had no headache or visual upset. Seven days after admission the Aschheim-Zondek test was reported as positive in a dilution of 1 in 100, and it was decided to examine the patient by sonar for the possible presence of hydatidiform mole.

FIG. A.—Uterine contents showing the dead foetus still in its sac and the hydatidiform change involving the placenta.

Sonar Examination.—Several scans of the patient's abdomen were taken both in longitudinal and in transverse axes. The upper part of the uterus, which was clearly visualized by echosounding, seemed full of the typical speckled appearance characteristic of hydatidiform mole (Special Plate, Fig. 1), but in the lower portion of the uterus there was a well-marked cystic space, containing definite echoes (Special Plate, Fig. 2), which we recognize as being consistent with foetal parts (Special Plate, Fig. 3). The diagnosis was therefore made of the possibility of a twin pregnancy with hydatidiform mole having replaced one foetus, while the other was normal.

As the patient's condition did not improve, the decision to terminate the pregnancy was further reinforced by the sonar confirmation of the existence of hydatidiform mole.

Operation.—Under anaesthesia, pelvic examination revealed ballotable foetal parts, and it was decided to terminate by abdominal hysterotomy. The uterine contents were removed complete and intact. The specimen consisted of a missed abortion in a sac containing a dead foetus below, while the placenta was completely replaced by hydatidiform degeneration above (Fig. A). The ovaries were normal.

The patient made an uneventful recovery and was allowed home 14 days after operation. Her blood-pressure on dismissal was 140/90 mm. Hg, the urine contained only a trace of albumin, and the oedema had disappeared. An Aschheim-Zondek test one week after operation was negative in all dilutions.

Six weeks after operation the patient was well and had no complaints. Her blood-pressure was 120/80 mm. Hg; there was no oedema. The urine was normal. Pelvic examination revealed no abnormality and the Aschheim-Zondek test was again negative in all dilutions.

Histological Report.—Sections of the placenta showed moderate oedema and stromal degeneration of the villi, many of which were still normal, so that it was presumably still in

the early stages of hydatidiform degeneration. There was no evidence of syncytial proliferation or malignancy.

DISCUSSION

This patient developed the clinical picture of fulminating pre-eclamptic toxæmia in the second trimester of pregnancy, and it was known that her blood-pressure had been normal previously and that she had no history of renal disease. Clinical examination of the abdomen suggested a normal pregnancy rather than hydatidiform mole, since the uterus was cystic and not significantly larger than suggested by the dates. The pregnancy tests were contradictory, the prepuerin test being a weak positive and the quantitative Aschheim-Zondek test being positive at dilution of 1 in 100. Radiography showed no evidence of foetal parts, probably because the foetus had barely reached 16 weeks' gestation. We have found that sonar can detect foetal parts much earlier than this—in fact, between eight and nine weeks (MacVicar and Donald, 1963).

It is interesting that when this case was examined by sonar, not only were foetal echoes seen but also the typical picture of hydatidiform mole.

We should like to thank Dr. D. McKay Hart for his advice and help, and Professor Ian Donald for his confident diagnosis of an unusual sonar picture.

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Spontaneous Uterine Rupture in Association with Abortion

It is the purpose of this report to draw attention to spontaneous rupture of the uterus as a serious complication of abortion. Rupture of the uterus in late pregnancy or labour is well recognized, but its earlier occurrence is seldom reported.

CASE 1

A Cypriot woman aged 23 was admitted to another hospital on account of vaginal bleeding at about the twentieth week in her second pregnancy. The date of her last period was unknown. She had a normal confinement four years previously but no miscarriage or serious illness. The results of the usual antenatal investigations were normal.

No bleeding occurred after admission, but four days later her mental state necessitated moving her to a mental hospital.

After 10 days she complained of backache, followed by vaginal bleeding, which continued for eight days. Placenta praevia was suspected. Uterine contractions then started and she was transferred to the gynaecological unit at the Whittington Hospital. Her general condition was good, the blood-pressure being 130/70 mm. Hg. On pelvic examination some blood was found in the vagina, the cervix admitted one finger, and the head was presenting; no placenta was felt.

Four hours later a dead foetus, followed by its placenta, was passed. Bleeding amounting to about 500 ml. due to

uterine atony caused a fall of blood-pressure to 105/60. Intravenous ergometrine 0.5 mg. and morphine $\frac{1}{4}$ gr. (16 mg.) were given. Bleeding continued and the patient's condition deteriorated. She became uncooperative, vigorously resisting treatment. Blood transfusion was given under pressure, but the blood-pressure continued to fall. Methoxamine 20 mg. was injected intravenously and oxygen administered. One and a half hours after aborting the patient died.

Post-mortem examination of the uterus showed a tear 15 cm. long on the right side of the lower segment, extending into the broad ligament. Retroperitoneal haemorrhage had spread from the uterus up to the kidneys. There was no evidence of interference and no other significant abnormality.

CASE 2

The patient, aged 30, was admitted to hospital at the twenty-second week in her ninth pregnancy on account of vaginal bleeding. Between 1947 and 1953 she had, by her first husband, one miscarriage at two months and three normal deliveries, the largest infant weighing 6 lb. 13 oz. (3,090 g.). By her second husband she had four pregnancies, all but the last ending in abortion between the fourth and fifth months and being followed by curettage. In the last pregnancy a Shirodkar stitch was inserted at the thirteenth week. Labour began at the thirty-sixth week, when the cervical stitch was removed, at which time a deficiency was noted in the right side of the cervix. Labour continued rapidly, a live infant weighing 5 lb. 10 oz. (2,550 g.) being delivered.

In the ninth pregnancy the patient refused the offer of another Shirodkar operation. Heavy painless bleeding occurred at the twenty-second week. Her condition on admission was good, the blood-pressure being 90/50 mm. Hg. and there was no albuminuria. The uterus corresponded in size to a 22-weeks pregnancy and the foetal heart was heard. A diagnosis of probable placenta praevia was made.

The next day, after another brisk painless bleed of about 400 ml., blood transfusion was required. Under an anaesthetic a large amount of blood clot was evacuated from the vagina, and the membranes, bulging through a widely dilated cervix, were ruptured. The foetal head was guided through the cervix and the infant delivered. Intravenous ergometrine 0.5 mg. was given, but this failed to control the bleeding. The placenta, which was retained, was removed digitally. It was attached to the upper segment posteriorly and showed no evidence of premature separation. The source of the haemorrhage was a tear in the uterus extending from the right side of the cervix into the body of the uterus. Laparotomy was performed and total hysterectomy, which involved evacuation of a right-broad-ligament haematoma, was carried out. Blood loss was estimated at 3.5 litres. This was replaced intravenously by blood 2.5 litres, dextran 1.5 litres, and triple-strength plasma 1 litre. The last was given because of failure of clot formation during the operation.

The patient's post-operative course was uneventful and she left the hospital 10 days later.

Operation Specimen.—Examination of the uterus showed a ragged tear 4.5 cm. long extending from the right side of the internal os upwards into the bare area of the body. On histology the margins of the tear showed oedema, with recent haemorrhage into the myometrium. The placental site lay on the posterior wall of the uterus.

COMMENT

Rupture of the uterus during pregnancy nearly always involves the upper segment (Felmus *et al.*, 1953), and the clinical picture is one of intraperitoneal haemorrhage. Rupture during labour or abortion occurs in the lower segment, with bleeding into the vagina and extraperitoneal tissues.

Rupture before the twenty-eighth week of pregnancy is most often caused by trauma from attempts to procure

abortion. This seems unlikely in our patients, for they were in hospital for 22 and 2 days respectively without pyrexia before abortion or signs of rupture occurred. Schultze (1950) recorded a case of sudden death in pregnancy from intraperitoneal haemorrhage caused by the sudden giving way of a long-standing incomplete rupture. It is possible that a similar sequence followed earlier injury in our patients.

Case 2 was known to have an incompetent internal os associated with a scar running from the cervix laterally into the lower segment. It is likely that parting of this scar caused the vaginal bleeding mistakenly ascribed to placenta praevia. The correct diagnosis was not made until further bleeding demanded exploration of the uterus. It may be that a Shirodkar stitch would have prevented the scar parting.

Likewise in Case 1 the initial bleeding led to the misdiagnosis of placenta praevia. In fact, the source was either an incomplete rupture or an accidental haemorrhage, either of which resulted in complete rupture during the process of abortion.

In a review of the literature, Felmus *et al.* (1953) collected 35 cases of uterine rupture before the twenty-eighth week, but none was associated with abortion.

Ley (1920), Schenone (1933), Banks (1934), and Canney (1934) each reported one case of rupture between the twenty-first and twenty-eighth weeks of pregnancy. In none was any cause apparent. These cases were not associated with abortion and each involved the upper segment.

Histological examination of the edges of the laceration in Canney's case showed chronic non-specific inflammation. In the other cases, and in the one of ours examined histologically, the myometrium appeared normal.

We would like to thank Mr. J. Marshall Scott and Mr. R. G. Law for encouraging us to report these cases, which were under their care.

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Sixty-three years ago in the South African veldt, 27-year-old Captain Neville Reginald Howse, of the New South Wales Medical Staff Corps, under heavy fire from Boer riflemen, picked up a wounded man and carried him to a place of shelter. A painting depicting this act, for which Captain Howse won the Victoria Cross, was recently unveiled at the R.A.M.C. Headquarters Mess, in Millbank, London S.W.1, by the acting High Commissioner for Australia, Sir Allen Brown. The unveiling brings to a total of thirty-nine the number of paintings of heroes of the Army Medical Services in the R.A.M.C.'s gallery of V.C.s. They include doctors and medical orderlies of the British, Canadian, Indian, New Zealand, South African, Burmese, and now Australian Armies.