RUPTURE OF THE UTERUS*

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Since 1947, 18 cases of rupture of the uterus during labour have been treated at the Sinoia Native Hospital, all except one case being under the care of the writer. As the treatment given is at variance with that recommended by others, in that repair instead of hysterectomy has been employed in certain instances, it has been decided to report the series in the hope that others may be induced to investigate the matter more fully, with a view to minimizing the profound damage which the condition does to its unfortunate victims.

The *classification* adopted by Beecham, Woodward and Beecham [1] is regarded as the soundest in that they divide their cases into Caesarean and non-Caesarean groups. In each category the term 'spontaneous' is employed to indicate self-engendered ruptures which occur without intervention, whilst the term 'induced' is used to indicate ruptures which are the result of interference, either operative, or from oxytocic or other means employed to hasten delivery.

In the present series there were 2 cases of Caesarean rupture and 16 cases of non-Caesarean rupture, of which 15 were spontaneous and 1 was probably induced.

CAESAREAN RUPTURES

There were 2 cases of rupture of previous Caesarean section scars in this series:

Elina had had 8 previous pregnancies; 6 children had been born alive. She had had a lower-segment operation at the 8th confinement. On admission to hospital, after being in labour for 36 hours, she was found to be in poor condition. The foetal heart could not be heard, and the uterus was tender over the lower segment. The vulva was oedematous. The cervix was fully dilated. The pelvic brim was contracted owing to forward projection of the sacral promontory, the result of osteomalacia (this type of deformity is common amongst African women who have borne many children). The abdomen was opened under local anaethesia, and the previous lower-segment scar was found to have given way. The baby was easily extracted through the opening and the uterus was closed with catgut. The patient made an uninterrupted recovery and was discharged after a hospital stay of 18 days.

In the case of *Jessica* there had been 3 previous pregnancies, all the children being born alive. The last child was delivered by a classical Caesarean section. The patient was admitted to hospital after having been in labour for 24 hours, as a case of ante-partum haemorrhage, and was obviously shocked. Her abdomen was opened under local anasthesia and the uterine scar, which was found to have given way, was repaired with catgut, after trimming of the edges. The patient's recovery was uneventful and she was discharged from hospital 17 days later.

My experience with rupture of previous Caesarean scars is in conformity with that of others, namely that the condition is less serious, is more easily dealt with, and is associated with a lower maternal mortality rate. Thus Munro Kerr and Chasser Moir[2] remarked that 'it is associated with a low maternal mortality'. Whitacre and Fang[3] state 'the conclusion from our experience that in cases of rupture of a Caesarean section scar the mortality rate for mothers is considerably less than in cases of other types of spontaneous rupture' agrees with that of many authors on this subject.

Beecham, Woodward and Beecham[4], in a series of 23 Caesarean ruptures, lost 6, a mortality rate of 26%, which is considerably lower than the death rate in their cases of spontaneous non-Caesarean rupture.

The reasons for the lower mortality figures are that the rupture is more confined, haemorrhage is usually less and repair is simpler. The diagnosis is more easily made, and the patient presents for aid earlier.

RUPTURE OF THE FUNDUS UTERI

There has been only 1 case of rupture of the fundus uteri in this series:

Mangara was admitted to hospital in a condition of shock, after being in labour for 24 hours. The foetal heart could not be heard. The vulva was oedematous. The cervix was fully dilated. The pelvis was contracted. The child was extracted with forceps after perforation of the head. The placenta followed easily. Exploration of the uterus was then carried out manually and a rent in the fundus was found. The abdomen was opened and, to my astonishment, the uterus was found not to be ruptured. However, it was very flaccid, and could not be made to contract and retract firmly. At this stage the patient collapsed and died a few minutes later. Careful examination then revealed a rupture of the fundus, extending to, but not through, the peritoneal surface. The patient had died of haemorrhage. Had an immediate hysterectomy been carried out to prevent this haemorrhage, it is possible that the patient could have been saved.

This type of case, although uncommon, is very important, and demands immediate hysterectomy. There is no other way of controlling the bleeding. The condition should always be borne in mind in cases of post-partum haemorrhage continuing after an intravaneous oxytocic.

SPONTANEOUS RUPTURE OF THE LOWER SEGMENT

There have been 15 cases of spontaneous rupture of the lower uterine segment in this series. Six of these patients died, a mortality rate of 40%.

Kettie was admitted with a history of having been delivered of a still-born child 2 days previously after a labour lasting about 24 hours. Examination of the patient revealed a twin pregnancy, the second twin being dead, and the head presenting in the perineum. The head was perforated, and the baby extracted with forceps. Examination showed a rent of the lower segment and the vaginal vault. The abdomen was opened, and the uterus and vagina were repaired with catgut. The patient died the following day. The cause of the rupture was delay in delivering the second baby.

Elitina, a primigravida, was admitted to hospital in a cold collapsed state, having been in labour for 2 days. After perforation of the head, the baby was extracted with forceps. A rupture of the anterior segment was found. The abdomen was opened. General peritonitis was present. Drainage was instituted, and antibiotics and intravaneous fluids were given. The cause of the rupture was a contracted pelvis. The patient died a few hours later.

*A paper presented at the South African Medical Congress, Pretoria, October, 1955.

Tabitha, who had had 2 previous deliveries, one child having being born alive, was admitted in very poor condition after being in labour for 2 days. At laparotomy the uterus was found to be ruptured, and frank peritonitis with pus was present. The patient died the same day. The cause of the rupture was a contracted pelvis.

Reti had had 3 children, all alive. She gave a history of strong labour pains which suddenly ceased, and on admission had a weak pulse, and no uterine contractions. The abdomen was opened, and a rupture of the lower segment due to a hydrocephalic foetus was found. The uterus was repaired. The patient died the following day, of shock.

Margaret, who had had one previous normal delivery, was admitted to hospital in very poor condition, with an oedematous vulva, and the head on the perineum. The baby was extracted with forceps after perforation of the head. An extensive laceration of the vault of the vagina, and a large rupture of the lower uterine segment, was found. The abdomen was opened, and subtotal hysterectomy was performed. The patient died the following day. The cause of the rupture was a contracted pelvis.

Neddie, a woman who had had 3 previous normal deliveries of live babies, was admitted after a prolonged labour, in poor condition. Examination showed a marked forward protrusion of the sacral promontory. The head was perforated but extraction with forceps was found to be impossible. Version was then performed, and the baby was delivered without difficulty. A complete rupture of the anterior lower segment extending into the vault on the left, was found on inserting the hand into the vagina. Laparotomy confirmed the rupture, and also confirmed that it was not the result of the version, but had occurred some hours previously. The rupture was satisfactorily repaired. The patient died the following day. Had a blood transfusion been available, it is possible that she would have lived.

Nine cases of spontaneous rupture of the lower segment survived.

Mariyana, a primigravida, had a subtotal hysterectomy performed for a rupture of the lower segment, due to a contracted pelvis. She recovered uneventfully, and was discharged after 13 days in hospital.

Dorasi was delivered in 1949 by my locum tenens. She was admitted with the baby's head on the perineum. Forceps delivery failed. Version was then performed and the after-coming head was perforated. A rupture of the uterus was found. The abdomen was opened and the rupture was sutured. The patient recovered and left hospital 43 days later. It is probable that the rupture in this case was the result of the version. It is important to note that in induced rupture, immediate operative repairs will give a reasonably good result.

Jessica, pregnant for the second time, was admitted after being in labour for 3 days. The head was on the perineum, and the baby was extracted with forceps after perforation of the head. The anterior lower segment was found to be ruptured. The abdomen was opened and the rupture was repaired with catgut. The patient left hospital 15 days later. The cause of the rupture was a contracted pelvis.

Biriyoza, a primigravida, had her anterior lower segment repaired after a complete rupture, and left hospital 12 days later. She, too, was a case of contracted pelvis.

Regina was admitted to hospital in June 1954 as a case of ante-partum haemorrhage. She had had 2 previous deliveries. One child had been born alive, the other had been still-born. Labour had commenced the morning before admission. Just after midnight, she maintained, she began bleeding from the vagina. She arrived at hospital next morning, still bleeding *per vaginam*, and in a somewhat anaemic state. Laparotomy under local anasthesia revealed a rupture of the lower uterine segment, through which the head was protruding. The baby and placenta were removed through the rupture, which was then repaired with catgut. The patient was discharged from hospital 17 days later. She was next seen in December 1954, when she was found to be pregnant, and was then seen regularly until April 1955. She next appeared in June, with a small baby in her arms, and stated that labour had come on in May, and that the baby had been born quite easily. On examination, the uterus was found to be normal and no sign of the previous rupture could be found. The baby was small, which accounted for the fact that it had been born normally, for the mother's pelvis is small.

Mwijawo, who had had 4 previous children, was admitted after a prolonged labour, in poor condition, with the baby's head on the perineum. The head was perforated and the baby was extracted with forceps. The rupture in the lower segment, extending into the vaginal vault on the right side, was repaired with catgut *via* the abdomen. The patient left hospital after 28 days well apart from a bilateral peroneal palsy. The cause of the rupture in her case was a partially contracted pelvis.

Sophia, who had had five normal deliveries, was admitted with a history typical of rupture of the uterus, namely strong uterine contractions which ceased suddenly. She was found to be shocked, her abdomen was tender and her pulse was weak. The abdomen was opened. The lower uterine segment was found to be ruptured, and a hydro-cephalic head was found to have been extruded through the rupture. The uterus was repaired with catgut after the baby and placenta had been removed. The patient recovered uneventfully and left hospital after 14 days.

Emeria, pregnant for the 9th time was admitted after she had been in labour for 24 hours, with a shoulder presentation. Vaginal examination confirmed a rupture of the anterior segment. The abdomen was opened, the child was removed, and hysterectomy was performed. The patient left hospital 13 days later alive and well.

Cecilia, a primigravida, was admitted with a hand presenting *per vaginam*, having been in labour for 2 days. The foetus being obviously dead, the arm was amputated, and the baby was delivered, as a breech after internal version. The lower uterine segment was found to be ruptured on vaginal examination; the abdomen was then opened and the rupture was sutured. The rupture was not the result of the version, but had been there for some while, as could easily be seen by the condition of the edges of the wound. The patient, after a stormy passage, left hospital 51 days later.

Of the 9 cases of spontaneous rupture of the lower segment who recovered, the 2 treated by hysterectomy both did well, and of the 7 treated by suture 4 did well and 3 went septic but recovered.

CLINICAL FEATURES

The clinical features of a ruptured uterus are not always clear cut. One sometimes gets the typical history of a violent labour ceasing suddenly, followed by shock and collapse and pallor. On other occasions the history is not so clear, and shock is not always a feature of the case. Haemorrhage may also be very slight.

The diagnosis is not always easy. The features that should make one suspicious are excessive abnormal discomfort and marked tenderness over the lower segment. The fact that the foetal parts are easily felt does not always connote rupture. This experience has also been that of Munro Kerr and Chassar Moir.[5]

It is regarded as important to explore the vagina and uterus manually after any difficult and prolonged labour, to make certain that rupture has not occurred (Munro Kerr and Chassar Moir[6]). Thus I was called in consultation recently to see a woman who had given birth to twins, the second being delivered by version and breech extraction. The accoucher did not suspect rupture at the time but, when I saw her 2 days later, she was very anaemic and had a large tender mass in the left pelvis and flank. She had obviously had a haemorrhage into the broad ligament. She was treated by antibiotics and recovered, the haematoma resolving.

Analysis of Cases

This series serves to confirm the experience of others that rupture of the uterus is commoner in multipara

then primigravida. Thus Beecham, Woodward and Beecham[7] and Whiteacre and Fang[8] had only 2 woman in their first pregnancy out of 44. Another notable feature is that the fact of previous normal deliveries is no guarantee that rupture may not occur at a subsequent pregnancy, especially in the African, in whom osteomalacia seems to be not uncommon.

The commonest cause of the rupture in this series of cases was an inadequate maternal pelvis, this occurring in 11 cases. This conforms to the experience of others.

Malpresentation of the foetus was responsible for 2 cases, one being a shoulder, the other a hand. This, too, agrees with Munro Kerr and Chassar Moir[9] who find malpresentation of the child the second most important cause of rupture of the uterus, and shoulder presentation the malpresentation most commonly responsible.

Hydrocephalus was the cause of rupture in 2 cases. This agrees with the experience of others, who have found hydrocephalus to be a common and important cause of rupture.

Twin pregnancy was responsible for one case of rupture, through prolonged delay in the delivery of the second twin.

The site of the rupture in all except one case was the lower uterine segment. This is in conformity with the experience of others. The reason would appear to be that the taking up of the lower segment thins it excessively, and this plus the pressure of the foetal head upon the symphysis weakens the lower segment till it ruptures.

Treatment

An important factor making for success in treatment of this highly fatal condition is early diagnosis. Delay prejudices the prospects of recovery. Thus in 2 of the fatal cases the patients were already suffering from frank peritonitis before arriving at hospital for treatment. Delay also increases shock and permits of greater haemorrhage before treatment.

Adequate quantities of blood are indeed most essential to satisfactory treatment. Unfortunately, in none of our cases were we able to obtain donors. Had blood been available, it is probable that 4 deaths might have been prevented.

Chemotherapy and intravaneous fluids were given to all cases, and contributed very materially to the recovery of those that survived.

The type of operation performed upon the uterus depends upon the case. Thus, in elderly women who have had many children, hysterectomy is the procedure of choice. In the young woman who obviously would like to have more children, conservation of the uterus has much to commend it. In 3 cases hysterectomy was performed. One of these died, the cause of death being shock. This patient was in poor condition before operation, and should have been given a blocd transfusion.

In 2 cases nothing could be done except drain the peritoneal cavity because of peritonitis; both cases died.

In 10 cases the uterus was sutured. Three of these died—a mortality rate of 30%. This compares very favourably with the figures for treatment of spontaneous non-Caesarean rupture by hysterectomy; e.g., Beecham, Woodward and Beecham[10] had a 44·8% mortality rate for their cases treated by hysterectomy.

CONCLUSION

These cases are reported as a plea for conservation of the uterus except in elderly multiparae in the treatment of this tragic condition. Ten cases had their uterus repaired, 3 dying, a mortality rate of 30%. This compares very favourably with the figures for hysterectomy. Furthermore, as the site of rupture is similar to the site of the lower segment incision, it should be possible to repair it satisfactorily and the scar should stand up to subsequent pregnancies. This is confirmed in the case of Regina, who had a normal delivery 11 months after repair of her rupture.

The final and most important reason for conservation of the uterus, lies in the fact that a Native woman without a uterus is valueless to the male. The husband will divorce her sooner or later on one pretext or another. Her plight is pitiful, and she becomes a social out-cast.[11]

My thanks are due to the Director of Medical Services for Southern Rhodesia for permission to present this paper.

REFERENCES

1. Beecham, Woodward and Beecham (1951): Amer. J. Obstet. Gynec., **61**. 824.
2. Kerr, J. M. M. and Moir, J. C. (1949): *Operative Obstetrics*, p. 838. London: Ballière, Tindall and Co.
3. Whiteacre, F. E. and Fang, L. Y. (1942): Arch. Surg., **45**, 229.
4. Beecham Woodward and Beecham (1951): *Op., cit.*, p. 830.
5. Kerr, J. M. M. and Moir, J. C. (1949): *Op., cit.*, p. 814.
6. Kerr, J. M. M. and Moir, J. C. (1949): *Op., cit.*, p. 835.
7. Beecham, Woodward and Beecham (1951): *Op., cit.*, p. 826.
8. Whiteacre, F. E. and Fang, L. Y. (1942): *Op., cit.*, p. 225.
9. Kerr, J. M. M. and Moir, J. C. (1949): *Op., cit.*, p. 830.
10. Beecham, Woodward and Beecham (1951): *Op., cit.*, p. 830.
11. Wood, R. C. H,. Native Commissioner, Sinoia. Private communication.