

INTRAAMNIOTIC INFUSION OF HYPERTONIC SALINE THROUGH CERVICAL OS. PRELIMINARY REPORT ON FIFTEEN CASES

by

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The use of intra-amniotic hypertonic saline for termination of pregnancy in second trimester has become fairly established. Whereas, the literature deal with the method of infusion through the abdominal route, very few are on the approach through vaginal route. Fuchs (1967) preferred vaginal instead of abdominal route between thirteenth to twentieth weeks of pregnancy. He has described the technique of infusion by approaching the anterior vaginal fornix and then piercing the cervical tissue of the anterior lip. Nabriski *et al*, (1971) have mentioned the name of Boero who followed the technique of approach through the posterior fornix. Nabriski *et al*, (1971) have tried intraovular injection of rivanol through cervical canal for interruption of pregnancy. Similarly Björn (1972) has reported intra-amniotic infusion of hypertonic saline through cervical canal by a Foley Catheter. The abdominal method carries the potential risk of intestinal injury, peritoneal infection and intramyometrial injection. The approach through the anterior fornix carries the risk of infu-

sion in the bladder. With a view to avoid these possible hazards, fifteen cases were selected for preliminary trial for intra-amniotic infusion of hypertonic saline by the vaginal route through the cervical canal. The following instruments have been used

1. Sim's Bivalve speculum
2. Allis tissue forceps
3. Uterine sound
4. Epidural needle gauge = 18-20 with stylet—4" long
5. 50 ml all glass syringe, and 10 ml all glass syringe.

Material and Methods

Fifteen cases have been selected between 12 to 24 weeks of pregnancy where termination was decided. Detailed clinical history was elicited; clinical examination and necessary laboratory investigations were carried out in every case. Preoperative preparation of the patient was done with special emphasis on vaginal and perineal antisepsis. The intra-amniotic infusion of hypertonic (22 per cent) saline was carried out in the operation theatre. A premedication was given in each case. Local antiseptic painting and sterile draping followed bimanual examination of the patient.

The posterior vaginal fornix was pressed down by Sim's speculum; the anterior lip of the cervix was grasped by the

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Allis tissue forceps and pulled down. The direction of the cervical canal was noted with the help of an uterine sound which in some cases was left in position to guide the needle towards the internal os. Lumbar puncture needle 18-20 gauge and 4" long with the stylet was then introduced through the cervical canal towards the internal os. In some cases puncture of the amniotic sac could be done direct through the internal os whereas in others the needle had to be pierced through the cervical tissue at the level of internal os. The exact point at which needle pierced the amniotic sac could be felt by the hand holding the needle. The stylet was then removed. Clear liquor drained out in each case before the hypertonic saline was infused. In some cases the process had to be repeated more than once before the sac could be punctured. With the help of a 50 ml. glass syringe, 100 to 150 ml. of hypertonic saline was infused after which the needle was withdrawn. The patient was closely watched during and after the procedure was over.

Results and Analyses

The method of hypertonic saline infusion through cervical canal has been tried in 15 cases and in 1 case the amniotic sac could not be punctured (Table I).

TABLE I
Showing Success Rate of Infusion of Hypertonic Saline Through Cervical Canal

Total No. of cases tried	No. of successful cases	No. of failed cases
15	14	1

In none of the cases, there was spontaneous rupture of the membranes during

the process of infusion. In 11 cases the uterine sound was used as a guide to help the needle to reach the level of internal os. In 9 cases the sac could be punctured direct through the internal os and in 5 cases cervical tissue at the level of internal os had to be pierced through before the gestation sac could be punctured (Table II). In 5 cases liquor vary-

TABLE II
Analysis of Successful Cases Showing the Process of Puncture of Amniotic Sac Through Cervical Canal

No. of cases	No. of cases where the sac could be punctured through cervical canal	No. of cases where cervical tissue at the level of internal os was pierced through
14	9	5

ing from 15 to 100 ml. (average 44 ml.) could be withdrawn. Twenty-two per cent saline solution varying from 90 ml. to 150 ml (average 121 ml.) was infused depending upon the period of pregnancy (Table III). Two cases after the infusion of saline behaved as cases of missed abortion where subsequently dilatation and evacuation was done. In the remaining 12 cases, there was spontaneous expulsion of products—in 8 cases foetus with part of placenta and in 4 cases complete expulsion). The average period from infusion of hypertonic saline to expulsion of products was 27 hours (Table IV).

Two cases had severe colicky lower abdominal pain after infusion which could be relieved by parenteral administration of pethidine hydrochloride. One case complained of burning of body and thirst which passed off spontaneously

TABLE III

Showing Average Amount of Liquor Amnii Withdrawn and Average Amount of Hypertonic Saline Infused in Successful Cases

No. of cases	No. of cases where liquor amnii was withdrawn	Average amount of liquor amnii withdrawn (5 cases)	Average amount of hypertonic saline infused (14 cases)
14	5	44 ml	121 ml

TABLE IV

Showing Results of Hypertonic Saline Infusion Through Cervical Canal in Successful Cases

No. of cases	Cases of spontaneous expulsion			Average duration from infusion to expulsion	No. of cases behaved as missed abortion
	No. of cases	Complete expulsion	Partial expulsion		
14	12	4	8	27 hrs.	2

after half an hour (Table V). There was no maternal death.

TABLE V

Showing Complications in Successful Cases of Intraamniotic Saline Infusion Through Cervical Canal

Total cases	—	14
Sepsis	—	Nil
Colicky abdominal pain	—	2
Burning of body and thirst	—	1

Discussion

Infusion of intra-amniotic hypertonic saline through the vaginal route is a less tried method. Fuchs (1967) and Boero as mentioned by Nabriski *et al.*, (1971) have described the technique through the anterior and posterior vaginal fornices by piercing through the respective cervical lip. Present study based on 15 cases show that injection through the cervical canal is a simpler and less risky method. In this method no local anaesthetic agent is necessary. The abdominal route requires blind negotiation of the needle

through thick abdominal parieties and then piercing the myometrium to reach the gestation sac. This method only needs negotiation of the needle through the cervical canal and in some cases piercing cervical tissue at the level of internal os, thereby avoiding intestinal injury, peritoneal infection and intramyometrial injection. An approach through the anterior vaginal fornix carries the risk of accidental infusion inside the bladder which also can be avoided by this method. Amniotic sac by this technique was punctured in the most dependent part. This, theoretically carries the risk of rupture of the membranes and leakage of liquor. But such accident did not occur in any case in the present series. Prevention of rupture of membranes and subsequent leakage of liquor may be explained in any of the following ways:

(1) cervical mucus plug present in every case perhaps plugged the puncture point.

(2) Either the small needle prick of membranes sealed off spontaneously or

was closed by a valve action due to distension of amniotic sac by hypertonic saline.

(3) The internal os was found closed in all cases and this possibly prevented herniation of the bag of water and premature rupture of membranes.

In 12 out of 14 cases, products of conception were expelled spontaneously without the help of oxytocin. In 4 cases only (33 per cent), expulsion of products were complete. In the remaining 8 cases (67 per cent), placental tissue either in part or as a whole had to be evacuated under general anaesthesia. It is worth mentioning here that in 8 out of these 12 cases the duration of pregnancy was between 12 to 16 weeks when an abortion tends to be incomplete. In the series presented by Fuchs (1967), 68 per cent cases, i.e. 145 out of 212 cases needed curettage for partial expulsion of products of conception. The average vaginal infusion to expulsion interval was 27 hours, whereas the duration was 37 hours for the abdominal method (based on 30 cases studied earlier). Therefore, it appears that the time taken for expulsion of products is relatively less with vaginal infusion than when infusion is done by abdominal route. Fuchs (1967) has described that the average time period for the abdominal method was 36 hours.

Two cases complained of severe colicky lower abdominal pain which could be relieved by parenteral administration of pethidine hydrochloride. The period of pregnancy in these cases was 12 and 16 weeks and 90 ml. and 100 ml. of hypertonic saline was infused without withdrawing any liquor amnii. This, perhaps, resulted in overstretching of the uterus. One case complained of thirst and burn-

ing of body which passed away spontaneously within half hour. In this case, during infusion of hypertonic saline, the needle came out of the gestation sac and as such, the needle had to be pierced for the second time after which rest of the saline was infused. Hence there was a possibility of systemic absorption of hypertonic saline in this case.

Out of 15 cases, this method failed in 1 case only. Puncture of gestation sac at first attempt was found to be difficult when the period of pregnancy was less, because the sac in such cases was found situated high-up inside the uterine cavity. It is hoped that more practice, use of a longer needle (6") and an obturator to guide the needle to the internal os will lessen the failure rate.

Summary

Intra-amniotic infusion of hypertonic saline has been tried in 15 cases through the cervical canal. The technique has been successful in 14 cases. There was no spontaneous rupture of the membrane following the infusion. All had spontaneous expulsion of products of conception, either in part or as a whole, within an average period of 27 hours. There has been no incidence of sepsis. Preliminary studies show that the method is simpler, less risky and effective.

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