

# RUPTURE OF UTERUS AFTER INTRAVENOUS "SYNTOCINON" DRIP

(A Case Report with a Review)

by

S. N. MUKHERJEE,\* M.B., B.S., D.G.O., M.O. (Cal.)

The use of oxytocin in the management of cases of hypotonic uterine inertia in the first stage of labour is well established. A continuous intravenous drip of oxytocin in physiological dosage is extremely helpful in stimulating an inert labour. This practice is practically safe provided it is carried out carefully in selected cases, but is not always devoid of risk. It may well prove to be a dangerous drug sometimes either to the mother or to her baby or both.

A case is described below in which rupture of the uterus occurred during labour with foetal death, following the administration of "Syntocinon" (synthetic oxytocin) by intravenous drip method.

## Case Report

Mrs. K, aged 28 years, para 2 + 0, was admitted into the maternity hospital on 22-8-1961, at 11-40 a.m. with complaint of labour pains since 3 a.m. She had had two normal deliveries at term, the last one in 1956. She was not sure of her last menstrual period. She had no complaint during this pregnancy and did not attend the antenatal clinic.

The woman was of average height and build, and fairly nourished. Her pulse was 72 per minute and blood pressure was 110/70 mm. Hg. and urine contained nei-

ther albumin nor sugar. Her haemoglobin was 8 gm.%. Other systemic examinations revealed no abnormality. Abdomen was uniformly enlarged to the size of a full-time pregnancy. Uterine contractions were sluggish. The vertex was engaged in L.O.A. position, the foetal heart rate being 126 per minute. No vaginal examination was done at the moment. An enema was given followed by 100 mgm. of pethidine hydrochloride intramuscularly.

22-8-61, 1 p.m. The membranes ruptured spontaneously. The uterine contractions were still weak. The general condition of the patient was good. On vaginal examination, cord prolapse was excluded and the cervix was found to be three-fourth taken up, with the os about three fingers dilated. The head was at the level of ischial spines in L.O.A. position and no caput could be felt. The membranes were absent. Glucose 25%, 100 ml. with calcium gluconate 10%, 5 ml. were given intravenously.

4 p.m. As character of uterine contractions did not improve and no further progress of labour was noticed, the patient was once again examined thoroughly. The examination revealed the same previous findings. Clear liquor was draining. There was slight caput and the pelvis appeared to be clinically normal. Vitamin K, 10 mgm., and 5,00,000 units of crystalline penicillin were given intramuscularly. An intravenous drip with Syntocinon (synthetic oxytocin) 2 I.U. in 500 ml. of 5% dextrose solution was started at a rate of 10 drops per minute. The patient was carefully supervised as per standard directions.

6 p.m. General condition of the patient was satisfactory. Uterine contractions were good and came at intervals of 5-7 minutes lasting about 50-60 seconds. The foetal heart rate was 120 per minute. The patient

\*Reader in Obstetrics & Gynaecology.  
Medical College, Pondicherry.

Received for publication on 24-10-62.

complained of more abdominal pain than before.

6-30 p.m. The foetal heart was no longer audible. The patient did not complain of any extraordinary severe abdominal pain. There was no bleeding per vaginam. Her general condition was fair and pulse was 94 per minute. Her blood pressure was 104/74 mm.Hg. Abdominal examination was not difficult. There was no area of tenderness over the abdomen and no other abnormality detected. Uterine contractions were sluggish. The patient was bearing down fruitlessly. The head was low down and was visible on separating the labia. The drip was discontinued.

A vaginal examination was done. The head was below the level of ischial spines. The cervix was fully taken up and os was fully dilated. As there was no further progress of the head and a doubtful foetal heart, it was decided to deliver the child with forceps. Under pudendal block and local infiltration anaesthesia a fresh still-born female child weighing 6 pounds 10 ounces was delivered by easy low forceps at 7-15 p.m. The placenta and membranes were expelled five minutes later. There was neither any unusual haemorrhage nor any retroplacental blood clot. The uterus

was well contracted. Ergometrine 0.5 mg. was administered intravenously. The uterus was explored and a transverse complete rent on the anterior wall of the lower uterine segment was detected. An immediate laparotomy was decided. General condition of the patient was fairly satisfactory. Her blood pressure was 100/70 mm.Hg, but the pulse rate went up to 130 per minute.

9-30 p.m. The abdomen was opened under general anaesthesia and found to contain little amount of fresh blood and few pieces of small clots. It was noticed that the complete rupture over the anterior wall of the lower segment of the uterus extended from right lateral to left lateral side (Fig.). The rupture stopped short of uterine blood vessels on either side and the area presented closely the picture of an incised lower segment for caesarean section. A hysterectomy was done and abdomen closed as usual.

The patient was transfused with 2 pints of group 0 rhesus-negative blood during the operation. Her pulse was 140 per minute and blood pressure was 100/72 mm.Hg at the end of the operation. Her post-operative period was uneventful and she was discharged in good condition.

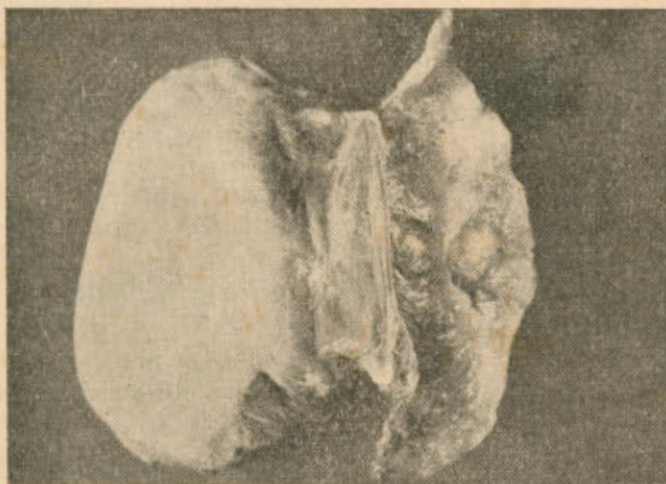


Fig.  
Transverse rupture of the anterior wall of the lower segment of the uterus. Hysterectomy done at the level of the rent.

### Discussion

Intravenous dilute drip infusions of posterior pituitary extract and synthetic oxytocin (Syntocinon) are now extensively used in obstetrics for the induction of labour and for the stimulation of an inert labour. Rupture of uterus, following judicious use of posterior pituitary by this technique, is very rare but a dreadful possibility. The present case is reported firstly, because of the fact that this complication is uncommon and more so because such cases are rarely published, even if they do occur, in comparison to the volume of the published literature regarding the successful and safe uses of the drug. A search through the literature has failed to reveal an instance of uterine rupture following intravenous drip infusion of "Syntocinon" after the onset of labour. Secondly, this can draw the most careful attention towards the serious possible hazards of intravenous oxytocin drip infusions and should serve as an added caution to those who would wish to recommend its liberal and safe use in cases of hypotonic inertia.

Oxytocin was first used in the treatment of inertia about forty-five years ago. The continuous intravenous drip method was first suggested by Page (1943). Later on, the technique was introduced and popularised by Theobald et al (1948). The apparent safety of intravenous use of dilute oxytocin by drip method has established its place in the treatment of primary (hypotonic) uterine inertia (Hellman *et al*, 1950; Nixon, 1951; Stone and Tanz, 1953; Ryan, 1958). In so far as oxytocin works

at all, it works by accentuating the pattern of uterine activity already present, i.e. small regular contractions tend to become large regular contractions, hence its great use in hypotonia. Synthetic oxytocin (Syntocinon) now claims the same position in obstetric uses as that of natural oxytocin. In fact, it has got certain added advantages: it is free from vasopressin impurities, it does not affect the blood pressure, does not produce anaphylactic shock and has constant potency within narrow limits. This synthetic product has been found to be as effective as pitocin (natural oxytocin) which can be studied from the conclusion of those who have undertaken a fuller clinical trial (Mayes and Schearman, 1956; Bainbridge et al, 1956; Donald, 1959). Many authors as Bishop (1958), Nixon and Smyth (1958), Orengo (1958), Quivy and Dejoie (1958), Esteban and Salamero (1958) and Loew (1958) have studied the use of Syntocinon intravenous drip successfully in cases of hypotonic uterine inertia and they recommend its applicability, efficacy and safety in preference to natural oxytocin.

From the study of all this literature on the subject, it is also apparent that oxytocin, when administered before the birth of baby, may not only be erratic in its mode of action, but it may well prove to be a dangerous drug either to the mother or to her child or both. The patients vary enormously in their sensitivity to this drug. ✓ Chassar Moir (1959) states that even with moderate dosage the action of the extract is admittedly erratic.

It is an accepted fact that the use of oxytocin before the delivery of the child is definitely fraught with some perilous complications. Rupture of the uterus remains the most fearsome risk and constitutes the main reason for its infrequent use in many obstetric units. Several authors as Delfs and Eastman (1945), Feeney and Barry (1956), Swami and Patel (1960) and others draw attention to the dangers of oxytocin therapy while discussing their series of uterine ruptures. ✓ A search through the recent literature discloses the details of 5 cases of rupture of uterus following oxytocin drip therapy (Ferguson et al, 1952; Mauzy, 1954; Mathew, 1956; Hellman *et al*, 1957). ✓ Goldman (1959) reports that although no rupture of the uterus occurred in his series of 300 cases of inefficient uterine action, he has experienced 3 cases of uterine rupture associated with the use of intravenous pitocin for the induction of labour. None of these cases of ruptured uterus was primiparous. ✓ A recent case of rupture of the uterus, followed by the death of the mother after intramuscular injection of pitocin, has been reported on by Dwyer (1960). ✓ Greenhill (1961) reports that he has seen 2 such cases and heard from Dwyer of 2 more cases that were never published. The practice of administration of pitocin by the method of repeated intramuscular injections was rightly and strongly condemned at the Fifteenth British Congress of Obstetrics and Gynaecology by Wrigley (1959) and others.

Rupture of uterus is not the only danger. Another very real risk is

amniotic fluid embolism caused by the greatly increased uterine contractions induced by oxytocin. Seven out of the 15 cases of amniotic fluid embolism, published by Barño and Freeman (1959), were associated with the use of pitocin. There was one maternal death from amniotic embolus following pitocin drip in Wrigley's (1959) series. Pitocin may also give rise to toxic reactions, e.g. anaphylaxis, pituitary shock, etc. Pitocin is known to contain 5-7% of a vasopressor principle and Greenhill (1956) has expressed anxiety about the danger of a sudden rise in blood pressure, particularly in patients with pre-eclamptic toxæmia. Goldman (1959) reports a case of eclampsia following pitocin drip. Wrigley (1959) also draws attention to the occurrence of subsequent uterine atony, particularly in the third stage of labour leading to post-partum haemorrhage. Excessively strong and abnormally frequent uterine contractions, and a state of tonic contraction or uterine tetanic spasm are known to occur after administration of oxytocin for inducing labour or for correcting hypotonic uterine inertia. Furthermore, there is a real chance of producing foetal asphyxia. Buxton and Hausknecht (1960) report a corrected foetal mortality of 2.04%. There was only one foetal death which could have been due to the pitocin drip in Ryan's (1958) series of 322 cases. Muscat (1961) reports two cases of varying degree of placental separation with foetal death following the administration of pitocin by the intramuscular route.

The oxytocin drip now enjoys

enormous popularity and the technique is safe provided it is carried out carefully. We must remember the benefits of this drug and use it for proper indications. On the other hand, one should not forget the harm that injudicious use of oxytocin can produce, not only during labour but also before labour. The method is not always free from risk in selected cases and even under expert supervision. It may be helpful and safer to use an oxytocin sensitivity test as being recommended by Nixon and Smyth (1957) before administering a pitocin drip. Most critics interdict the use of pitocin drip in cases of disproportion, unengaged heads, grande multiparity, previous caesarean section, elderly primigravidae, pre-eclampsia, twin pregnancy, hydramnios, malpresentations, hypertonic uterine inertia and colicky uterus.

The case reported here was carefully selected for syntocinon drip, remembering the contraindications to its use and, during the entire procedure, a medical officer kept constant vigilance at the bedside. The patient was a young third gravida with an engaged vertex, the occiput being anterior and to the left. She had no abnormality as regards her pregnancy and her past obstetric history was normal. The selection and diagnosis of hypotonic uterine inertia was made from the typical clinical characters as defined by Lewis (1956). It appears that the rupture of uterus in the present case may have been due to abnormal individual sensitivity to syntocinon or unreported acceleration in the rate of drip flow precipitating exaggerated or erratic uterine action

which might have been missed. It is felt that the drip may be responsible for intrauterine foetal death interfering with foetal oxygenation or it could be a case of undiagnosed post-maturity. Uterine rupture could not be diagnosed for lack of classical features. Application of low forceps was decided for doubtful foetal heart and arrest of further progress of labour.

This case report reinforces the need for the most careful selection and constant attention of the patient by an experienced obstetrician during the whole time that an oxytocic infusion is running. It is hoped that this article will be a reminder of the possibility of uterine rupture to those who have used this method for many years and have had the good fortune to avoid a similar catastrophe. It is also expected to discourage the unusual enthusiasm of those who describe the procedure as effective, completely safe and devoid of any untoward anxiety concerning the mother or foetal heart attributable to the pitocin drip. As regards supervision of the drip, Theobald et al (1956) suggest that continuous medical observation is unnecessary. Theobald (1959) further states that the physiological drip requires no supervision other than that given to all women in labour and it can be used in any patient who is fit to go into labour. It is efficient and is so safe that it can be used in a cottage. Ryan (1960) also says that constant supervision of patients receiving pitocin drip is unnecessary and time-consuming. He uses intravenous drip in almost all conditions including dis-

proportion, previous caesarean section, grand multiparas, unstable lie etc. We completely disagree with their statements and recommendations and believe that their advice is positively dangerous. Oxytocin drip therapy, in our view, is entirely a hospital procedure which requires constant and unremitting care.

This paper is presented not with the idea of decrying the use of pitocin or syntocinon drip, but only to point out the possibility of tragic hazards related to it. We should not forget the advantages of this drug and should continue to use intravenous oxytocin in selected cases under careful supervision and trust that this unfortunate case will make us more cognizant than ever of its limitations and risks.

#### *Summary and Conclusion*

A rare case of rupture of the uterus, following intravenous syntocinon drip therapy in hypotonic uterine inertia, is described. Rupture occurred within three hours of administration of syntocinon drip and was associated with foetal death. There was complete rupture of the anterior lower segment of the uterus which needed a hysterectomy and the patient had an uneventful recovery.

The introduction of intravenous oxytocin drip therapy and the apparent safety and efficacy of the use of pitocin and syntocinon by intravenous drip method in cases of hypotonic uterine inertia has been stated.

The literature on uterine rupture and other complications associated with intravenous oxytocin drip

therapy has been reviewed. The cause of rupture in this case has been discussed.

The importance of proper selection of cases and institution of intravenous oxytocin drip therapy under expert and careful hospital supervision has been emphasized.

#### *Acknowledgments*

My thanks are due to Mrs. S. Abraham, Professor of Midwifery, for her encouragement, interest and helpful criticism of the paper. I am grateful to Dr. S. G. Vengsarkar, Principal, and Dr. C. K. P. Menon, Superintendent, Medical College and Hospitals, Pondicherry, for their kind permission to publish this case.

#### *References*

1. Bainbridge, M. N., Nixon, W. C. W., Schild, H. D. and Smith, C. B.: *B.M.J.* 1: 1133, 1956.
2. Barno, A. and Freeman, D. W.: *Am. J. Obst. & Gynec.* 77: 1199, 1959.
3. Bishop, E. H.: *Obst. & Gynec.* 11: 290, 1958.
4. Buxton, C. L. and Hausknecht, R.: *Am. J. Obst. & Gynec.* 80: 32, 1960.
5. Delfs, E. and Eastman, N. J.: *Canad. Med. Ass. J.* 52: 376, 1945.
6. Donald, I.: *Practical Obstetric Problems*, ed. 2, London, 1959, Lloyd-Luke Ltd., p. 301.
7. Dwyer, P. J.: *B.M.J.* 2: 1570, 1960.
8. Esteban, A. J. and Selamero, R. F.: *Med. Clin. Barcelona.* 30: 422, 1958.
9. Feeney, K. and Barry, A.: *B.M.J.* 1: 65, 1956.
10. Ferguson, I. H., Schneider, G. T. and Miller, H. K.: *New Eng. J. Med.* 246: 694, 1952.

11. Goldman, L.: *J. Obst. & Gynec. Br. Emp.* 66: 382, 1959.
12. Greenhill, J. P.: *Year Book of Obst. & Gynec. 1955-56 series*, Chicago 1956, Year Book Publishers, Inc., p. 150.
13. Greenhill, J. P.: *Year Book of Obst. & Gynec. 1961-62 series*, Chicago, 1961, Year Book Publishers, Inc., p. 150.
14. Hellman, L. M., Harris, J. S. and Reynolds, S. R. M.: *Am. J. Obst. & Gynec.* 59: 41, 1950.
15. Hellman, L. M., Kohl, S. G. and Schechter, H. R.: *Am. J. Obst. & Gynec.* 73: 507, 1957.
16. Lewis, T. L. T.: *Progress in Clinical Obstetrics and Gynaecology*. ed. 1, London, 1956, J. & A., Churchill Ltd. p. 258.
17. Loew, K.: *Geburtsh. U. Franen. klin.* 18: 1418, 1958.
18. Mathew, A. G.: *Med. J. Aust.* 1: 1040, 1956.
19. Mauzy, C. H.: *Am. J. Obst. & Gynec.* 68: 524, 1954.
20. Mayes, B. T. and Schearman, R. P.: *J. Obst. & Gynec. Br. Emp.* 63: 812, 1956.
21. Moir, J. C.: *J. Obst. & Gynec. Br. Emp.* 66: 860, 1959.
22. Muscat, S.: *J. Obst. & Gynec. Br. Com.* 68: 1011, 1961.
23. Nixon, W. C. W.: *Am. J. Obst. & Gynec.* 62: 964, 1951.
24. Nixon, W. C. W. and Smyth, C. N.: *J. Obst. & Gynec. Br. Emp.* 64: 35, 1957.
25. Nixon, W. C. W. and Smyth, C. N.: *Triangle.* 3: 239, 1958.
26. Orengo, F.: *Rev. Espan. Obst. Madrid.* 17: 119, 1958.
27. Page, E. W.: *Proc. Soc. Exper. Biol. & Med.* 52: 195, 1943.
28. Quivy, J. and Dejoie, A.: *Bull. Fed. Soc. Gynec. Obst. Paris.* 10: 350, 1958.
29. Ryan, T. J.: *J. Obst. & Gynec. Br. Emp.* 65: 71, 1958.
30. Ryan, T. J.: *J. Obst. & Gynec. Br. Emp.* 67: 962, 1960.
31. Stone, M. L. and Tanz, A.: *Obst. & Gynec.* 1: 346, 1953.
32. Swami, N. and Patel, T. V.: *J. Obst. & Gynec. India.* 11: 63, 1960.
33. Theobald, G. W.: *J. Obst. & Gynec. Br. Emp.* 66: 862, 1959.
34. Theobald, G. W., Graham, A., Campbell, J., Gange, P. D. and Driscoll, W. J.: *B.M.J.* 2: 123, 1948.
35. Theobald, G. W., Kelsey, H. A. and Muirhead, J.M.B.: *J. Obst. & Gynec. Br. Emp.* 63: 641, 1956.
36. Wrigley, A. J.: *J. Obst. & Gynec. Br. Emp.* 66: 857, 1959.