



Case Report

Resuscitative endovascular balloon occlusion of the aorta with a low profile, wire free device: A game changer?

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ABSTRACT

A 24 year old male arrived to our hospital after a motor cycle crash with evidence of a traumatic brain injury and in hemorrhagic shock not responsive to volume administration. Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) was performed in a timely fashion using a new, low profile, wire free device. This lead to rapid reversal of hypotension while his bleeding source was sought and controlled.

Recently, REBOA has emerged as an adjunct in the hypotensive trauma patient with noncompressible torso hemorrhage. As first described, this procedure makes use of commonly available vascular surgery and endovascular products requiring large introducer sheaths (12–14 French) and long guidewires. Concerns regarding this technique center around the safety and feasibility of using such equipment in the emergency setting outside an angiography suite. This has likely limited widespread adoption of this technique. To address these concerns, newer products designed to be placed through a smaller sheath (7 French) and without the use of guidewires have been developed. Here we report on our first clinical use of such a device that we believe represents a significant advance in the care of the trauma patient.

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Introduction

First described in the 1950s, Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) has emerged as a viable treatment modality for non-compressible torso hemorrhage in trauma patients [1–4]. The goal of REBOA is to obtain aortic occlusion via a common femoral artery access site thus decreasing hemorrhage volume and preserving perfusion to the heart and brain. While this technique has the potential to reduce the need for resuscitative thoracotomy, commonly used devices require large introducer sheaths (12 French or greater) risking significant vascular injury and requiring formal surgical repair of the femoral artery upon removal [2]. Furthermore, the requirement for long guidewires makes the procedure cumbersome anywhere other than an angiography suite. It is likely that the requirement for placing such large sheaths under emergency circumstances in addition to the need for cumbersome guidewires has inhibited the wide adoption of this technique. However, recently approved devices designed to deploy through smaller 7 French sheaths without the need for cumbersome guidewires have become available [5]. In this report, we describe our first experience with a new, low profile, wire free system (Fig. 1).

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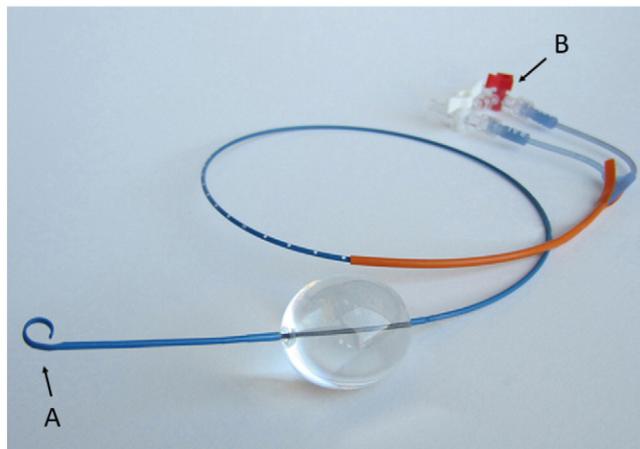


Fig. 1. ER-REBOA catheter (Prytime Medical, Boerne TX). A: The “P-tip” on the end of the catheter allows for wire free placement. B: Two ports are present, one for balloon inflation and deflation, one for arterial waveform monitoring proximal to the balloon. Image courtesy of Prytime Medical.

Case

The patient is a 24 year old male transported to our American College of Surgeons designated Level One trauma center after a motorcycle crash. Per report he was found moaning with a palpable carotid pulse but no obtainable blood pressure in the field. On

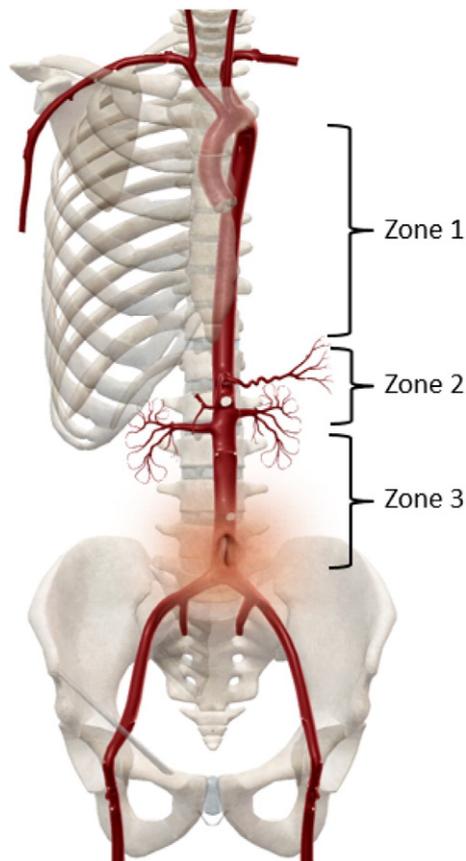


Fig. 2. Aortic zones for REBOA placement with overlying surface landmarks. Zone 1: descending aorta above the celiac artery. Zone 2: Abdominal aorta between celiac artery and lowest renal artery. Zone 3: Abdominal aorta between lowest renal artery and aortic bifurcation. Zone 1 surface landmark is the xiphoid process. Zone 3 surface landmark is the umbilicus.

Image courtesy of Visible Body (www.visiblebody.com).

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