

# Hemodynamically Responsive Retrograde Endovascular Balloon Occlusion Of The Aorta (REBOA) Simulator

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## ABSTRACT

Researchers at the University of California, Davis have developed a hemodynamically responsive simulator for retrograde endovascular balloon occlusion of the aorta (REBOA).

## FULL DESCRIPTION

Retrograde Endovascular Balloon Occlusion of the Aorta (REBOA) is a method that decreases morbidity associated with open resuscitative thoracotomy. It is taught in courses for physicians as a life-saving technique for patients suffering from non-compressible torso hemorrhage. Existing REBOA simulators are computer based and while they can replicate clinical scenarios, they do not provide haptic feedback resulting in an unrealistic simulation experience. Perfused cadavers can provide haptic feedback and are anatomically correct but they carry the risk of biohazardous occupational exposures. Perfused cadavers are also expensive and not reusable.

Researchers at the University of California, Davis have developed a hemodynamically responsive endovascular simulator for REBOA. It is a simple, mechanical system that utilizes a low cost pulsatile perfusion pump and vascular circuit to simulate the human vascular anatomy with near physiologic parameters. It can be used to train health care providers in both simple (e.g. ultrasound-guided access, access guided by the palpation of the femoral pulse access guided by palpation of the femoral pulse) and complex endovascular techniques. It can also be used to test and develop new endovascular devices.

## APPLICATIONS

- ▶ Training health care providers in simple and complex endovascular procedures, including REBOA
- ▶ Testing and development of new endovascular devices

## FEATURES/BENEFITS

- ▶ Realistic simulation experience
- ▶ Low cost compared to other simulators on the market
- ▶ Ideal for education training for physicians and other medical professionals
- ▶ Lifelike haptic feedback
- ▶ Minimized requirement for fluid in the simulator from circulation feature
- ▶ Simulator provides realism for hemorrhage injuries

## PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,074,833	07/27/2021	2016-424

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## OTHER INFORMATION

### KEYWORDS

hemorrhage, aorta,  
 traumatic injury  
 stimulator, blood loss  
 stimulator, pulsatile  
 perfusion stimulator,  
 femoral artery stimulator,  
 REBOA, clinical training  
 courses, endovascular  
 simulation, physiological  
 hemodynamic properties,  
 trauma resuscitation,  
 retrograde endovascular  
 balloon occlusion of the  
 aorta

## CATEGORIZED AS

▶ **Biotechnology**

▶ Bioinformatics

▶ Health

▶ **Medical**

▶ Devices

▶ **Sensors &  
Instrumentation**

▶ Medical

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