REBOA in the Role 2 Afloat environment

Mansoor Khan

To the Editor

It is with great interest I read your recent article on the proposed usage of the Resuscitative Endovascular Balloon Occlusion of the Aorta on the Role 2 Afloat platform.[1] There are a number of points and concerns which I would like to highlight with regards to the indications, equipment and subsequent management. There are two categories of patients who are being routinely identified.

It is without a doubt that in isolated haemorrhage, with the patient on the cusp of arrest, REBOA saves the day. However, there are some that will argue, especially in patients who have subsequently had a laparotomy with minimal ischaemia time, whether REBOA was actually required. The others are the polytrauma patients in which the burden of injury and the systemic inflammatory response is such that it is incompatible with life. The REBOA intervention maintains their circulatory volume, but regardless of physiological resuscitation, they do not tolerate the balloon being taken down. It is highly likely that military casualties will likely fit the latter category, and with limited resources, this procedure can rapidly consume vital manpower and equipment.

At the forefront of this is competence to use the equipment. This goes beyond the practical aspects and relates to using it for the appropriate indications and the appropriate infrastructure being in place to safely monitor and remove the catheter. REBOA in the USA, in civilian and military practice, is currently undertaken by trained acute care surgeons who are able to perform the procedure given the technological limitations and able to troubleshoot/understand the potentially severe complications of REBOA.[2]

The equipment required should be kept simple. The equipment suggested by the authors is entirely untested and not approved for that indication. Currently the most widely used product, which have successfully been used in deployed US Combat Support Hospitals, have been the ER-REBOA or the Reboa Balloon Kit devices which keeps the amount of equipment required to a minimum.

The procedure, if indicated, is not necessarily as straightforward as the authors suggest. Access in the shocked patient can prove difficult, as stated in the manuscript, as this procedure is undertaken when '*profound haemodynamic instability*' exists and only individuals who have adequate training and skill set should attempt this as demonstrated in the AORTA study, which demonstrated that REBOA access was femoral cut-down (50%); US-guided (10.9%) and percutaneous without imaging (28.3%).[3] And finally, when removal of the catheter is undertaken, it is advised to assess the distal vasculature, and likely thrombectomy, as there is a high risk of distal thrombus presence distal to catheter insertion.

Unless partial REBOA (pREBOA) is deployed, then timelines for Zone 1 deployment are limited. If there are two simultaneous casualties, even with the most conservative estimates, it would take 30–45 min to operatively manage a severely injured patient, which is too long for deployment in Zone 1. This can be partially mitigated by pREBOA, but given manpower constraints on Role 2 Afloat, this may be problematic as this is the equivalent of running two operating tables simultaneously, as previously mentioned 50% required a femoral cut down, which is a skilled operative procedure.

Therefore, I believe that there are significant risks with using this technology, especially in terms of the likely presentation of patients, the equipment suggested and the maintenance of skill set required of the deploying personnel in the current climate.

Correspondence to Mr Mansoor Khan, Academic Department of Military Surgery and Trauma, Royal Centre for Defence Medicine, Birmingham B15 2GW, UK; mansoorkhan@nhs.net

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