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**TITLE:** 5% HYPERTONIC SALINE ALLOWS A RAPID FLUID LOADING BEFORE LUMBAR EPIDURAL ANESTHESIA.  
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Hypertonic saline (HS) produces a sodium (Na+) load and an expansion of extracellular fluids. HS has demonstrated its efficiency in the treatment of hemorrhagic shock (1) and for postoperative fluid therapy after coronary artery bypass grafting (2). However, HS has never been evaluated for fluid loading (FL) before lumbar epidural anesthesia (LEA).

After informed consent and institutional approval were obtained, a double blind prospective study was performed. 30 ASA1 patients scheduled for lower limb orthopedic surgery received an equal amount of Na+ (1.95 mmol.kg-1) before LEA. Patients were randomly assigned to one of three equal groups. Group1: Ringer's lactate (RL); Group2: 0.9% isotonic saline (IS); Group3: 5% HS. No more fluid was then given during the rest of the procedure. 2% lidocaine (6mg.kg-1) with epinephrine 1:240.000 was injected in increments. Heart rate (HR) and mean arterial pressure (MAP) were measured before and after P and every two minutes during the course of LEA. Ephedrine (3mg) was administered when MAP dropped to less than 80% of its control value. Blood samples were withdrawn before and after FL and 30 and 90 min later. Results are expressed as mean ± SD. Data analysis included ANOVA followed by Student's t test for parametric data, Chi-square analysis with Yates correction and Kruskal-Wallis test for non parametric data.

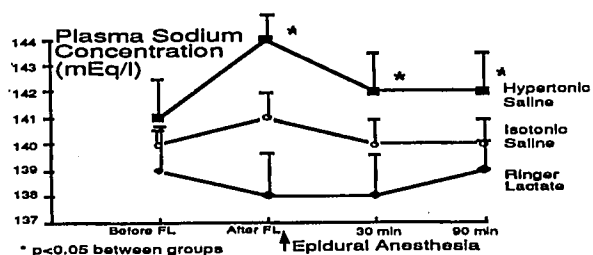
Results are summarized in the figure and the table. In patients receiving HS, volume and duration of FL were both significantly lower than in patients receiving IS and RL. HR and MAP were not modified by FL. The incidence of side effects (headache, thirst, heat sensation) was not significantly different between groups. Number of blocked segments, maximal decrease in MAP and total dose of ephedrine were similar in all groups.

In conclusion, with RL, IS and HS, for the same amount of sodium chloride infused during FL, LEA produced the same hemodynamic changes. The routine use of RL for FL before LEA may be reconsidered and replaced by either IS or HS; 2.3 ml.kg-1 of HS is well tolerated and may be used for rapid FL before LEA.

- References:** 1. Ann Surg, 206: 279-288, 1987.  
2. J Trauma, 29: 817-826, 1989.

mean ± SD	RL	IS	HS
volume infused (ml)	932 ± 166	903 ± 144	160 ± 25 *
duration of FL (min)	21.2 ± 6.0	17.7 ± 3.7	8.8 ± 2.9 *
max Δ % MAP	-23 ± 13 **	-24 ± 15 **	-31 ± 10 **
blocked segments	17 ± 3	17 ± 3	18 ± 3
ephedrine (mg)	12 ± 20	13 ± 15	9 ± 9

\* p<0.05 between groups \*\* p< 0.05 vs control value



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**TITLE:** A NEW LOOK AT LUMBAR EPIDURAL ANATOMY  
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**Introduction:** Lumbar epidural anatomy has been explored by dissection<sup>1</sup>, and by the observation of injected substances, such as air<sup>2</sup>, x-ray contrast<sup>3</sup>, and resins<sup>4</sup>. However, dissection destroys the balance of forces that position the contents of the spinal canal, and injection shows only the loculus of material distorting the epidural space, not the native anatomy. Cryomicrotome section is a new method that avoids these sources of artifact.

**Methods:** Cryomicrotome sectioning was done as a part of an ongoing project of the Department of Radiology, MCW. Thirty-eight bodies were obtained through a donor program (ages 10-87 years; 23 male). The bodies were frozen within 15 hours of death. A heavy duty sledge cryomicrotome was used to reveal sectional anatomy. The device maintains the tissue block at -20°C while shaving with a heavy blade, removing tissue from the block in 20 micron increments. Photographs were made of the unstained block at 1mm intervals. The planes of sectioning were axial (n=7), sagittal (24), and coronal (7).

**Findings:** Cryomicrotome images allow the sharp resolution of structures as small as 100 microns.

The epidural space is discontinuous, both circumferentially and metamericly. A narrow posterior compartment is roofed by the steeply arched ligamenta flava (LF), which may be incomplete in the midline. Lateral compartments are found between the vertebral pedicles and are widely open laterally. The anterior compartment is nearly filled with veins, is separated from the lateral compartments by a membranous extension of the posterior longitudinal ligament (PLL), and is absent at the levels of the discs where the fused PLL and dura merge with the disc. Extensive areas where the dura is in contact with the spinal canal wall (bone and LF) separate the compartments.

The posterior epidural compartment shows no septation, but has a vascular pedicle in the posterior midline. Neither a plica mediana dorsalis nor a midline fibrous band was seen in any specimen.

There was no evidence of a fibrous barrier across the intervertebral neural canal.

- References**  
 1. Anesth. Analg. 42:398, 1963.  
 2. Anesth. Analg. 68:157, 1989  
 3. Anesthesiology 68:217, 1988  
 4. Br. J. Anaesth. 57:333, 1985