

Occlusion of femoral artery using foley catheter: a REBOA inspired tale to save a life

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Abstract

we report a case of lower extremity hemorrhage refractory to usual methods of bleeding control, which was controlled using a Folley catheter which was placed in to external iliac artery.

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Abstract :

in this case report, we emphasize the need to control the bleeding by any measures in the Emergency department as this is the first step in a good resuscitation effort to save a patient life who is actively bleeding.

Key words:

Emergency Medicine, General Surgery, Vascular Surgery

“Written informed consent was obtained from the patient to publish this report in accordance with the journal’s patient consent policy”

Introduction :

Resuscitative endovascular balloon occlusion of the aorta (REBOA) is a procedure that involves placement of an endovascular balloon in the aorta to obtain proximal control of hemorrhage . In recent years, REBOA has become increasingly popular amongst trauma surgeons for the management of traumatic non-compressible torso hemorrhage (NCTH) .

The concept of using a balloon to occlude an artery has been around for decades, a recent example of that using ROEBA in traumatic patients requiring emergent control of bleeding, but has not been widely available in third-world countries. The standard method of bleeding control is placing a tourniquet proximal to site of injury in the Emergency room followed by a definitive measure in the operating room. This sequence of interventions is successful in majority of cases.

In this case report we represent, a ROBEA inspired method to control extremity hemorrhage in rural hospital, which was a last-ditch effort to save patients life by an emergency physician.

This case emphasizes the need to control hemorrhage in any way to save patient's life in the absence of expertise and tools in rural settings.

Case Report

A 52-year-old man who had a gunshot wound to both legs and knees brought to the emergency room by ambulance. He was in a state of hemorrhagic shock with vitals of respiratory rate of 24, blood pressure of 100/60 mmHg and a heart rate of 156 and a maximum Glasgow coma scale of 13. A make shift tourniquet was placed on his lower thigh by bystanders but he was still bleeding profusely from the injury site (figure 1). We urgently began the resuscitation process by inserting 2 large bore IVs and a large dialysis catheter was placed in his right subclavian vein and 2 units of O positive and one liter of normal saline was given as fast as possible. Two tourniquets were placed on his thigh and the extremity was put in an emergency splint and pressure was applied to the injured site. Despite these efforts the patients bleeding did not stop and his mentation and perfusion were deteriorating by the minute with minimum BP of 60 over pulse and heart rate of 175. We decided to block the blood flow the from a more proximal site, femoral artery 5cm distal to inguinal ligament was chosen due to its accessibility. A dialysis Catheter kit was used initially to insert a needle into the femoral artery, then a guide wire was threaded through the needle, the route was dilated, using a standard dilator, then small skin incision was made, then using a small Hemostat, a 6 fr foley catheter was placed over the guide wire in to the femoral artery and was guided to distal external iliac artery, subsequently balloon was inflated by injecting 5ml of Saline 0.9 %. Standard foley catheters have a side hole at their end in order to better thread the catheter, end of the catheter was cut to make end hole catheter (figure 2). Hemorrhage was controlled, and within minutes patient's vitals were improved drastically. The patient was then transferred to a Level one Trauma Center, capable of handling vascular injuries. Thereafter in the operating room, due to extensive crush of the injury site, the leg had to be amputated. The patient survived the operation and was moved to the ICU. He was discharged on day 15.

Discussion

The challenge in this case was the need to control the hemorrhage in a rapidly deteriorating patient in a rural setting without onsite help from any other specialties. Although it was evident that bleeding should be controlled, this act proved to be quite challenging. This case emphasizes the role of emergency physician to be resourceful and quick thinking. REBOA Is a procedure to control bleeding usually used in non-compressible torso bleeding but this device is expensive and not readily available in our country. extremities arterial bleedings are usually controlled either by direct compression or application of tourniquet. Nonetheless, despite conventional efforts to control bleeding, we were unable to occlude the bleeding site, hence the need of a technique similar to REBOA to control bleeding. Also due to patients' obesity no suitable pneumatic tourniquets were available in the hospital which could fit him.

There are surgical techniques to ligate the artery from a more proximal site like ligating the artery proximally, but we did not have the experience to achieve this in time sensitive manner. Indeed, the patient was deteriorating at an extremely alarming pace. Using a familiar technique (seldinger) which is remarkably similar to placing a central venous line (something that we are quite experienced with), allowed us to rapidly place a sheath and guide wire into the femoral artery and occlude the mentioned artery by a small foley catheter. This technique is also similar to the usage of Fogarty Balloon in vascular surgery. Also, the need for adequate resuscitation cannot be stressed enough.

Conclusion

Placing a foley catheter into at the femoral artery in a profusely bleeding patient allowed us to rapidly achieve hemostasis and adequately resuscitate the patient enough to transfer him to a higher-level center for definitive care. We believe due to its simplicity this technique can be a good addition to the skillset of emergency physicians.

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