A Case Report: Management of Coagulopathy in Cirrhotic Patient Undergoing Instrumented Spine Surgery

**BACKGROUND**

Liver cirrhosis is the manifestation of chronic liver disease characterized by the replacement of liver tissue by regenerative changes such as fibrosis and scar tissue. This leads to a loss of liver function increasing bleeding tendency, portal hypertension, and an immunocompromised state that can lead to perioperative complications (3). Previously, studies showed higher rate of perioperative complications and mortality in cirrhotic patients undergoing abdominal, chest and open-heart surgeries (3). Spine surgery in cirrhotic patients has not been extensively published in the current literature. Surgical time associated with spine surgery can be lengthy due to the time it takes for decompression, instrumentation, and fusion (1). Moreover, patients with liver cirrhosis are coagulopathic and may have extensive bleeding, which may be a major contributor to morbidity and mortality (2). Anesthetic management of patients with cirrhosis undergoing spine surgery can be challenging due to these risks.

**PATIENT**

- 63-year-old female with PMH of biliary atresia and cirrhosis who suffered several falls in the last few years and developed progressive weakness that was thought to be related to myopathy. She was admitted most recently for rapidly worsening back pain and weakness.
- Further workup with MRI report showed C6-C7 bulge retropulsion and narrowing of her subarachnoid space and emergent surgery was deemed necessary to stabilize the dislocation.
- Plan for C3-T3 PSF, C7-T3 lamin, and ORIF of a C6-7.
- Patient’s laboratory values and physical exam identified her as Child-Pugh Class C due to her asci, bilirubin 1.1, albumin 2.6, and INR 2.4.

**PRE-OP TEG**

**POST-OP TEG**

**INTRA-OP COURSE**

- Prior to arrival in the OR, the patient was transfused 5 units of FFP to correct her elevated INR.
- Surgery time was 3.5 hours and EBL was 1000ml.
- The patient was given a total of 6 units of platelets to maintain counts above 100,000, 4 FFP, 5 pRBCs and 1 unit of cryoprecipitate intraoperatively.
- TEG results were within range throughout the procedure with adequate hemostasis confirmed by the surgeon.
- She did not require post-op transfusion

**CONCLUSIONS**

- In addition to its licensed use in the United States, Factor VIIa has been used in other categories of patients with coagulation defects.
- The use of Factor VIIa has been shown to control bleeding in patients with cirrhosis undergoing surgical procedures (2).
- There are few case reports of patients undergoing spine surgeries who developed intractable bleeding where conventional hemostatic treatments had failed and administration of Factor VIIa resulted in cessation of bleeding (1).
- Patients with cirrhosis-related coagulopathy carry increased risks of bleeding and anesthetic management should include close monitoring to reverse coagulopathy and administration of Factor VIIa where appropriate.

**ANESTHETIC PLAN**

- Per discussion with our staff hematologist for management of her coagulopathy, plan included hourly TEG, CBC, coagulation panel and fibrinogen level to guide transfusion of blood.
- Factor VIIa, 4mg to be given pre-incision followed by 2mg Q4 hours.
- Baseline TEG obtained after factor VIIa and platelet transfusion was within normal limits.
- Uneventful induction with direct laryngoscopy using glidescope without removing her C-collar. R radial art line was placed along with R-IJ CVC for access. Sufenta and propofol infusions were used in conjunction with sevo at .5 MAC for SSEP and MEP monitoring.
- The patient was given a total of 6 units of platelets and emergent surgery was deemed necessary to stabilize her C-collar.
- Prior to arrival in the OR, the patient was transfused 5 units of FFP to correct her elevated INR.
- Surgery time was 3.5 hours and EBL was 1000ml.
- The patient was given a total of 6 units of platelets to maintain counts above 100,000, 4 FFP, 5 pRBCs and 1 unit of cryoprecipitate intraoperatively.
- TEG results were within range throughout the procedure with adequate hemostasis confirmed by the surgeon.
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**REFERENCES**


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**Table: Child-Pugh Score**

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**Figure 1 (adapted from www.va.gov)**

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**Figure 2 (adapted from www.va.gov)**

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**Figure 3 (adapted from www.va.gov)**