

HYSTEROSCOPY: A NEW DISTENSION MEDIUM

By

S. D. KHANDWALA

SUMMARY

Fifty per cent dextrose is used as a distending medium for hysteroscopy. It is a clear, viscous medium which does not mix with blood giving good distension and visibility. It is a physiological metabolite which can be delivered by a simple syringe. Thus, it has several advantages of "Hyskon" but is readily available and cheap and its caramelising effect is mild. 200 ml of 50% dextrose was used in 50 cases and they were monitored by estimating blood sugar, P.V.C. and serum potassium levels. All these parameters indicated transient hyperglycaemia and minimal hypervolaemia, thus establishing its safety.

Introduction

The three most practical distension media currently in use are carbon dioxide (Lindemann 1983; Gallinat 1984); dextrose 5% or normal saline (Valle 1979; Quinones 1984) and high molecular weight dextran i.e., Hyskon (Edstrom and Fernstrom 1970 and Levine 1976).

However, there are practical difficulties and disadvantages of all these media. Carbon dioxide needs a sophisticated, expensive imported delivery system viz Hystero-flator or Metromet. 5% dextrose or saline leak through the cervix and any bleeding clouds the view, thus reducing its efficacy especially for operative hysteroscopy. Hyskon is ideal, but is very expensive and is not available in our country.

50% dextrose has been used as a distension medium for hysteroscopy by the author in 50 cases over the last 4 months. This paper analyses the various advantages

and disadvantages of 50% dextrose as compared to the other recognised media.

Properties of 50% dextrose

1. Physiological metabolite.
2. Clear solution with high refractive index of 1.34.
3. Viscosity good.
4. Can be delivered with a 50 ml. syringe.
5. Does not readily mix with blood.
6. Easy availability.
7. Cheap.

Material and Methods

50% dextrose was used as a distension medium in 50 cases of hysteroscopy—40 diagnostic and 10 operative from 1st December 1987 to 31st March 1988. The dextrose was delivered by 2 syringes and a 3 way stop-cock through a tubing connected to the stop-cock of the hysteroscopy sheath. 200 ml. was used in the first 42 cases and 300 ml. in the last 8 cases, al-

From: Dr. Khandwala's Hospital, Bombay.
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though 50 to 75 ml. was adequate for diagnostic purposes. Larger volumes were used for this study to evaluate safety.

Results

The cases were analysed for

1. Distension.
2. Leakage.
3. Visibility especially in presence of bleeding.
4. Safety.
5. Difficulties and disadvantages.

1. *Distension:* Adequate distension was obtained in all cases.

2. *Leakage:* There was minimal leakage. In 5 cases, with patulous cervix, two lateral vulsella pinching the cervix gave good water tight connection and reduced the leakage.

3. *Visibility:* There was good visibility in all cases. In 10 operative cases, bleeding occurred but did not mix with dextrose and reduce visibility. Blood remained floating as small clots.

4. *Safety:* A study was done to determine hyperglycaemia or hypervolaemia following administration of 200 ml. of 50% dextrose over a period of 20 minutes. Blood sugar levels were estimated at 0, $\frac{1}{2}$, 1 and 3 hours. Serum potassium was estimated at 0, and 1 hour. Blood P.C.V. was estimated at 0 and 1 hour. Table I shows the results of these estimates. Blood sugar levels were raised upto a maximum of 386 mgm per 100 ml. after half an hour and

upto 333 mgm per 100 ml. after one hour but tended to come down to about 200 mgm per 100 ml. after 3 hours. In one case, where 300 ml. of 50% dextrose was used the blood sugar shot upto 720 mgm per 100 ml. but came down to 216 mgm per 100 ml. after 3 hours. Serum potassium showed hardly any change of about 0.1 meg/litre. Blood P.C.V. also showed minor reduction of 2 to 3% only. Thus, these results indicate that 200 to 300 ml. of 50% dextrose used for hysteroscopy produce transient hyperglycaemia, with minimal if any hypervolaemia and therefore safe to use.

5. Difficulties and disadvantages.

(a) The viscous dextrose requires, a lot of pressure to inject especially through the 5 mm sheath. Two luerlock syringes with a 3 way stopcock facilitate smooth injection without interruption and thus help to maintain good distension.

(b) About 25% of patients complained of intra-operative abdominal pain which however can be diminished or relieved by giving Pentazocine I.V.

(c) 50% dextrose tends to caramelize on drying but much less than Hyskon. Thus the telescope, sheath and accessories must be immediately dismantled and washed in warm water.

Table II shows the comparison of 50% dextrose and Hyskon.

TABLE I
Hysteroscopy: 200 ml. 50% Dextrose

	0 Hour	$\frac{1}{2}$ Hour	1 Hour	3 Hours
BLOOD SUGAR IN mgm PER 100 cc	75-145	87-386 (720)	80-333	75-291
Serum Potassium meg/l	4.2-5.4	—	4.1-5.3	—
P.C.V.	29%-45%	—	24%-45%	—

TABLE II

	50% Dextrose	Hyskon
Viscosity	Moderate	High
Clarity (Refraction Index)	1.34	1.39
Distensibility	Good	Good
Miscibility with blood	Minimal	Nil
Safety	Safe	Safe
		Occ. Allergy
Caramelisation	Moderate	Severe
Availability	Yes	No
Cost	Rs. 12 for 100 ml.	Rs. 500 for 100 ml.

Discussion

Many institutions even in developing countries have cystoscopes. These can be used as hysteroscopes with appropriate sheaths. But the distension media used for hysteroscopy are either too expensive and not available viz Hyskon or need expensive sophisticated, imported equipment viz Hysteroflator for CO₂, or are inadequate especially for operative hysteroscopy viz 5% dextrose or normal saline. 50% dextrose is a viscous, clear medium which gives good distension and does not mix with blood and is safe to use. It, thus, has all the advantages of Hyskon at the same time it is available and cheap.

For routine diagnostic hysteroscopy, an obturator fitting the 5 mm diagnostic sheath is devised which facilitates the introduction of 5 mm sheath upto internal os, smoothly like a dilator. The obturator is then removed and the telescope inserted. Then the uterine cavity is distended with 50% dextrose, of which only 50 to 75 ml. are required. Operative hysteroscopy may need 200 to 500 ml. and therefore must be carefully monitored. Clinically, all the patients where 50% dextrose was used were the same as when CO₂ was used. 42 out of these 50 cases had simultaneous laparoscopy performed. The pelvic organs appeared normal and the dextrose

pool in the Douglas' pouch was absorbed rapidly. Curettage and endometrial histopathology done in 35 cases showed no adverse effects. No patient developed any pelvic inflammatory disease.

50% dextrose is being administered intravenously in certain medical conditions. Intravenous glucose tolerance test requires injecting 200 ml. 50% dextrose I.V. over 20 minutes. These further indicate the safety of 50% dextrose.

Conclusion

50% dextrose is a safe, simple, adequate medium for distension of uterine cavity for hysteroscopy both diagnostic and operative comparable to the widely used Hyskon but readily available and inexpensive.

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