process of haemostasis, and the lack of platelets in stored blood may be of significance.

The direct transfusions were carried out with a rotary pump modified by Julian Smith (1941), and the technique has been previously described (McLean, 1951).

It has been objected that a rapid rate of transfusion, which cannot be avoided by the direct method, may cause further haemorrhage; in practice, however, this has not been observed. Another objection is that cardiac failure may be precipitated. This is possible in patients with severe anaemia and impaired myocardial efficiency, but, during the transfusion, symptoms and signs of circulatory embarrassment are readily observed and can be relieved by a small venesection.

In recent haematemesis, when the blood volume has been reduced, there seems to be little likelihood of causing cardiac failure.

JOHN A. McLEAN, M.D., F.R.A.C.P., M.R.C.P.,
Honorary Haematologist, Alfred Hospital, Melbourne.

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Incarceration and Sacculation of the Uterus with Rupture of the Cervix

Incarceration of the retroverted gravid uterus producing retention of urine and abortion is common, but the association of sacculation of the anterior uterine wall is rare. The following case is also of interest, as rupture of the cervix occurred during the abortion of an 18-weeks foetus. Rupture of an incarcerated retroverted gravid uterus has been reported before by Campbell (1908). In his case retention of urine occurred at 18 weeks, followed by rupture of the anterior uterine wall during labour at 26 weeks.

CASE REPORT

A primigravida aged 25 was admitted to hospital at 10.30 a.m. on August 5, 1951, as a case of threatened abortion. Her last menstrual period began on April 5, and she was therefore 18 weeks pregnant. The sudden onset of severe intermittent hypogastric pain with backache had occurred 12 hours previously; there had been no vaginal bleeding. She had suffered no serious illnesses or operations, but an attack of cystitis had occurred two weeks before admission.

Examination showed the patient to be very distressed, with pain far in excess of that usually experienced during an abortion. Her temperature was 97° F. (36.1° C.), pulse 104, and blood pressure 140/80; she was pale although not shocked. Abdominal examination revealed generalized hypogastric tenderness, and the uterus was felt at the umbilicus, compatible with a 22-weeks rather than an 18-weeks pregnancy.

Vaginal examination after catheterization showed that the cervix was taken up, softened, and undilated; there was no bleeding. A soft tender cystic mass continuous with the cervix was occupying the pouch of Douglas. The uterus could be felt extending to the umbilicus, but the contour was concave, resulting in the anterior uterine wall lying well behind the symphysis pubis. A diagnosis was made of incarceration of a retroverted gravid uterus with anterior sacculation.

The patient continued to labour with frequent painful contractions, and at 3.50 p.m. a foetus compatible with an 18-weeks gestation was delivered, but the placenta was retained. There was no excessive bleeding or shock. Examination under general anaesthesia at 6 p.m. showed that the external cervical os had failed to dilate and the patient had aborted by rupturing the posterior wall of the cervical canal. The placenta was partly adherent to the posterior fundal wall and was easily removed following digital separation; the uterus was still retroverted, but the signs of anterior sac-

culation had now disappeared. It was decided not to repair the rupture at this stage, as the partly detached external cervical os was not dilated enough to allow for adequate drainage. Bleeding was controlled by ergometrine, 0.5 mg., given intravenously, and the patient was returned to the ward. She developed a temperature of 101° F. (38.3° C.), but after the administration of penicillin, 100,000 units six-hourly, it returned to normal in 48 hours and remained so until her discharge.

On August 13 examination showed a cervico-vaginal fistula which admitted one finger. The internal os and external cervical os were both closed, although a sound could be passed freely through them; the length of the cervical canal was 1½ in. (3.8 cm.). The uterus was regular in outline and still retroverted, but no other abnormality was detected in the pelvis. Under general anaesthesia the edges of the fistula were excised and the cervical canal was reconstituted with two layers of No. 2 chromic catgut. When the patient was seen on September 25 the cervico-vaginal fistula had largely healed up, but a definite opening ¼ in. (0.6 cm.) in diameter was present in the posterior wall of the cervical canal.

COMMENT

The obvious explanation of the rupture is criminal trauma in an attempt to procure the abortion. Exhaustive questioning, the patient's sincere desire for a family, the absence of bleeding before admission, and the initial vaginal examination made it clear that such a simple solution could be excluded.

Rigidity of the external os may complicate the abnormal uterine mechanism which occurs when retroverted gravid uteri with anterior sacculation abort, and rupture of the uterus or cervix results. An abnormal uterine action in this case is inferred from the excessive pain during labour, and the abnormal polarity of the uterus interfering with the capacity of the cervix to dilate. The downward thrust in anterior sacculation with retroversion centres on the thinned-out posterior cervical wall, and rupture in the weakest portion follows. A misdirection of the uterine axis also occurs in malpositions such as pendulous belly, ventrifixation of the uterus, and sacculation of the uterine wall, and is regarded by Eden and Holland (1948) as predisposing to uterine rupture.

Annular detachment of a rigid cervix is seen occasionally in primigravidae during labour at term, and a similar mechanism probably occurred in this case, with the production of a cervico-vaginal fistula instead of detachment of the external os. Three cases of cervico-vaginal fistula following labour at term have been reported by Finn (1950). In his cases, ischaemia of the cervix followed by necrosis of the anterior cervical lip occurred from disproportion between the vertex and symphysis pubis, and he mentioned that unusually rigid or exceptionally long cervixes might also predispose to cervical necrosis. The length of the cervix in our case was excessive, approaching 1½ in. (3.8 cm.), and this is probably the essential factor in the production of the cervico-vaginal fistula.

The fate of the bladder in these cases has been referred to by Munro Kerr and Chassar Moir (1949), who state: "Although bladder troubles occur with sacculation, they are seldom so extreme, nor is there extensive destruction of the bladder wall which is so common an occurrence in the ordinary variety of incarceration of the uterus." Our case supports their view.

DEREK FREETH, M.D., M.R.C.O.G.

AILEEN P. M. DRING, M.B., B.S., D.Obst.R.C.O.G.

Central Middlesex Hospital, London, N.W.10.

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