

TERMINATION OF MID-TERM PREGNANCY WITH HYPERTONIC SALINE—A SAFE PROCEDURE

by

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Introduction

Although much work has been done on induction of abortion with hypertonic saline, the method is still viewed with apprehension with regard to its safety. The object of this paper is to emphasize the fact that 20% hypertonic saline can be used with great efficacy and safety as a method of induction of abortion provided certain precautions are carefully observed.

Since the time it was first described by Aburel (1934), the method of termination of pregnancy by hypertonic saline has been extensively used by a number of workers in India and abroad (Wagner *et al*, 1962; Ruthner, 1966; Mitra *et al*, 1975).

While most of the workers (Fuchs, 1967 and Schiffer, 1966 and Mackenzie, 1971) used abdominal route for instillation of hypertonic saline, others (Ruthner, 1966; Mitra *et al*, 1975) claimed equal success by injecting it through vaginal route.

Saline of different strengths has been used by different workers. Aburel (1934) Haschizume (1950) and Goodlin *et al* (1969) used 33%, 35% and 23% hypertonic saline respectively. Majority of

workers used 20% saline (Wagner *et al*, 1962; Mackenzie, 1971; Walton, 1971). Except a few workers (Ruthner, 1966; Alpern, 1968) the amount of saline instilled was restricted to a maximum limit of 200 ml. by majority of workers.

Haschizume (1950) reported 13 maternal deaths following saline injection. Cameron and Dayan (1966) recorded 2 deaths due to massive cerebral infarction following instillation of hypertonic saline.

Material and Methods

In the present series, 400 cases in whom termination of pregnancy was executed by intra-amniotic injection of 20% saline were studied.

The procedure was adopted in cases where the size of uterus varied from 14 to 20 weeks of gestation. Any associated medical disorder or systemic disease was excluded before the technique was used. A thorough general examination was done. Routine investigations i.e. estimation of Hb and urine examination were done prior to the day of instillation. Patient was given diazepam 5 mg at night to allay anxiety, tension and to ensure proper sleep. The patient was kept on empty stomach on the day of instillation. She was asked to void urine prior to commencing the operation. She was put in supine position. After proper cleansing and draping the area midway between

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umbilicus and symphysis pubis, 2% xylocaine was infiltrated. A 18 gauge spinal needle with stylette in place was directed perpendicularly to the uterine wall. Amniotic fluid was drawn as long as clear and free flow continued followed by instillation of hypertonic saline in varying amounts ranging from 50 cc to 180 cc according to the gestational size of the uterus. In no case more than 180 cc of saline was instilled. In case where blood or blood mixed liquor appeared and did not clear subsequently the procedure was abandoned. While withdrawing the needle from amniotic cavity, 5-10 cc of normal saline was injected to prevent spillage of hypertonic saline into peritoneal cavity and muscles. Prophylactic antibiotics like crystalline penicillin and streptomycin were given to all the patients during post-instillation period. If they were found sensitive to the above antibiotic, other broad spectrum antibiotic was substituted.

Results

In this series 400 cases were analysed with age ranging from 14-45 years, maximum age group being 21-30 years. In three fourth of the cases the duration of pregnancy was between 17-20 weeks of gestation and the rest being from 14 to 16 weeks.

Instillation was successful in 390 patients (97.5%) of whom 380 (97.4%) patients aborted successfully and spontaneously within 12-56 hours of initial injection of hypertonic saline, the mean injection abortion interval being 36.2 hours. Only 10 patients (2.5%) required syntocinon drip for induction since they did not go into labour within 56 hours.

In 10 patients (2.5%) instillation was abandoned because of repeated blood tap.

Subsequently those patients had undergone hysterotomy.

Out of 390 successful abortions, 6 patients (1.5%) had retained placenta following delivery of the foetus. They were removed with the help of syntocinon drip and sponge forceps within 4-6 hours. No anaesthesia was given.

Complications and Side Effects

No side effects were observed in this series. In 15 cases (3.7%) a rise of temperature from 38°C to 39°C within 48 hours was noticed. The fever, however, came down on the 3rd day. In no case, any local or generalised sepsis was discovered.

Complications like haemorrhage, Vaso-vagal shock, coagulation disorder have not been encountered in any case. There was no death.

Comments

The present method of termination of pregnancy by intra-amniotic hypertonic saline indicates it to be safe and effective in second trimester provided the method is carried out carefully after taking certain precautions.

In the present series 400 cases were studied. There were no side effects. This largely supports the observations of previous workers (Wagner, 1962; Mackenzie *et al*, 1971; Dass and Mukhopadhyay, 1975).

Various complications like postabortal fever, pelvic infection, retained placenta, maternal mortality have been reported by various workers. Wagner (1962) reported an incidence of 2.35 per cent of pelvic infection, which included 1 case of Pelvic abscess and 1 case of paralytic ileus. Dass and Mukhopadhyay (1975) reported the incidence of pelvic infection as 3.3%. In the present series, no case of

pelvic infection was encountered. All the patients in this series were given prophylactic antibiotic.

Postabortal fever was reported by Wagner *et al* (1962), Weingold (1965), Kerenyi (1971) as 7.5%, 11.1% and 6.8% respectively. In this series, the incidence for the same was noticed as 3.7% which responded to simple antipyretic measures.

Deaths reported by various authors are definitely either due to faulty technique adopted or wrong selection of cases with systemic disorders. The cases of deaths reported by Haschizume (1950) from Japan were subsequently reviewed by Wagastuma (1965) and causes were attributed to (1) technical failure which represented infection or direct injection into the blood stream or myometrium (2) aggravation of general complication already present due to improper evaluation of their illness. Pathak (1968) reported death in a known diabetic and with instillation of excessive hypertonic saline. Cameron and Dayan (1966) reported death in which the technique was practised under general anaesthesia which is a disadvantage where the side effects cannot be elicited early as compared to in a fully conscious patient. So it is felt that selection of cases and proper technique of administration of hypertonic saline is very important in order to avoid serious complications and side effects. In the present series, no patient with systemic disorder was selected for instillation, and the amount of saline was restricted to 180 cc with a high rate of success.

Instillation of hypertonic saline has many advantages. It may be preferred to hysterotomy in as much as avoiding of uterine scar, anaesthesia and operative complications, length of hospital stay. If

carefully practised, it can be adopted as an out door method.

Conclusion

In view of high percentage of success rate (97.5%) there is little doubt that provided the following precautions are observed the technique of termination of pregnancy in mid trimester by 20% hypertonic saline is one of the safest and most effective methods:

1. Proper medical check up to exclude existing illness and systemic disorder is done.
2. The emptiness of bladder is ensured.
3. Avoidence of general anaesthesia either at the time of instillation or subsequently.
4. Giving up of instillation if blood tap is obtained.
5. Instillation of saline is carried out only when the liquor is clear and following freely.
6. The amount of saline to be instilled is kept below 200 cc and never exceeded.
7. The procedure should be immediately stopped if the patient complains of pain, dizziness or heat in the upper part of the body, intense thirst or headache etc.
8. Injection of 5-10 cc of normal saline while withdrawing the needle from the amniotic cavity to prevent escape of hypertonic saline into the peritoneal cavity and muscle.
9. Routine use of antibiotic to reduce postoperative morbidity.

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