Live Cadaver Model for Laboratory Training on the Management of Intra-operative Rupture of Cerebral Aneurysms

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Introduction

The management of Intra-operative vascular complications in neurosurgery cannot be learned in the OR. These are not scheduled on regular basis. And even when happened there is no time to teach. Intra-operative rupture of aneurysms one example of such conditions that should be practiced using training models in a simulation environment. We established a new cadaveric model that allows life-like surgical training on the management of intra-operative rupture of cerebral aneurysms.

Methods

The major vessels in 9 head specimens were cannulated and connected to colored liquid reservoirs and further connect the arterial reservoir to a pump, to simulate the CSF the sbarachnoid space through the spinal canal is canulated and connected to a clear liquid reservoir: (Fig 1) the pump provides pulsating pressure transmitted to the arteries creating a condition that simulates live surgery in terms of bleeding, pulsation, and liquid filling of the vascular tree: (Video 1).

Movie

Artificial aneurysms were created in the usual locations by using venous grafts sutured to the vessels wall and reshaped to simulate real aneurysms: (Video 2).

Results

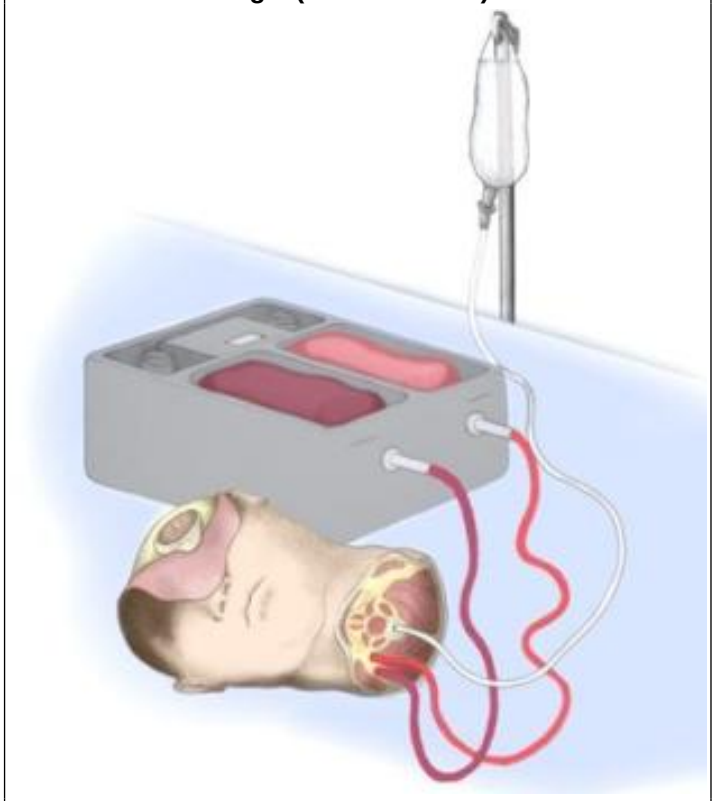
Trainees were being able to clip aneurysms and deal with intra-operative aneurismal rupture under the same conditions of life surgery and in the same anatomical field. The applicability of this model for simulating cerebral aneurysm and intra-operative rupture was assessed using a short questionnaire which has been completed by 15 trainees. The majority of them either agreed or strongly agreed that the model simulates the real conditions and would be an important addition to laboratory surgical training

Movie

Conclusions

This method provides a unique opportunity for residents and young Neurosurgeons to practice the management of intra-operative rupture of cerebral aneurysms in the same human anatomy and the real live surgical field. **United States Patent number: 6790043**

Fig 1 (Aboud Model)



Head Specimen connected to the device

Learning Objectives

trainees will be able to set such model in their institutions and practice using such technique.

References

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2 -Emad T Aboud, Method and Apparatus for Surgical Training. Patent Application Publication. Pub.No.: US 2003/01862203, Oct 2003. United States Patent No US 6,790,043 B2. Sep 2004.