

Amnioscopy in high risk pregnancy

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Synopsis

EXPERIENCE WITH AMNIOSCOPIC studies on 280 patients with high risk pregnancy in the University Hospital, Kuala Lumpur, is reported. The technique of Saling (1962) was employed. Results are classed as clear (negative) or meconium-stained (positive).

Toxaemia of pregnancy forms the largest single group of patients (57.1 per cent). Prolonged pregnancy (28.9 per cent) forms the next largest group. Of 51 patients with meconium staining, 32 (61.7 per cent) were correctly diagnosed, giving 19 false negative. There were also 34 false positive.

The examination is not difficult to master, does not cause the patient great discomfort and the results useful as an aid in the management of patients with high risk pregnancy. It is suggested that plentiful of black hair may be a hindrance in the method.

The passage of meconium is regarded as an unfavourable sign to the fetus. Almost 50 per cent of neonates, with this sign alone, shows a delay

in onset of respiration for more than 4 minutes after delivery (Wood and Pinkerton 1961). This increased hazard to fetal well-being has also been shown by White (1955), Wren (1960), and Cox (1961).

The presence of meconium-stained liquor, in the absence of fetal heart arrhythmias, has been shown by Coltard et al (1969) to be associated with a 9 per cent fetal distress as demonstrated by acidosis in fetal blood sampling. However, it must be remembered that in some, the meconium has been passed days previously and the fetal blood sampling. However, it must be remembered that in some, the meconium has been passed days previously and the fetal acidosis no longer exists.

Amnioscopy is now widely used as a means of detecting meconium-staining in the liquor. Saling (1962) pioneered this work; in 1,355 high risk patients monitored by amnioscopy, he reduced the perinatal mortality to 14 per thousand. This study sets forth to evaluate the value of amnioscopy in monitoring high risk patients. Further, it looks into

the maintenance of such a service in a busy obstetric unit. The study was carried out in the University Hospital, Kuala Lumpur.

Method

The technique for amnioscopy has been documented (Saling 1962, Barham 1968). The authors have adopted the method and recommendations of Saling (1962). The technique has been found to be relatively simple and can be performed by any doctor after a brief period of training. Patients could be either in-patients or out-patients. They feel no ill-effects after this simple and quick procedure. High risk patients were amnioskoped every 48-72 hours. The amnioscopic studies were carried out under aseptic conditions. Swabs for culture were taken from the cervical canal before each examination.

Amnioscopy clinics are organised in the morning to facilitate inductions of labour where indicated. The procedure is explained to each patient before she is included in the study. Whenever any suspicious signs are seen, a joint examination by both authors is carried out.

The colour of the forewaters is simply classified as clear or meconium-stained. The volume of liquor in the forewaters and the presence of vernix caseosa are noted. In patients where the head is engaged and no liquor seen in the forewater, the fetal head is gently displaced and the liquor examined. In spite of this, some patients showed no liquor in the forewater.

Patients with positive findings are induced by low amniotomy, either at amnioscopy, or within a few hours. At amniotomy, the colour of the liquor was noted. This observation is sometimes carried out by independent observers.

Racial Distribution

The racial distribution of the 280 patients are shown in table I. The distribution is similar to that of the ratio of the various races admitted to the maternity wards.

Age Group

All the patients are between 16 to 45 years old. The majority (59.4 per cent) are between 21-35 years old.

Indications for amnioscopy

Toxaemias of pregnancy form the largest single group of patients in this study — 57.1 per cent. This group includes any patient with a blood pressure reading of 120/90 mm Hg and above, after bed rest in the ward. There may or may not be other signs of pre-eclampsia.

Table I
Racial Distribution of 280 patients

Race	No. of Patients
Chinese	149 (53.0%)
Malay	68 (24.0%)
Indian	52 (18.0%)
Others	11 (5.0%)
Total	280 (100.0%)

Table II
Indications for Amnioscopy

Indications	No. of Patients
Toxaemias of pregnancy	160 (57.1%)
Post-dates	81 (28.9%)
Doubtful/Unknown dates	25 (8.9%)
Miscellaneous	14 (5.1%)

The next group of patients are those who have passed the expected dates of delivery — 28.9 per cent. Unless otherwise indicated by amnioscopy or other clinical signs, the pregnancies in these patients were terminated 14 days after the expected dates of delivery.

Other patient had amnioscopic supervision because of uncertain dates, diabetes mellitus, bad obstetrical history and suspected placental insufficiency.

The aim in this series is to use amnioscopy as an ancillary aid in the management of patients whose pregnancies are considered to be high risks. Hence, pregnancies may be terminated in spite of favourable amnioscopic findings.

Number of examinations

Table III shows 51.8 per cent of the patients required only one amnioscopic examination each. Of these, 34 patients went into spontaneous labour within 24 hours of amnioscopy. Despite favourable amnioscopic findings, patients had induction of labour for other reasons.

Patients who had 2 amnioscopic examinations form 23.2 per cent and 15.0 per cent had 3 examinations. One patient who had uncertain dates had 8 amnioscopic examinations. She subsequently delivered spontaneously a baby weighing 3250 gms.

Gestation period

The majority of patients, who had amnioscopic monitoring, were between 38 to 42 weeks of gestation. There were two exceptions — a patient

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Fig. 1: Amnioscopic view of clear liquor amni.



Fig. 2: Amnioscopic view of meconium-stained liquor amni.

at 32 weeks of gestation and a patient at 35 weeks of gestation. The former, a patient with twin pregnancy, had severe pre-eclampsia; urine estimations showed falling levels of oestriols. Meconium-stained liquor was detected by amnioscopy. The pregnancy was terminated at 33 weeks gestation. A live first twin was delivered. The liquor was meconium-stained. The second twin was a macerated still-born.

The second patient was also a case of severe pre-eclampsia with falling urinary oestriol level. Amnioscopy showed meconium-stained liquor. A healthy baby was delivered following induction.

The main contra-indication to early amnioscopic supervision is accidental amniotomy. In this series, accidental rupture of the forewaters occurred once, an incidence of 0.35 per cent. It is the authors' opinion that the risk of accidental rupture of membrane is not so significant as to deter clinicians from performing amnioscopy before the 36th week of gestation, if monitoring is indicated.

Result

The results are shown in Table IV.

Of 51 patients who actually had meconium-stained liquor, 32 patients (61.7 per cent) were correctly detected before the onset of labour. The meconium-stained liquor in the other 19 patients (38.3 per cent) were missed at amnioscopy. The actual incidence of meconium-stained liquor in this series of patients was 18.2 per cent. This is fairly high when compared with the results of: Hintingford (1968) 11.2 per cent; Saling (1962) 13.0 per cent; Korknacki (1968) 12.8 per cent; and Barham (1968) 13.0 per cent.

Thirty-four patients, diagnosed as having meconium-stained liquor at amnioscopy, were found to have clear liquor at amniotomy. They all had uncomplicated deliveries thereafter. Many had scanty liquor.

Outcome of pregnancy

Of 280 patients, 170 patients (58.9 per cent) had induced labours. This group consisted of those patients who were diagnosed as having meconium-stained liquor at amnioscopy and patients who failed to respond to management.

Seventy-one patients (25.3 per cent) were

Table III
Number of Amnioscopic Examinations Each Patient Underwent

No. of Amnioscopic Examinations	No. of Patients
1	145
2	65
3	42
4	14
5	9
6	4
7	0
8	1

Table IV
Results of Amnioscopic Study in 280 patients

Amnioscopic Finding	Number
Positive	32
False Negative	19
False Positive	34

allowed to continue their pregnancies, until they went into spontaneous labours.

One of the known complications of amnioscopy is that some patients tended to go into labour after amnioscopic examinations. In this study, 34 (12.1 per cent) patients went into labour within 24 hours of the first amnioscopic examination.

Of these patients who went into labour following amnioscopy, 17 (50.0 per cent) patients were more than 40 weeks maturity and none of the patients was less than 38 weeks maturity. In this group of patients, all the babies produced were healthy. The results are shown in Table VI.

Complications

A cervical swab was taken as a routine before each amnioscopic examination. The incidence of infection before, during and after labour and delivery was not significantly different from patients who did not have amnioscopy.

Accidental amniotomy accounted for 0.35 per cent — only one patient. She went into labour and delivered a healthy infant. The incidence of accidental rupture of membranes reported by various workers are: Saling (1962) 2.1 per cent; Barham (1968) 1.0 per cent; and Browne (1968) 3.0 per cent. Brisk bleeding as a result of amnioscopy was not encountered.

Table V
Types of labour following amnioscopy

Type of Labour	No. of Patients
Induced	170
Spontaneous	71
Spontaneous with 24 hours of amnioscopy	34
Elective Caesarean section	5
Total	280

Table VI
Thirty-four patients who had "Amnioscopy Induced" labours

Gestation Period	No. of Patients
38 — 39 weeks	5 (14.7%)
39 — 40 weeks	9 (26.6%)
Over 40 weeks	17 (50.0%)
Unknown	3 (8.8%)
Total	34 (100.0%)

Perinatal mortality

There were two perinatal deaths. The first baby died four hours following a difficult vacuum extraction delivery. Autopsy showed a severe intracranial injury and haemorrhage. The second baby lost was the second twin, born macerated. The corrected perinatal mortality (excluding the death from birth trauma) was 3.5 per thousand.

Discussion

Bailey (1948) was the first to report on the use of amnioscopy on monitoring the fetus in utero. He was not convinced of its value. Saling (1962) produced good results by amnioscopic supervision of high risk patients. Mainly due to Saling's work, amnioscopy has gained popularity in many centres in Europe, the United Kingdom and Australia. The basic aim is to monitor the intrauterine environment of the fetus.

The mechanism which causes the passage of meconium is controversial. However, it is generally accepted that the relaxation of the sphincter ani muscles is initiated by fetal hypoxia.

Walker (1954) suggested that the passage of meconium is associated with reduced oxygen tension of the blood in the umbilical vein, usually at or below 30 per cent. The low oxygen tension is said to stimulate the vagus nerve and relax

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Fig. 3: Amnioscopic view. Blood vessels and stains obscuring view.



Fig. 4: Amnioscopic view. Blood stains obscuring view.

the sphincter ani. In a study of 2,301 patients, Leonard (1962) found 4.3 per cent had meconium-stained liquor. The aetiology of this was unknown in 58 per cent of the patients. The perinatal loss in the group with meconium-stained liquor was 9.5 per cent, 8 times higher than usual.

Perinatal mortality in patients with meconium-stained liquor has been reported as 100 per thousand by Fitzgerald and McFarlane (1955); 30.0 per thousand by Cox (1961). Even though the presence of meconium in the liquor suggests a current or past episode of hypoxia (Morris and Beard 1968), the degree of risk to the fetus is still uncertain. On the other hand, a fetus may perish from hypoxia in the absence of meconium-stained liquor.

In this study, the pick-up rate has not been encouraging. Of 66 patients diagnosed as having meconium-stained liquor, 32 turned out to be correct at amniotomy. On the other hand, 19 patients with meconium-stained liquor were missed. (See Table IV) This large number of false negative is worrying. This may be due to the inexperience

of the workers rather than the inadequacy of the method. Hintingford et al (1968) reported 2 false positives and one false negative in a group of 290 patients. Henry (1969) reported one false negative in 204 patients. Browne et al (1968) reported two patients with antepartum intrauterine death with maceration who were found to have clear liquor at amniotomy, four days and six days after intrauterine deaths respectively. Three of their 1,434 patients failed to reveal that hypoxia was imminent. The fetuses succumbed during labour within 24 hours of the last amnioscopic examination when the liquor was reported to be clear.

Barham (1968) stated that, with practice, the amnioscopist should be able to detect meconium-stained liquor in at least one half of the examined patients who develop meconium-staining. The authors agree with this view. However, there are certain groups of patients in whom assessment of the liquor is difficult, e.g. patients with scanty liquor in the forewater in spite of having displaced the fetal head.

However, Henry (1969) considered these

patients with scanty liquor as positive amnioscopic findings. This is then taken as an indication to terminate the pregnancy. In the other group of patients, for some unknown reason, meconium does not circulate to the forewaters; often the meconium is old and the liquor scanty. The presence of old blood stains on the membranes can also cause confusion at amniotomy. Asian babies tend to have rich growth of black hair. The authors consider this black background may hinder the

appreciation of the colour of the liquor. Hence the high percentage of false positive. However, until further work is done on black-haired babies, this remains a conjecture.

Acknowledgement

The authors are grateful to Prof. Donald P. C. Chan, formerly University of Malaya, for encouragement and help.

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