CAUSES OF STILL BIRTH

An Analysis of a hundred consecutive Hospital Cases.

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For this analysis a hundred still births have been taken from the records of the City of London Maternity Hospital between April, 1933 and April, 1935.

The Hospital had the charge of 1,784 deliveries in 1934 with three maternal deaths, i.e., a mortality of 1.7 per 1,000. There were 56 still births, i.e., 3.13 per cent. Both the maternal mortality and still-birth rate have decreased during recent years in the Hospital, owing to better organization, better equipment, and to the appointment of more senior graduates as residents. The decrease in still births has been mainly in forceps and breech delivery cases.

This series of a hundred recent still births, which includes emergency cases, brings out a few points of great interest, e.g., the infrequency of syphilis as a cause, the great frequency of toxæmia as a cause, and the large number of intra-uterine deaths due to factors unknown.

The list of causes in order of magnitude is as follows:

(1)	Toxæmia including accidental hæmorrhage	...	...	28
(2)	Antepartum death from no obvious cause	...	...	13
(3)	Placenta prævia	...	...	11
(4)	Uterine inertia	...	...	10
(5)	Fœtal deformity	{ anencephaly 4 } { hydrocephaly 5 }	...	9
(6)	Postmaturity	...	...	7
(7)	Prolapsed cord	...	...	5
(8)	Disproportion	...	...	4
(9)	Forceps	...	...	3
(10)	Breech	...	...	2
(11)	Following antenatal version	...	...	2
(12)	Syphilis	...	...	2
(13)	Malpresentation	{ Shoulder presentation 2 } { Brow presentation 1 } { Persistent occipito-posterior 1 }	...	4
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Analysing these figures we find that thirty-eight deaths were due to surgical or mechanical causes and sixty-one deaths were due to medical or pathological causes.

It is impossible to divide the cases into those which were avoidable and those which were not avoidable, as there is so much to learn yet in their prevention.

1.—Toxæmia.

Toxæmia is the largest factor (28 per cent.) in causing still births. It also conduces to pernicious vomiting of pregnancy, accidental hæmorrhage, and eclampsia in the mother. It also leads to premature labour and thereby is the most serious factor in the neonatal death rate.

Patients with toxæmia have albuminuria, high blood pressure and other pre-eclamptic symptoms, e.g., oedema. Labour may be ushered in, usually prematurely, by antepartum hæmorrhage, abdominal pains, sickness and diarrhoea. Foetal movements cease before delivery takes place, which commonly produces an under-sized foetus with a placenta showing depressions on its maternal surface filled with blood clots.

Of the twenty-eight cases, seventeen (or sixty per cent.) were primiparæ and only one patient had eclampsia. The general treatment of such cases is most important and doubtless prevents many still births and neonatal deaths. It consists in a vegetable and fruit diet with the avoidance of all meats, copious fluids, open air exercise in moderation and medication with alkalis and calcium.

Clinically I find a completely protein-free diet not so good as one including milk, and that purgation exclusively by salines is not beneficial. If two weeks' treatment by rest and diet does not cause a very marked improvement in the albuminuria, then it is wise to induce labour by medical means and apparently sacrifice the child. Medical induction is more successful in these toxic cases than it is ordinarily.

Maternal recovery afterwards is sometimes slow and occasionally there is jaundice and suppression of urine for some days.

2.—Antepartum Death from no Obvious Cause.

Death *in utero* before the onset of labour is of great interest because its causation is uncertain. Causes that are known are toxæmia, injury, syphilis, antenatal version, and certain drugs. Certain women produce almost full time dead children, not once but twice and sometimes three times. Cæsarean section has been resorted to in such cases so as to obtain a live child. Others have been treated medically with success by such drugs as thyroid, potassium chlorate, mercury, potassium iodide, corpus luteum and vitamin E. On investigating the thirteen cases in the present series I find that placental insufficiency seemed to be an important factor, as four cases had relatively small placenta or the placenta showed infarcts. In three cases there was hyperpiesis. One woman had had five still births. The Wasserman and Kahn reactions were negative in all cases, there was no albuminuria in any of them and the "blood ureas" were normal. Drugs taken to procure abortion can result in antepartum death. Some obstetricians greatly fear the use of quinine in medical induction for this reason.

The treatment of this condition is uncertain because the cause is uncertain. Nowadays corpus luteum extract is in great favour, but clinically I find thyroid of greater assistance. This is probably due to its iodide content, as it is well known that in goitre districts animals are prone to abortion.

3.—Placenta Prævia.

Placenta prævia caused twelve per cent. of the still births. It would be a larger factor were not some foetal lives saved by Cæsarean section, which gives the child the best possible chance of survival, especially in central placenta prævia cases. If the child is small and doubt as to its viability is held, then rupture of the membranes and plugging or the application of Willets forceps gives the next best hope. Pulling down a leg, with or without internal version, is the least satisfactory treatment, judging by statistics, as death by cerebral injury in these cases is not uncommon. Multiparity is conducive to placenta prævia and in the series we find ten were multiparæ and two were primiparæ.

It is seldom, if ever, wise to allow a pregnancy to go on with the hope of producing a viable child once a diagnosis of placenta prævia has been made.

4.—Uterine Inertia.

Uterine inertia causes prolonged labour and resulted in ten per cent. of the deaths. These were cases in which the force of the pains alone was at fault and in which no disproportion in size between the head and pelvis, or abnormal position was present.

The history in the cases was of feeble pains, early rupture of the membranes, and slow dilatation of the os. In several the foetal heart ceased to beat before the os was fully dilated. Six of the cases required instrumental assistance—forceps delivery or craniotomy.

Should the child's heart give an indication of approaching death, then anaesthesia and manual dilatation or incisions of the cervix with immediate forceps delivery can save the life of the child, and must be adopted if the mother's life is in danger as is evident by a rising pulse rate and temperature.

In the series all cases were primiparæ, all had a prolonged first stage, some up to four days. Craniotomy was done twice in the series and forceps were used four times.

The medical treatment consists of using morphia, chloral and bromide in the early stages. In some cases the sluggish uterus can be stirred into action by injections of thymophysin. This drug I find most useful and not infrequently it saves the use of the forceps.

Calcium medication in the antenatal stages is believed to reduce the incidence of this condition.

5.—Foetal Deformity.

There were nine cases of deformity, including hydrocephalus, anencephalus, spina bifida and foetal ascites. Four of the mothers were primiparæ. Such deformities are more likely to occur at the first birth. The trouble is not likely to occur at subsequent confinements.

The monsters are more likely to be female than male. Six of the nine were females in the present series. The condition was generally suspected on palpation in the first instance, as most cases had hydramnios. The diagnosis was confirmed by X-ray examination and medical induction was started as soon after as convenient. Two required craniotomy, but most were easy labours. It is not wise to do Cæsarean section on these cases as labour is seldom obstructed and if a section is done there may be difficulty in getting the uterus to contract owing to its previous distension by hydramnios.

The cause of foetal deformity is as yet unknown.

6.—Postmaturity.

Postmaturity was in my opinion the cause of seven deaths. The postmaturity extended to one to four weeks, the average being over two weeks.

The weight of the infants varied from 7 lbs. 8 ozs. to 9 lbs. 8 ozs.

Five of the seven mothers were primiparæ and all were under 32 years of age.

The general history of these cases was that of disproportion, i.e., prolonged labour with forceps delivery or craniotomy. One patient who was twelve days overdue suddenly developed albuminuria with antepartum foetal death.

Postmaturity with its seven per cent. of still births can therefore cause death and physical damage to the child. It can also injure the mother's pelvic floor by the increased size of the child, and the delay cause her mental suspense—one of the worst forms of torture. For this reason my general attitude towards labour is to give a late date for the expected delivery, e.g., seven days from the last day of the last period plus nine months—and then soon after that day to do a medical induction which is usually successful.

Medical induction is often feared because quinine definitely slows the foetal heart and pituitary extract can cause uterine spasm. The risk, however, is very slight. I have seen many foetal deaths caused by postmaturity and have had to do a few craniotomies on well calcified skulls situated above the pelvic brim in fat women who were postmature. There are few operations more difficult.

Medical induction should be tried two or three times before surgical induction is resorted to, as surgical induction precludes subsequent Cæsarean section.

7.—Prolapsed Cord.

There were five cases of still births due to prolapsed cord. Most of them (three) were multiparæ, all were vertex presentations, and generally the child was large and the head was high.

Prolapse of the cord is generally fatal to the child. Rapid delivery by forceps extraction with fundal pressure is the best practice in multiparæ. In primiparæ raising the foot of the bed well up and performing a Cæsarean section as soon as possible gives the child its best chance.

Cord reposition and internal version are not often successful.

Other abnormalities of the cord can cause foetal death, e.g., true knots of the cord cause death by asphyxia as also does a short cord if during delivery it is wound around the child's neck tightly.

8.—Disproportion.

There were four cases where the child's head was too large to come through the pelvis for the child to live. In two cases craniotomy was done. Three were emergency cases admitted after forceps failed outside.

All of them were primiparæ, with large children and either due or overdue. Medical induction ten to fourteen days previously would probably have saved these lives.

9.—Forceps.

Three cases of still birth I attributed to forceps. Two had forceps applied outside before the os was fully dilated. Labour was allowed to progress some hours after admission and natural delivery was obtained in one case.

The tendency now is to use light forceps like Haig Ferguson's, or even Wrigley's, and by proper antenatal care not to get difficult forceps cases. An injection of thymophysin and a wait of half an hour will often avoid the recourse to forceps. Death in these cases is due to tentorial tears consequent on pulling the occiput too far forwards and injuring the tentorium by pressing it against the pubic arch. Episiotomy and fundal pressure are two means of lessening cerebral injury in forceps cases.

10.—Breech Delivery.

Breech delivery accounted for two still births. Both these cases were primiparæ and there was difficulty in getting down the extended arms and head. There were other breech deliveries still born, but the causes in these instances were placenta prævia, albuminuria, or accidental hæmorrhage.

At the City of London Hospital it has long been the custom to deliver breeches with extended legs with the foetus in that attitude. Fundal pressure is adopted during the pains with the patient in the dorsal position in bed. The fourchette is depressed by the finger and the posterior buttock rides over the perineum. Fundal pressure is continued and dexterous manipulation of the arms and head results in the easy delivery of a live child.

Should the child be large and become impacted, then the lithotomy position is indicated with deep anæsthesia and extraction in the classical manner. The mortality would seem to be related more to the skill than to the strength of the

operator, as deaths of the foetus are due not to asphyxia from inspiration of liquor amnii or from pressure on the cord by the aftercoming head, but to tears of the tentorium caused by attempts at delivery of the head before it has been flexed in the pelvis.

The number of breech deliveries has been greatly reduced by antenatal version and not a few Cæsarean sections are performed for breech presentation in elderly primiparæ.

11.—Antenatal Version.

Antenatal version caused two foetal deaths. One mother was admitted in a shocked condition after severe hæmorrhage following version performed outside, and the other ceased to feel foetal movements some hours after version had been performed.

Death is due to placental injury, thereby causing its separation by blood clot from its uterine site.

Version is best done gently by two people, and before the thirty-sixth week. If the legs are extended the version is difficult and should not be persisted in if strong force has to be applied, whether or not the patient is anæsthetised.

Death of the child *in utero* can follow a fall which can result in a similar injury.

12.—Syphilis.

There were only two deaths consequent on syphilis. Both foetuses were macerated and died before labour began. This figure seems low as in the past a high proportion of still births were attributed to syphilis, but other figures elsewhere bear out this low incidence. In the Report of the New York Lying-In Hospital for 1934 only two out of 139 infant deaths are attributed to syphilis.

13.—Malpresentations.

There were two deaths due to transverse presentations, one to a brow and one to a persistent occipito-posterior presentation.

Transverse and brow presentations will cause deaths, some of which can only be avoided by early recognition and appropriate treatment, preferably in an institution, owing to the added risk of sepsis and the fact that extra deep anæsthesia is required if the manipulations are to be successful and not to end in contraction rings and craniotomies. The persistent occipito-posterior presentation requires manual rotation of the head, and of the trunk also if possible, before the application of the forceps. It is wise to give these cases at least two hours in the second stage, as they often rotate spontaneously.

14.—Anæsthetics.

Anæsthesia seldom causes still birth. I have seen still birth follow prolonged gas and oxygen anæsthesia in a mother with a low blood pressure. Chloroform and ether are safe as far as the child is concerned. Prolonged apnoea of the child after the use of morphia during labour often causes unnecessary alarm.