Section of Obstetrics and Gynaecology

President—Miles Phillips, M.D.

[June 17, 1938]

DISCUSSION ON OBSTETRIC SHOCK

Dame Louise McIlroy: There is no very definite information available as to the exact nature of obstetric shock. Primary shock is in most cases associated with haemorrhage, but delayed shock, although rare without the previous presence of primary shock, occurs in some cases within a few hours of delivery, and when no cause is known or suspected. Surgical shock and obstetric shock are closely allied, and the Great War provided considerable information as to the results of traumatism and bruising of tissues in war wounds (Cannon: "Traumatic Shock", New York, Appleton, 1923). The President has stressed the great importance of the prevention and treatment of obstetric shock (Brit. Med. Journ., 1931 (i), 833).

Shock as a factor in the causation of maternal mortality possibly has more serious influences than we imagine, since statistics classifying deaths due to haemorrhage rarely give shock as a separate factor. In the Royal Free Hospital, out of 9,468 cases with a maternal mortality of 26 cases (2.7 per 1,000) six of the deaths were due to shock and four to shock and haemorrhage combined (Lancet, 1930 (i), 97). Doris Brown considers that shock is one of the most serious accidents of childbirth, resulting in a high maternal mortality, 16.3% of all deaths ("Obstetric shock", Ulster Med. Journ., 1937, p. 293). The mortality rate is not comparable with the incidence rate as undoubtedly a considerable number of patients recover under efficient treatment.

Nature of Shock

There are various theories as to the nature of the condition. These comprise disturbances of the vasomotor and heat-regulating centres caused by the production of toxic substances from bruised or lacerated tissues, histamine being given as an example. These substances enter the blood-stream and cause a rapid fall of the systolic blood-pressure, with stagnation of the corpuscles in the dilated capillaries, leading to plasma depletion of the vital organs and tissue edema. Acidosis is present when the carbon dioxide content of the blood is lowered. Bailey and Driscoll ("Shock in pregnant and puerperal women", Am. Journ. Obst. and Gyn., 1926, 11, 287), maintain that owing to the exertion of labour the respiratory centres become depleted of carbon dioxide, and that collapse occurs from respiratory, not from cardiac, failure. The importance of the influence of the suprarenals upon blood-pressure has also to be considered in relation to shock.

Shock differs from haemorrhage in that the surface capillaries are not depleted of blood; the skin is grey or cyanosed and is cold and damp from sweat. The temperature is low, the respirations are shallow, and the pulse-rate, as a rule, is high. The patient is dull and apathetic, in contrast to the patient who is collapsed owing to haemorrhage, there is anxiety, restlessness, and air hunger. In a case of shock the systolic blood-pressure may fall below 80 mm. and sometimes cannot be recorded.

Primary shock usually follows haemorrhage or extensive injury of the birth-canal. It may be the result of rapid evacuation of the contents of the uterus, as in the case of sudden rupture of the membranes in hydramnios. Rapid emptying of a distended bladder may cause signs of mild shock, such as shivering.

Secondary shock may occur when we think a case of primary shock is on the
way to recovery. The onset may be sudden, and death may occur within a few minutes. Delayed shock is not always associated with primary shock or hemorrhage. It may mean that there is infection or peritonitis. It may occur within a few hours of an apparently normal delivery.

**Caution of Shock**

Shock following rupture or acute inversion of the uterus is well known, but the chief interest lies in the more frequently occurring type of case such as after a protracted labour, with consequent muscular fatigue, or when lacerations have occurred as the result of precipitate labour or hurried instrumental intervention. The President has laid great emphasis upon lacerations of the pelvic floor as a cause of shock.

The predisposing causes of shock are preventable in many cases by efficient supervision of the patient during pregnancy. A patient who is anaemic or under-nourished naturally has a low resistance to strain, injury, or even a moderate loss of blood. In pulmonary or cardiac diseases there is a likelihood of the occurrence of shock after delivery.

The study of the mental attitude of the patient during pregnancy and labour is of the utmost importance. Mental anxiety and suffering react upon the tissues and lower resistance to shock and infections. The present-day Press publicity of maternal mortality statistics causes fear among child-bearing women. When a patient dreads a confinement or a major operation the risk is intensified and the medical attendant is always anxious as to the result. In cases of illegitimate births the element of shock is sometimes encountered if there has been much mental anxiety.

The next most important causes of shock are toxæmia and chronic nephritis. Poisons added to those already in the circulation cause over-stimulation of the medullary centres and general lowering of vitality. Acidosis may also be present. Hypertension in toxæmia may be a natural effort to combat these poisons. When the fall in blood-pressure is rapid there is serious shock. We know little of these conditions, and they are worthy of much investigation and research. Eclamptic patients and those suffering from chronic nephritis stand operations badly and statistics show a high mortality in these cases, after accouchement forcé. Collapse and death may follow the rapid evacuation of the uterus and fall of intra-abdominal pressure. Conservative methods of treatment have now superseded operative measures in a large number of cases.

Shock, apart from that due to hemorrhage, seldom occurs during pregnancy. Patients with low blood-pressure and shock should be treated for shock, and a rise in blood-pressure established, before any operative interference is carried out. In cases of placenta praevia the hemorrhage must be controlled by methods which cause least bruising of tissues. Forcible dilatation of the cervix in the treatment of hemorrhage is sometimes followed by severe shock. When the hemorrhage ceases these patients usually respond quickly to restorative treatment.

Causes of shock during labour and delivery.—Laceration of the pelvic tissues frequently followed forcible dilatation of the cervix by accouchement forcé—a method of delivery now happily relegated to the past. The application of forceps when the cervix is partially dilated, or when the fetal head is above the brim, may be the cause of shock. It is not the duration of labour that matters, but the degree of suffering and strain. Sedatives such as morphine, chloral, &c., should be given during the first stage.

Excessive muscular exertion such as undue straining, causes fatigue and is responsible for a tired, relaxed uterus after delivery. Toxins are driven into the bloodstream and the carbon dioxide content of the blood is lowered. Exposure to cold and wet bed-clothes lowers the vitality, and undue sweating, due to muscular exertion and heat, helps to deplete the body of fluids. Excessive purgation causes loss of body fluids.
The choice of an anaesthetic is important. Nitrous oxide with oxygen is the safest; chloroform, except when given in small doses and when the administration is not prolonged, may give rise to acidosis and toxic liver changes. Ether is less dangerous.

Mismanagement of the third stage of labour is in my opinion the most frequent cause of shock, apart from that due to haemorrhage and operative measures. Some persons have little patience, and do not hesitate to remove the placenta by the hand if there is any delay in its delivery. This operation is one of the most serious in obstetric practice, and should be avoided unless there is urgent reason for its performance such as haemorrhage. I feel convinced that an adherent placenta is of rare occurrence.

As soon as the delivery of the infant has taken place, a hand placed on the uterus may feel if the placenta has descended into the vagina. No massage is necessary, except in cases of haemorrhage, and should then be applied very gently. When the placenta has descended and the uterus is contracted, the placenta may be expelled by hand if the patient cannot expel it herself. When it protrudes at the vulva, the hand should at once be taken off the abdomen, as the stimulation of the uterus may cause snapping-off of the membranes following the delivery of the placenta. If there is post-partum haemorrhage and the uterus fails to contract under massage, bi-manual compression of the body of the uterus will stop the loss of blood.

**Prophylaxis and Treatment**

Efficient antenatal supervision by a qualified medical practitioner is essential. Deficiency diseases, such as anaemia, toxæmia, &c., should be prevented by suitable diet, fresh air, and exercise.

All fear should be banished. Sleeplessness should be treated by suitable sedatives. If there is toxic anteparturn haemorrhage, the patient must be treated for toxaemia and shock before any operative measures are contemplated. Blood-pressure observations will be the guide as to her progress. Morphine is useful in these cases, and sulphate-of-magnesia solution introduced into the colon is of benefit. Glucose in fruit-juice solution should be given to drink. Caesarean section is a dangerous operation in cases of collapse. Even packing the vagina may increase the degree of shock. In 40 consecutive cases of toxic anteparturn haemorrhage under my care, I did not perform one Caesarean section and there were no deaths. The method of treatment was to treat the toxaemia and rupture the membranes. In cases of placenta praevia, as already mentioned, haemorrhage should be controlled at once by the easiest method possible, as, for example, by Willett's clamp.

Throughout all labours, patients, when awake, should be fed and have fluids such as glucose lemonade given to them. Starvation is responsible for much of the undue fatigue and collapse after delivery. Sedatives, e.g. morphine, chloral, and bromide, should be given in the first stage of labour, and gas-and-oxygen during the second stage. Slow delivery by forceps is advisable. Mr. Phillips advocates the leaving of the perineum unstitched until collapse, if present, has been treated.

**Administration of fluids.**—If the blood-pressure is low it can only be raised by the administration of fluids, and it is absolutely necessary that this should be carried out at once by the best means at hand—by mouth, with glucose drinks if possible, and by rectum with saline or coffee saline solutions, which may be given through a rubber tube and funnel or by a douche can.

Slow subcutaneous injection of saline solution into the tissue under the breasts, or into the axilla or the thigh is a method available in most cases. The administration to be effective should be slow and the temperature of the fluid just above body heat.

In hospital practice the procedure is easier than in domestic practice and administration into the vein is much to be preferred to any other method, short of
blood transfusion. Sterile flasks of fluid are now supplied by chemists and are ready for use after being heated in warm water.

Saline solution acts quickly but its effect is only temporary; the fluid soon leaves the vessels and diffuses into the tissues; the addition of 6% solution of gum arabic causes longer retention. Dextrose, 20%, is sometimes added.

Blood transfusion is the ideal method of restoring a collapsed patient, but in emergency cases it is difficult to find a donor, except in large hospital centres, and the grouping is impossible unless methods for doing it are easily available. In domestic practice, especially in places at some distance from a town, the flask of saline gum-solution is the most useful, because it can be kept at hand. The slower the method of administration of fluid or blood, the better. The continuous-drip method is that most frequently employed, except in cases of extreme urgency, e.g., after severe haemorrhage, when fluid must be administered as quickly as possible. The blood-pressure should be ascertained at frequent intervals; by this means the patient’s progress can be observed. Oxygen is of use combined with 5% carbon dioxide. Warmth should be applied with care; Wright and Colebrook (Lancet, 1918 (i), 763) have pointed out the danger of too-rapid raising of the temperature by increasing acid in the blood. Collapsed patients should not be removed to hospital until treatment for shock has been carried out. The "flying squad" arrangement is excellent, as it does not involve the removal of the patient. Stimulants have their place, but it is useless to whip-up a flagging heart until the loss of fluid has been restored. Pituitrin is advocated, but I have seen the occurrence of shock after the administration of a pituitrin injection.

Dr. H. L. Sheehan: At the Glasgow Royal Maternity Hospital during the last five years, a study has been made of all patients who died with the clinical appearances of shock during delivery, or within twenty-four hours afterwards, and who were examined post mortem. Some aetiological factor was present in every case: no examples were found of "pure obstetric shock", i.e., shock following a normal delivery in a healthy woman, without any clinical or pathological explanation. This is probably dependent on the rejection of all cases in which a post-mortem examination had not been made.

The pathological changes were not in agreement with those described in experimental shock. The chief findings were: (1) Subendocardial haemorrhages in the left interventricular septum. These were usually present when the patient had remained a few hours in a state of shock before death; they were not found when the patient had died rapidly. They occurred in certain other patients who had died without apparent shock, and the possibility of a cerebral or vagal disturbance must be considered in these cases. The haemorrhages were considered to be probably indicative of a circulatory disturbance in this region which may have had a deleterious effect on cardiac function.

(2) The lungs sometimes showed some congestion and oedema of one or two lobes, particularly in cases in which shock had followed a series of haemorrhages, or in cases of shock without haemorrhage in which the patient had died during delivery or within an hour or two afterwards. Intravenous glucose-saline did not lead to oedema of the lungs in any of the cases studied. Sometimes there were multiple small petechial haemorrhages throughout the lungs, but the significance of these was not clear.

(3) The anterior pituitary gland showed necrosis in many of those patients who lived long enough for the histological changes to become recognizable. This was apparently a result of the general circulatory collapse. In the initial stages, before the necrosis was sufficiently advanced to be recognized under the microscope, there was presumably a serious functional disturbance of the anterior lobe. No decision could be arrived at as to whether this functional disturbance might be a factor in the deaths of shocked patients, a few hours after delivery. The enormous mortality
from post-operative collapse among rats hypophysectomized at the time of delivery was, however, an interesting finding.

(4) Acute dilatation of the stomach was a common finding—particularly after dystocia shock—and was presumably a result of a vagus disturbance.

(5) The pressure lesions at the base of the bladder were sometimes the source of a very early pyelonephritis, which might cause pyrexia and raised blood urea.

(6) The uterus sometimes showed gross lesions, such as rupture of the lower segment, utero-placental apoplexy, or inversion. In dystocia-shock the uterus was large, oedematous, and poorly-retracted in the early stages; certain of the late shock deaths were associated with gross oedema and early necrosis of the myometrium. In cases of retained placenta the patients who died early showed little or no abnormality of the uterus, but in the cases of later shock deaths the uterus was large and edematous, while in one case of very late death it was in the condition of early necrosis.

(7) In the pelvic floor there was sometimes hæmorrhage between the bladder and symphys in the dystocia-shock cases, but no other obvious hemorrhage was seen except in ruptured uterus. The edema of parametria and pelvic floor which occurred in certain of the cases was insufficient to account for shock on a plasma-loss theory.

(8) The ovaries showed extensive hæmorrhage in the stroma in a few cases; probably this was not due to trauma.

(9) The other viscera and the general vascular system showed no changes of significance.

Dr. W. H. F. Oxley said that he agreed with most of the points raised by Dame Louise McLroy and with her methods of treatment, but when he had heard her speak about a special kind of shock, labelled "obstetric shock", occurring in normal women after a normal labour, he felt as if he had been transported to an unknown world. Although he had been responsible for some 50,000 confinement cases he had never seen such a condition. In this he agreed with Dr. Herbert Spencer, and it had been interesting to learn from Dr. Sheehan that death from this cause had not occurred in his hospital.

Traumatic shock was not uncommon after severe injuries of the genital tract, and some women died from it—as they died from shock after injury to other parts of the body. Shock also occurred in cases of hæmorrhage, even though the amount lost was insufficient to affect the blood volume to a serious extent. He had seen nervous girls faint during labour, but the fainting was due to syncope, not to shock. In some girls fainting occurred from very slight causes.

No doubt physiologists would say that there could be no pain without shock and they were probably correct, but in normal labour cases the shock was so slight that it could not be discovered on ordinary clinical examination and the mothers did not feel ill. He suggested that the label of "obstetric shock" was being wrongly affixed to the common conditions of fatigue and starvation after prolonged labours, and since these could be avoided by timely intervention and good feeding it was dangerous to introduce that new idea. In his hospital women were fed frequently during labour, having soup, puddings, sweet drinks, &c.,—not solid meals, because an anaesthetic might be needed, but plenty of nourishment. A woman needed food if she had to work, whether the work was a day's washing or having a baby, but she did not always get it.

In reply to a question by the President: Binders were used at his (the speaker's) hospital, but were not applied until the patient was ready to be warded—about half, or three-quarters, of an hour after the child was born. Their use could not account for the absence of "obstetric shock" said to be due to the sudden diminution of intra-abdominal pressure at the birth of the child and therefore necessitating the application of the binder immediately afterwards.
He thought that a hand placed on the abdomen gave a better idea of the state of the uterus during the third stage of labour than mere observation did.

He did not advise the stitching of perineal tears before the birth of the placenta: in fact, he thought that in the event of serious tears better anatomical approximation of the tissues could be obtained if an hour or two were allowed to elapse before the repair was carried out, and he adopted this practice whenever it was convenient.

He had no hesitation in removing the placenta manually, for he knew that if his experienced labour-ward nurses were unable to squeeze it out it was adherent and not merely retained. Under those circumstances there was no object in waiting.

Dame Louise McIlroy (in reply) said that it was her custom to repair the perineum while waiting for the separation of the placenta. The haematoma described by Dr. Sheehan might possibly be due to the heavy hand-manipulation of the uterus during the third stage. When performing Caesarean section she manipulated the uterus as little as possible because of the danger of haematoma of the broad ligament. She did not describe the bandaging of the extremities as this was so well known in the treatment of cases of haemorrhage. In her opinion manual expulsion of the placenta from the uterus was inadvisable except in cases of haemorrhage.

Large Mesenteric Cyst situated mainly behind the Cæcum and resembling an Ovarian Cyst-Adenoma

By S. Gordon Luker, F.C.O.G.

Mrs. R., aged 36, was seen by me at the Out-patients' Department on March 31, 1938. She had had five children (the last being 9 years old), and had had no miscarriages. She was complaining of a pain in the right iliac fossa seven days previously. There had been some faintness but no vomiting: the bowels had been open regularly.

Present condition.—The periods had been regular every twenty-one days, and lasting for four days, the last having taken place two weeks previously. She said that the loss had not been much lately. Her general health was good.

On abdominal examination, a median swelling was felt rising above the pubis and to the right side. It was ovoid in shape and reached from the pelvic inlet below to above the level of the umbilicus towards the right loin. It was tense and elastic and (?) cystic. The uterine body was felt to be distinct. There was no history of any difficulty in micturition or of any increase or decrease in the quantity of urine. The diagnosis gave rise to some doubt because the tumour was not entirely mobile and could not be pushed away from the right iliac fossa. Hydrenephrosis was suspected but there had been no symptoms connected with the urinary system. The patient was admitted to hospital where, on further examination of the urinary system, hydrenephrosis was excluded. A tentative diagnosis of an ovarian cyst in the originating right broad ligament was made.

Operation.—On April 8, under spinal anaesthesia, a left paramedian incision was made and a large cyst, 7 in. in diameter, was found in the cecal region, quite distinct from the right tube and ovary. It had the appearance of a smooth-walled, ovarian cyst, with a wall thick enough to give it a pearly lustre. It was situated in the lower part of the mesentery of the cæcum and ascending colon, and was quite distinct and separate from the uterus or its appendages, from which it was distant 3 in. The cæcum and appendix were pushed forward by the tumour so as to be situated on its anterior aspect near the middle. The intestine was empty and there was no evidence of obstruction to the passage of the intestinal contents. The peritoneum was incised over the antero-lateral surface of the tumour and the cyst was then carefully shelled out of its bed. There were two bundles of vessels supplying blood to the cyst, but