

# Complications from Hysteroscopic Distending Media



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**“Advancing Minimally Invasive Gynecology Worldwide”**

# Disclosure

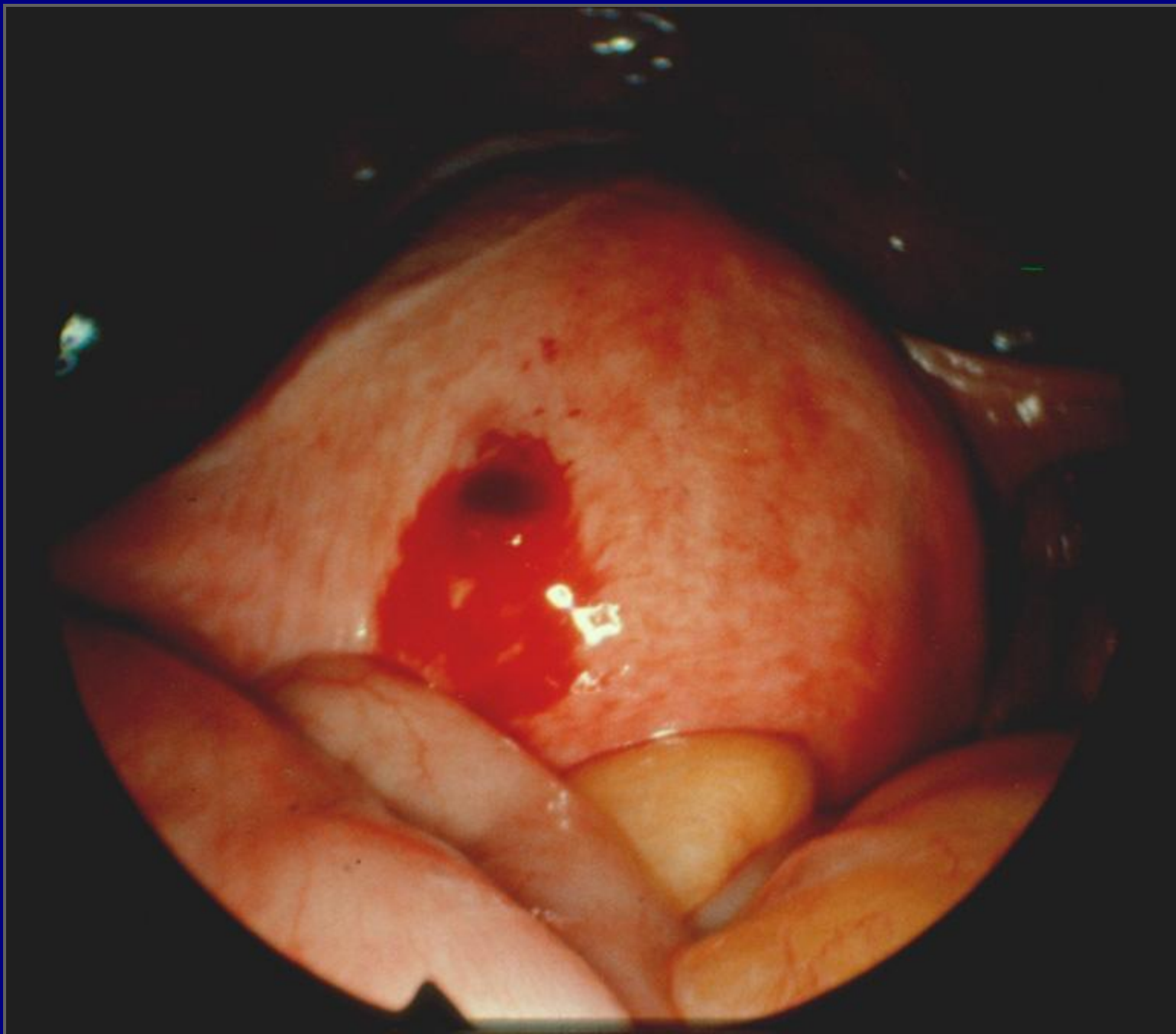
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**I have no financial relationships to disclose.**

# Objective

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**Review how to recognize and prevent complications from hysteroscopic distending media.**



# Hysteroscopic Complications

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- Uterine perforation
- Infection
- Premature conclusion of case
- Cervical trauma
- Hemorrhage
- Gaseous intravesation
- Excessive intravesation of distending media

# Fluid Intravesation

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**. . . is the loss of uterine distending media into open uterine vessels.**

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# Factors to Consider in Excessive Intravesication of Distending Media

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- **Most critical with electrolyte free media**
- **Less critical with electrolyte media**
- **Depends on the amount.**
- **If not prevented and untreated it may result in death.**

# Problems From Uterine Distending Media

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- **Congestive heart failure (all media)**
- **Hyperammonemia (glycine)**
- **Coagulopathies and/or allergic reactions (dextran)**
- **Hyponatremia/hypo-osmolarity → death (electrolyte free media)**



# Frequency of Fluid Overload

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- **AAGL survey**
  - 1988      **0.34%**
  - 1991      **0.14%**
  - 1993      **0.2%**
- **Submucous myoma**      **1.1%\***
- **Endometrial ablation / resection**      **1.5%\***

\* FD Loffer Literature Review

# Types of Distention Media

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- **Gas: CO<sub>2</sub>**
- **High viscosity fluid**
  - Dextran 70
- **Low viscosity fluid**
  - Glycine
  - Sorbitol
  - Mannitol
  - Saline / Ringers Lactate

# Fluid Management

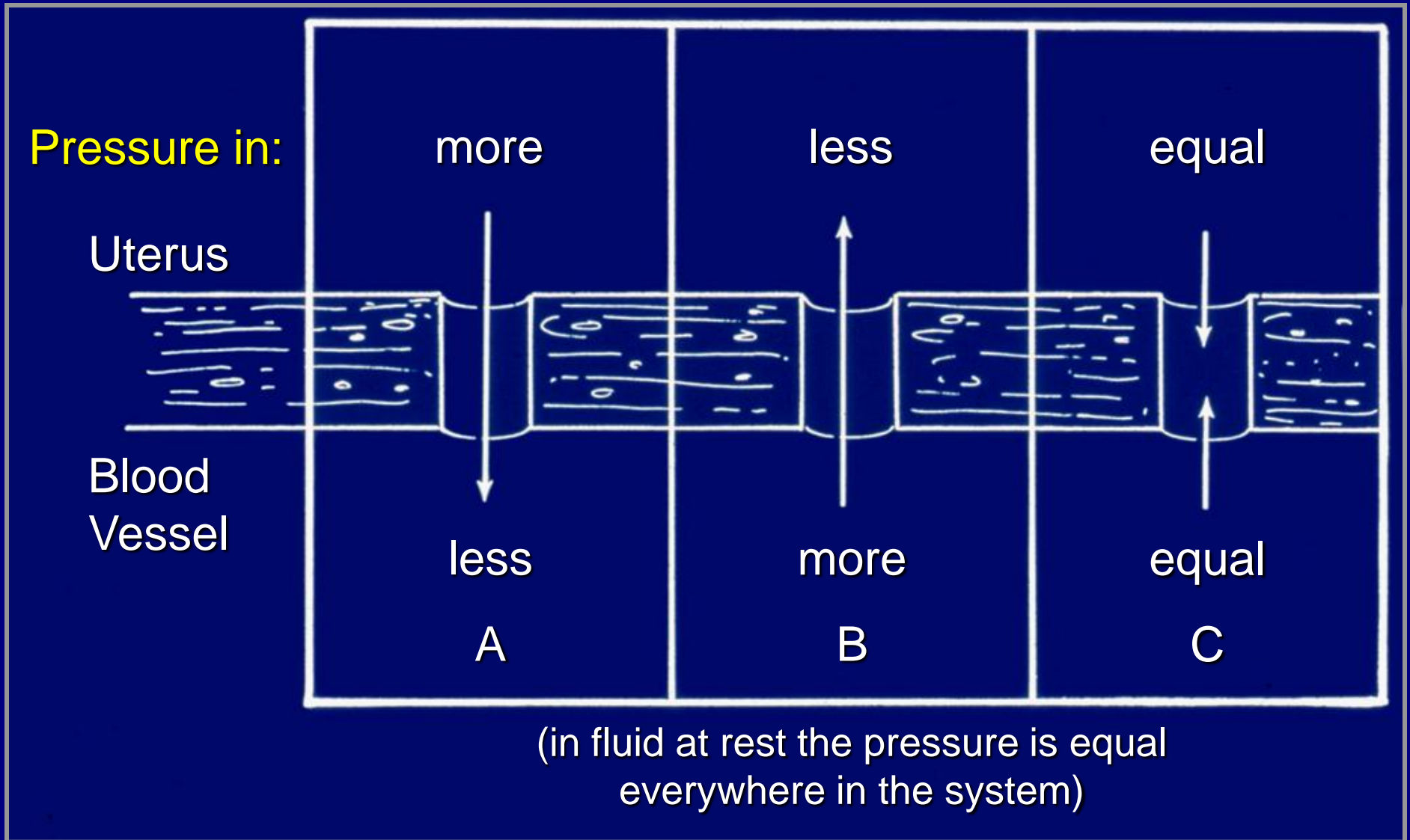
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- **Fluid management is required for operative hysteroscope**
- **Manual calculation is inadequate**
  - **Approximately 10% error in fluid packaging**
  - **Time delays**
  - **Nursing calculation errors**

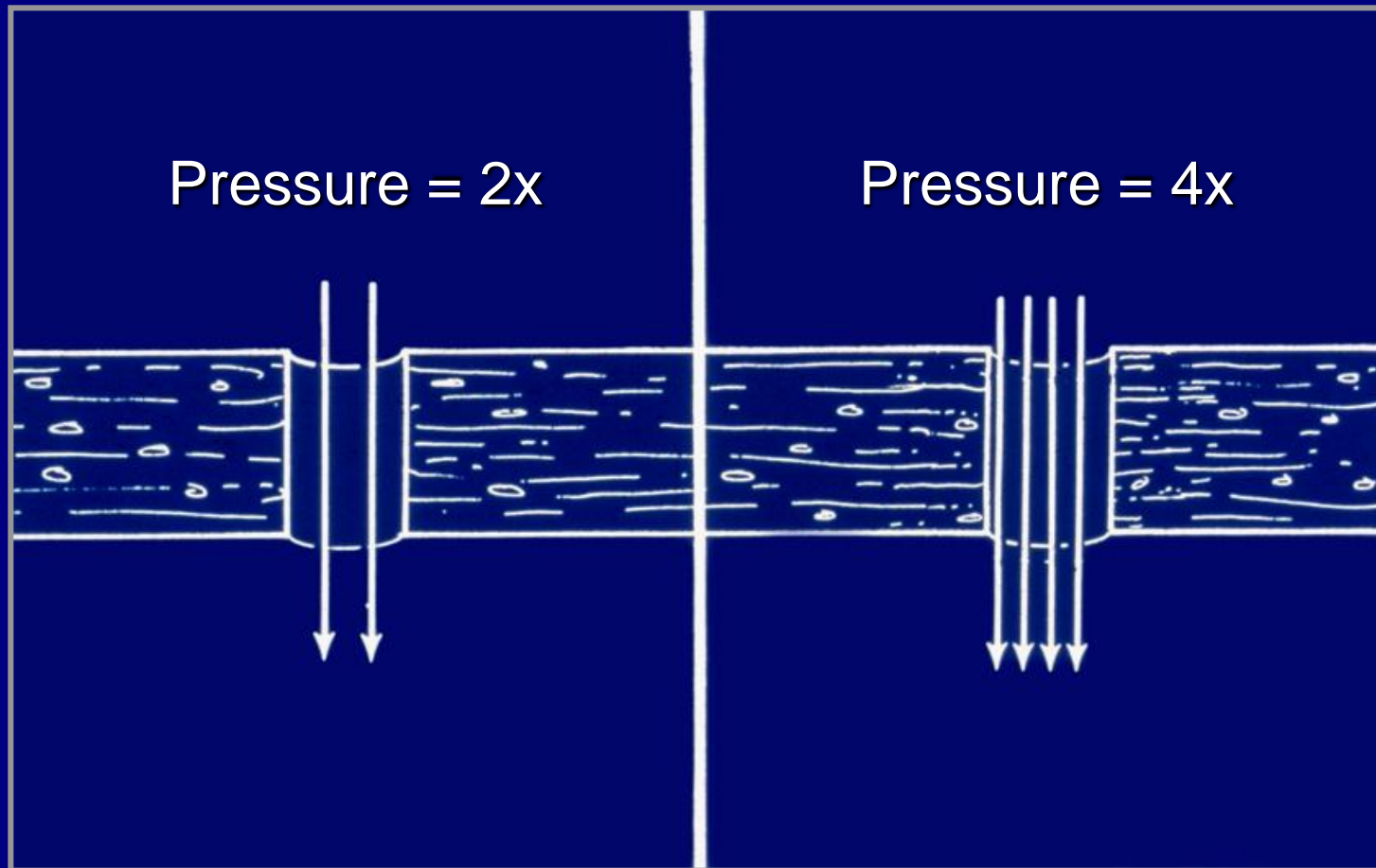
**Use only in  
diagnostic  
cases**



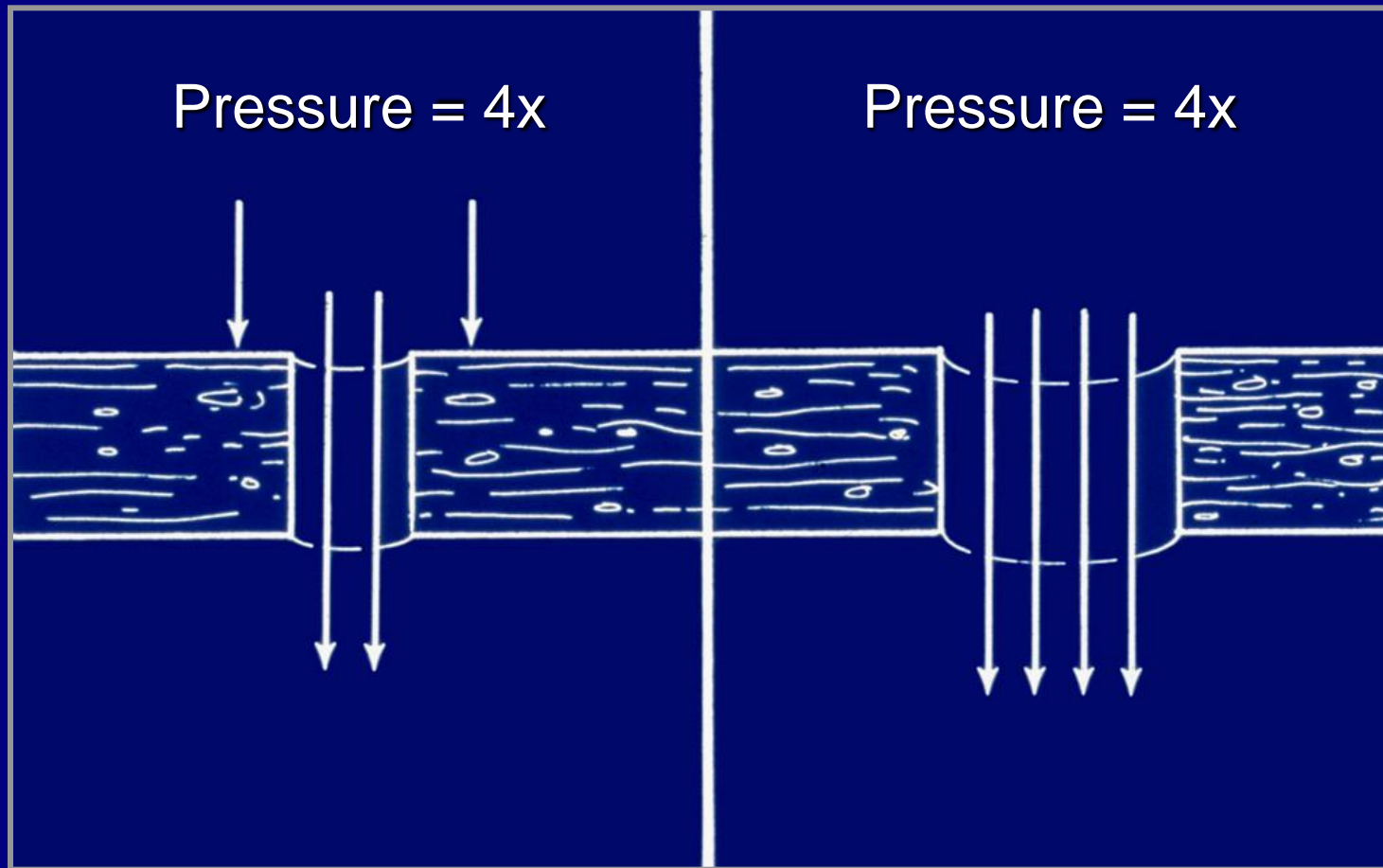
# Direction of Flow Relates to Pressure



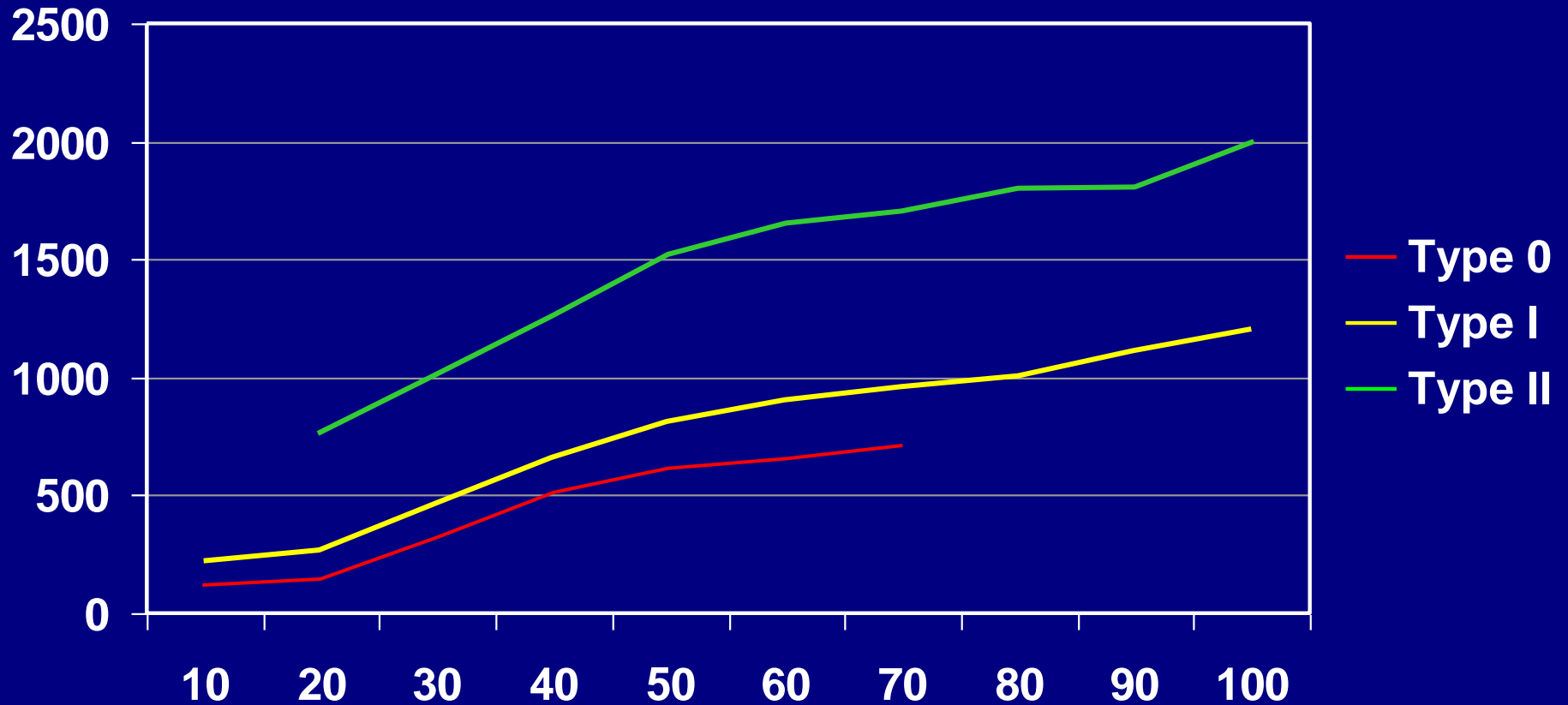
# Amount of Flow Relates to Pressure (with equal hole size)



# Amount of Flow Relates to Hole Size (with equal pressure)



# Relation Between Fluid Loss, Operative Time & Myomas







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# Relative Pressures (approximate)

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- **Uterine distension** - 50 – 70 mm Hg
- **Fallopian tubes open** - 55 – 110 mm Hg
- **Blood pressure** - 120/70 mm Hg

# Fluid Delivery / Monitoring Systems

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- **Eyeball vs. measuring  
(seeing is not believing)**
- **Gravity vs. mechanical pumps  
(pressure is pressure)**

# Fluid Delivery / Monitoring Systems

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## *Value of:*

- **Pumps**
  - **Convenience**
- **Monitoring**
  - **Early warning**
  - **Exact amounts**
  - **Evaluating rapidity**

# **Choosing a low viscosity distending media**

# Advantages of Bipolar and Unipolar Instrumentation

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## Bipolar

- **Electrical safety**
- **Use of electrolyte distending media decrease intravesation risks**

## Unipolar

- **Commonly available in operating rooms**



# Is Mannitol A Better Media Than Glycine?

	1½% Glycine		5% Mannitol	
	pt 1	pt 2	pt 1	pt 2
<b>Vol. Deficit (L)</b>	<b>2.124</b>	<b>2.448</b>	<b>3.640</b>	<b>2.735</b>
<b>P.O. Na (mmol/L)</b>	<b>124</b>	<b>124</b>	<b>105</b>	<b>110</b>
<b>Na diff (mmol/L)</b>	<b>18</b>	<b>15</b>	<b>36</b>	<b>31</b>
<b>Serum osmolality diff (mmol/L)</b>	<b>-13</b>	<b>-11</b>	<b>1</b>	<b>-3</b>
<b>Nausea &amp; vomiting</b>	<b>+</b>	<b>+</b>	<b>0</b>	<b>0</b>

Phillips, DR et al. JAAGL 1997;4:567

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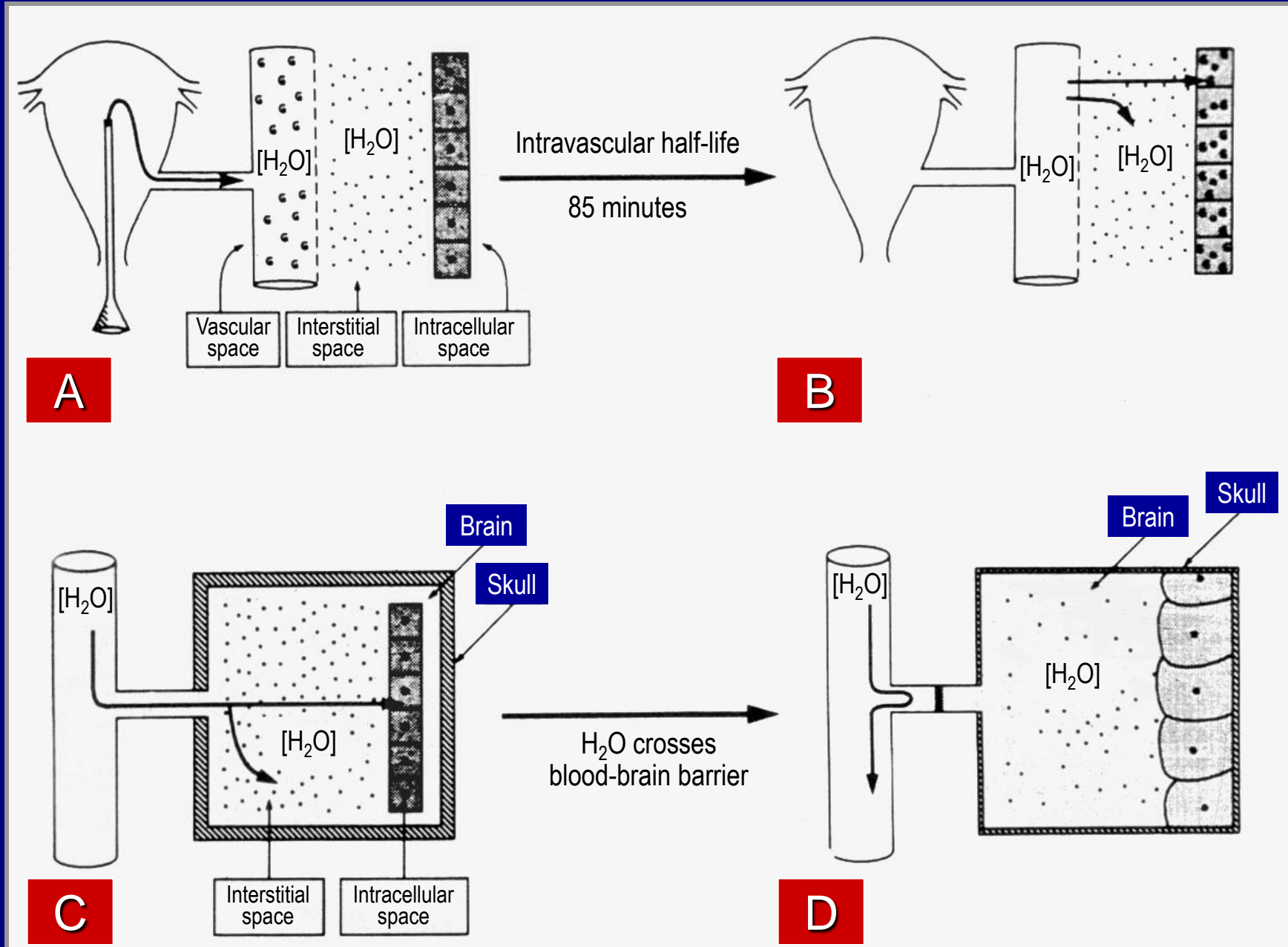


# 5% Mannitol *Metabolism*

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- **Metabolism**
  - Absorption                      6-10%
  - Excretion                        90-94%
  - Plasma half life                15-102 min
- **Excessive intravasation**
  - Hypervolemia
  - Hyponatremia
  - Normal plasma osmolality

# Cerebral Edema Following Absorption of Glycine Irrigating Solution



# Intravasation Increased By

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- **Open vascular channels**
- **High infusion pressure**
- **High flow rate**
- **Long operative time**

# Preventing Fluid Overload

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- Anticipate possibility of problem
- Minimal distension pressures
- Operate quickly
- Use mannitol solution?
- Accurate intake & output
- Diuretic and kidney function
- Use of oxytocin, vasopression or GnRh agonists?

# Medical Preparation

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- **Vasopressin 20 u/100 saline = 0.2 u/cc**
- **Direct intracervical injection at 4 and 8 o'clock**
  - **Alert anesthesiologist**
  - **Aspirate before injection**
  - **Administer 10 cc/side = 4 units**
  - **Assess for cardiovascular response before second injection**

# Randomized Comparison of Vasopressin and Placebo

Randomized Placebo Controlled Trial *N=106*

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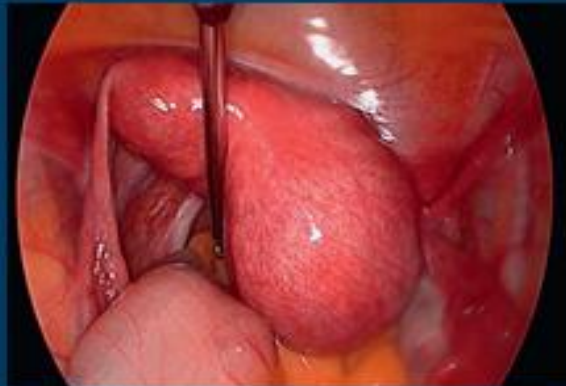
	Vasopressin	Placebo	P=
Blood loss mL	20.3	33.4	<0.001
Intravesation mL	448.5	819.1	<0.001
Operating time (min)	31.1	34.1	<0.001

Phillips D et al. *Obstet Gynecol.* 1996; 88:761-766

# JMIG

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