stated that the median duration of the 2\textsuperscript{nd} stage of labour was similar in both amniotomy and conservative groups. These differences may be explained by the effects of oxytocin and the direct application of the presenting part on the cervix, which induced early bearing down. Also these results may be biased by the onset of diagnosis of the 2\textsuperscript{nd} stage of labour, which in most patients took place when they started to bear down.

There was no reported cases of major obvious maternal morbidity including extensive perineal injuries involving the anal sphincter, puerperal pyrexia or puerperal sepsis in amniotomy group in comparison to conservative group. However, there may be
underreporting of such complications by patients who may as well seek advice in other hospitals.

Regarding the neonatal mortality and early neonatal morbidity (in 1st 24 hrs), 10 neonates (9.7%) in the amniotomy group had Apgar score < 7 at 5 minutes, compared to 13 neonates (12.4%) in the conservative group. Of those 10 neonates in amniotomy group, 9 (8.79%) had old meconium at time of ARM, and one neonate (1%) had thick meconium with foetal bradycardia (FHR < 100) and was delivered by emergency C/S and admitted to NCU. This pregnancy was found to be prolonged (41 week + 5 days) and the placenta was found to be small with multiple large areas of infarction and reduced liquor. Eight neonates (7.8%) of those with Apgar score < 7 were resuscitated at the delivery room by oxygen and nasopharyngeal suction and showed dramatic improvement. The other neonate who was delivered by an outlet forceps due to persistent bradycardia was admitted to NCU. Both neonates were discharged in good condition after 72 hours.

Of those 13 neonates in the conservative group, which had Apgar score < 7 at 5 minutes, 12 responded to resuscitation in the delivery room and did not need admission to NCU. Only one neonate
was admitted to NCU, who was also delivered by forceps due to prolonged second stage and poor maternal effort and again was discharged in a good condition after 48 hours. No perinatal loss (including fresh stillbirth and early neonatal loss) observed in both amniotomy and conservative groups. These results were compatible with those of Cohen (1987) who guaranteed the safety of the amniotomy procedure for mothers, fetuses and neonates.\(^{(15)}\)

**CONCLUSION**

- Early amniotomy remain an effective method in management of nulliparous patients as it was proved to be of great value in reducing the duration of labour by approximately two hours without adverse maternal or perinatal outcome. It is of great interest to endorse that amniotomy reduced the cesarean
section rate even though it was not statistically significant.

- Although amniotomy can cause FHR artifact in CTG machine and can produce variable decelerations, this did not result in adverse perinatal outcome including Apgar score < 7 in 5 minutes or increase incidence of admission to intensive neonatal care units.

- No adverse effects from amniotomy maneuver were reported such as cord prolapse, chorioamnionitis although small number of women found the procedure to be unpleasant and slightly painful.
RECOMMENDATIONS

- All labour wards should have a protocol for management of labour which should include active management.
- All primigravidae who present in early labour with fully effaced cervix and regular uterine contractions should have early amniotomy (provided that the presenting part is well fitting into the cervix) and oxytocin should only be started if uterine contractions were inefficient by 1-2 hours of amniotomy.
- Adequate pain relieve should be offered to all patients who required it. Pethidne should be given as free and should be available in the labour wards.
- When oxytocin is needed, it should be given in incremental doses every 30 minutes according to patient’s response.
- Those patients who have active management (amniotomy + oxytocin) should be meticulously followed up so as to guard against uterine hyper-stimulation and foetal distress.
- The number of vaginal examination should be reduced to the minimum to reduce the risk of infection.
- Antibiotic cover should be started when there is suspicion of infection.
REFERENCES


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