

parametritis, sterility and isoimmunization of the ABO system. There is said to be an increased incidence of subsequent spontaneous abortion, cervical incompetence, premature labour, complicated labours which require intervention especially because of placenta prævia and retained placenta, and twice the incidence of foetal death during pregnancy and labour. One per cent suffers from menstrual disorders which were not previously present, and occasionally serious disorders occur in gonadotrophin secretion.

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#### Termination of Pregnancy Using Utus Paste

One hundred and sixteen patients who were twelve or more weeks pregnant were admitted to Saint Mary's Hospitals, Manchester, for termination of pregnancy using utus paste. In 58 patients the paste was inserted under anaesthesia, and in another 58 following premedication only. There was one failure in each group, the success rate of inducing an abortion being therefore 98.3%. An analysis of the remaining 57 cases in the anaesthetic group revealed that 16 (28.1%) aborted completely, and 41 (71.9%) subsequently required evacuation of retained products, but in the unanaesthetized group almost the reverse was true, 38 (66.6%) aborted completely and 19 (33.3%) needed later evacuation.

The reason for the difference is probably the fact that the anaesthetic often used is halothane which relaxes the uterus, and under these circumstances it would appear obvious that utus paste will tend to pool at the site of introduction, whereas with some uterine tone in the unanaesthetized patient the tendency will be for the paste to strip off the membranes at least. In terms of anaesthesia, the first group required 98 anaesthetics (57 for insertion and 41 for evacuation), whereas in the second group only 19 anaesthetics were required for evacuation. This fact alone represents increased safety to the patient and a saving of expense and medical and nursing time.

The average time taken for the patient to abort was 32 hours in the anaesthetized group, and 29½ hours in the unanaesthetized group. However, an oxytocin drip was set up in the theatre before the insertion of paste in some cases in each group, and this shortened the average induction-abortion interval to 29 hours in the anaesthetized group and to 21 hours when no anaesthetic was given. Conversely, when no drip was set up the average

duration was 37½ hours and 33 hours, a time difference of 8½ hours and 12 hours respectively, denoting time saved when a drip was used.

Although the use of an oxytocin drip speeded up the abortion process, it was found that the use of intramuscular ergometrine at the time of passing the foetus was associated with retained products in both groups. The best results were in the unanaesthetized group who were on a drip but were not given routine ergometrine, when 87.5% had a complete abortion and there were no complications, and in the anaesthetized group similarly treated 47.5% aborted completely but there were 4 complications.

There were 22 complications in the series (19.3%), hæmorrhage and/or infection, the incidence being only 5.5% when the abortion was complete, but 31.6% when it was incomplete. There were no deaths. To counteract bleeding the drip can be speeded, and for infection the earlier use of an antibiotic and a precautionary pre-operative investigation of the vaginal flora are suggested.

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Termination of pregnancy by the use of intra-amniotic hypertonic saline has many advantages: general anaesthesia is avoided; there is minimal surgical interference and no scarring of the uterus, little blood loss and low morbidity; and no haste in arriving at decisions or arranging admission of patients. Eighty-four pregnancies between fifteen and twenty weeks have been terminated by me by this technique at Hackney Hospital in the last three years, with only 2 failures: one of these turned out to be a hydatidiform mole. After the 12th week of pregnancy, this is the method of choice and hysterotomy is resorted to only in patients who are to be sterilized.

Contraindications are heart disease, nephritis and pre-eclampsia, and – most important – failure to get a clear tap, free from blood, with 2 attempts. In such a case amniocentesis is either done vaginally or attempted again two weeks later.

Deaths have been recorded principally by Wagatsuma (1965) and Cameron & Dayan (1966). The former's series of 25 deaths in Japan between 1946 and 1952 occurred in a population of unselected patients, many suffering from malnutrition or other systemic disease, operated on by inexperienced operators under poor conditions with no antibiotic or transfusion facilities, and

Table 1

Changes in serum sodium following intra-amniotic saline

No. in Group	Pre-injection	3 hours	24 hours
12	138.8 SEM $\pm$ 0.7 ●	144.3 $\pm$ 0.8	140.1 $\pm$ 1.4 m/Eq
Mean % increase calculated for individual patients		4.0 $\pm$ 1.2	0.9 $\pm$ 1.1

● SEM = Standard error of the mean

bears no relation to modern conditions. The 3 deaths reported by Cameron & Dayan were associated with faulty technique and showed acute hæmorrhagic infarction of cerebral centres, almost certainly due to excessive absorption of saline into the maternal circulation. Infection is another risk.

The fate of the injected saline was studied in 12 patients in the present series by comparing serum sodium levels at 3 and 24 hours with pre-injection levels. The results (Table 1) show only an insignificant leak of sodium into the circulation at three hours which is practically reversed at twenty-four hours.

Thirty per cent saline was used in this series because weaker solutions of saline, like glucose, may harbour pathogenic micro-organisms.

The technique used differs from that of other authors in one important aspect: in all cases the saline was used to top up the pre-existing volume of amniotic liquor, and withdrawing of liquor and its replacement with saline was strictly avoided.

Amniotic liquor volumes were separately determined in 32 hysterotomy specimens and the results are shown in Fig 1. The figures correspond closely to those recorded by Rhodes (1966) and by Abramovich (1968). They emphasize the extraordinarily large variations in the volume of amniotic liquor in early pregnancy. Withdrawal of significant amounts of liquor will result in tonic

contraction of uterine muscle with the resulting risk that the cannula tip which was previously free in the amniotic cavity may become lodged in placenta, myometrium or fœtus. Saline injection may then cause disastrous hypernatræmia. It is for this reason that topping up is safe and replacement is not.

Further work is in progress to determine the ultimate fate of injected saline. The findings of Anderson & Turnbull (1968) that saline levels in the blood and urine increase as they decrease in the amniotic liquor have not been substantiated in the present investigation, nor by Menzies & Rees (personal communication) who found, on the other hand, highly significant rises in the sodium content of the fœtus and placenta.

## REFERENCES

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Mr P C Steptoe (*Rochdale, Lancashire*) said he did not apologize for introducing the ever wandering lens of the laparoscope into the subject of termination of pregnancy. Encouraged by the excellent results obtained in his Oldham unit by aspiration-evacuation of the uterus it was decided to combine the procedure with 'instant' sterilization by laparoscopic techniques.

The numbers of cases for 1968 were shown in Table 1. He had adopted the technique for cases as far advanced as sixteen weeks. All aspiration terminations showed no morbidity rate whatsoever, and none had required transfusion. The 72 cases combined with laparoscopic sterilization showed a morbidity rate of 8.3%. The average total stay in hospital was 4.4 days, which included at least thirty-six hours before operation. Only

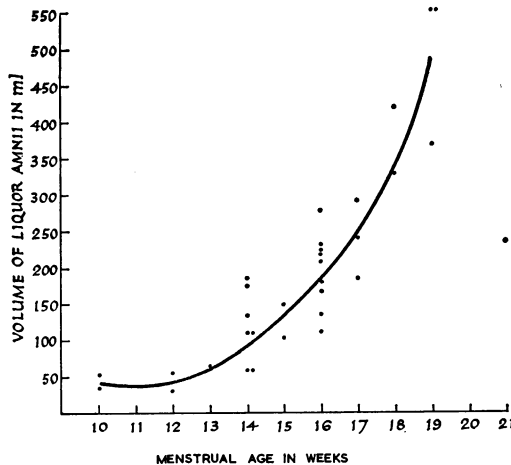


Fig 1 Liquor volume in early pregnancy related to menstrual age

Table 1

Terminations of pregnancy 1968

Aspiration terminations	63
Aspiration terminations with laparoscopic sterilization	72
Abdominal hysterotomies	4
Abdominal hysterotomies with laparoscopic sterilization	8
Total	147