Rescue Device For In-Field Treatment of Esophageal Variceal Bleeding

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Area of study: Biomaterials, Biomechanics
Preferred Expertise: Physiology, Biomaterials, Biodevices
Team size: 4 students (BME)
Rescue Device For
In-Field Treatment of Esophageal Variceal
Bleeding

Anatomy
Esophageal varices are enlarged veins in the esophagus that can occur in patients with liver disease. The enlarged varices can rupture leading to uncontrollable bleeding within the esophagus. The condition is a surgical emergency.

Esophageal variceal bleeding remains a high mortality event with approximately 30-50% of patients dying from their first episode. In the prehospital setting a ruptured esophageal varices is nearly always fatal.

Project
Design a rescue device for paramedics to use in the field for patients with life-threatening esophageal varices rupture as a temporary bridge to surgical intervention.

Challenge
While some rescue devices are commercially available, none are designed for field use as they require X-ray confirmation of placement. New materials and coatings could lead to more effective and useful rescue devices.