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Investigation of intravenous hydroxocobalamin compared to Hextend for resuscitation in a swine model of uncontrolled hemorrhagic shock: A preliminary report

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Investigation of intravenous Hydroxocobalamin compared to Hextend® for resuscitation in a swine model of uncontrolled hemorrhagic shock: a preliminary report

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**Background**

Previously we reported that intravenous (IV) hydroxocobalamin is as effective as IV Hextend® in improving systolic blood pressure (SBP) in a controlled hemorrhagic shock model. We aimed to compare IV hydroxocobalamin (HOC) to Hextend® using an uncontrolled hemorrhage model. Non-compressible wounds are difficult to treat. An ideal resuscitative fluid would be a small volume, portable drug that improves blood pressure and survival.

**Objective**

To compare systolic blood pressure over time in swine that have undergone hemorrhagic shock induced by lethal groin injury.

**Methods**

Experiment: 12 swine, 45-55 kg were anesthetized, intubated, and instrumented with continuous femoral and pulmonary artery pressure monitoring. A groin injury was created by surgically exposing and transecting a femoral artery and vein. A suction catheter connected a canister placed distal to the wound measured blood loss. Swine were bled to a SBP of 40 mmHg then packed with QuikClot followed by 5 minutes of manual pressure. A chest seal was then applied. Animals were randomized to receive 150 mg/kg IV HOC, or 500 mL of Hextend® and monitored for 120 minutes.

**Results**

There were no significant differences between the HOC or Hextend groups at baseline or at shock (SBP 52 vs. 59 mmHg), nor was there a significant difference in blood loss from the injury (1005 vs 1100 mL). There was a significant difference by time between groups (p<0.5) post treatment. No significant difference in SBP, MAP or HR between groups. SVR was significantly higher and CO significantly lower in the HOC compared to Hextend® treated animals.

**Conclusions**

IV HOC was as effective as Hextend® in supporting SBP in an uncontrolled hemorrhagic shock model. HOC resulted in an statistically significant increase in SVR and decrease in CO.