Hysteroscopic Fluid Monitoring Guidelines

From the Ad Hoc Committee on Hysteroscopic Fluid Guidelines of the American Association of Gynecologic Laparoscopists

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Media

1. The use of high-viscosity 32% dextran 70 in diagnostic and operative hysteroscopy has largely been replaced by CO_2 and low-viscosity fluids.
2. Carbon dioxide is used primarily for diagnostic hysteroscopy. Its use in operative hysteroscopy is limited at this time.
3. Electrolyte-containing fluids such as saline and Ringer's lactate are recommended in diagnostic cases, and in operative cases in which mechanical, laser, or bipolar energy is used.
4. 5% mannitol rather than glycine or sorbitol should be considered when using monopolar energy.

Delivery of Distending Media

1. Air should always be flushed from all hysteroscopic tubing before beginning distention.
2. Only CO_2 insufflators designed for hysteroscopy should be used.
3. Pressure cuffs on low-viscosity fluid bags are generally not appropriate except for short cases in which diagnostic hysteroscopes with narrow-diameter inflow channels are used.
4. Adequate visualization can generally be obtained with a maximum delivery pressure of 75 to 100 mm Hg when using either gravity or a hysteroscopic pump (minimum pressures required for good visualization should always be used).
5. Pressure from gravity systems using a low-viscosity fluid is measured from the height of the highest portion of the continuous column of fluid to the level of the uterus. (One foot equals approximately 25 mm Hg).
6. Fluid pumps for low-viscosity media are a convenience and do not guarantee safety.

Risks of Excessive Intravasation

1. Excessive intravasation of CO_2 should not occur if appropriate flow rates (maximum 100 ml/min) and pressures (less than 100 mm Hg) are used.
2. The primary risk of electrolyte containing solutions, such as saline and Ringer's lactate, is fluid overload. The extent of the risk depends in part on the cardiovascular status of patients.
3. In addition to fluid overload, nonelectrolyte solutions such as sorbitol and 1.5% glycine have the risk of hyponatremia (hypo-osmolality) with cerebral edema and death.
4. Mannitol 5% acts as its own diuretic. It may cause hyponatremia but not hypo-osmolality. There is currently limited knowledge of the effects on patients exposed to large overloads of mannitol.

Limits of Intravasation

1. The anesthesiologist should be encouraged to monitor closely and limit hydration of patients preoperatively and intraoperatively during operative hysteroscopy with fluid distention medium used.
2. Fluid intravasation of 750 ml implies impending excessive intravasation and completion of the case should be planned.

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3. If fluid intravasation reaches approximately 1500 ml of a nonelectrolyte solution or 2500 ml of normal saline, the case should be brought to a conclusion, electrolytes assessed, administration of diuretics considered, and further diagnostic and therapeutic intervention begun as indicated.
4. Management of hyponatremia is not standardized at this time.

Monitoring

1. Mechanical monitoring is highly desirable since it removes the human factor in measuring fluid deficit, allows for early warning of excessive intravasation by real time totals, and indicates the rapidity with which the loss is occurring.
2. If mechanical monitoring is not available, an operating room person should be dedicated to frequent measurements of intake, output, and deficit.
3. Both anesthesiologist and surgeon should be made aware of fluid deficit frequently during the procedure by a designated member of the operating room staff.