

Using a Double-Balloon Catheter to Control Trocar Bleeding in Laparoscopic Surgery

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Abstract

We describe an apparatus designed to prevent bleeding from the orifices produced by trocars in laparoscopic surgery.

The device consists of a 2 mm-diameter catheter that has two inflatable balloons at the tip, separated by a 3 mm-space (the interballoon area). When applied to the trocar orifice, one balloon is situated above the aponeurosis and the other one below it, thus closing the aponeurosis in the interglobal area.

The balloons remain inflated for 24-48 hours. When they are deflated, the catheter is extracted and, due to its small diameter, the skin and the aponeurosis remain closed.

During these 24-48 hours, the inflation pressure of the balloons produces haemostasis above and below the aponeurosis.

Keywords: Trocar bleeding, laparoscopic surgery, double balloon

TEXT

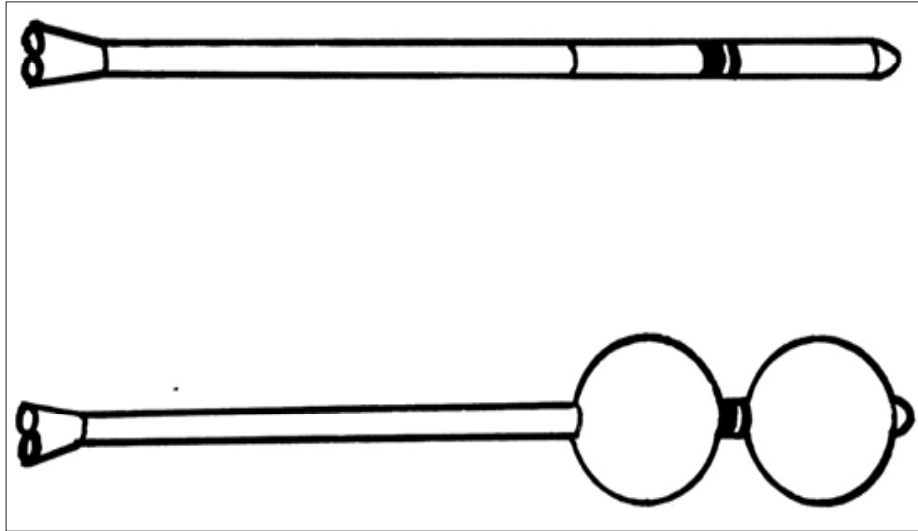
Haemorrhage from laparoscopic port sites is uncommon but potentially significant (1). Bleeding may occur at the very beginning of the surgery but, in some cases, it may go unrecognized for a while complicating the operation and at the postoperative course. Planned careful trocar placement can prevent most of these instances that otherwise can be readily managed avoiding severe morbidity (2).

If prevention fails, routine injection of lidocaine with epinephrine may decrease skin edge bleeding. Other options for controlling the bleeding include using the trocar that the bleeding is coming through for direct pressure by rotating the tip against the bleeding site. It is possible to try to tamponade by applying pressure to the abdominal wall with a balloon trocar or a Foley catheter pulled against the abdominal wall and

attached to a clamp (the temporary pressure usually stops bleeding from small vessels or veins) (3). We proposed in 2016 an easy technical gesture to stop the bleeding at the port site in laparoscopic surgery. We use a haemostatic patch (Surgicel®) involving the trocar (any kind of trocar)(4).

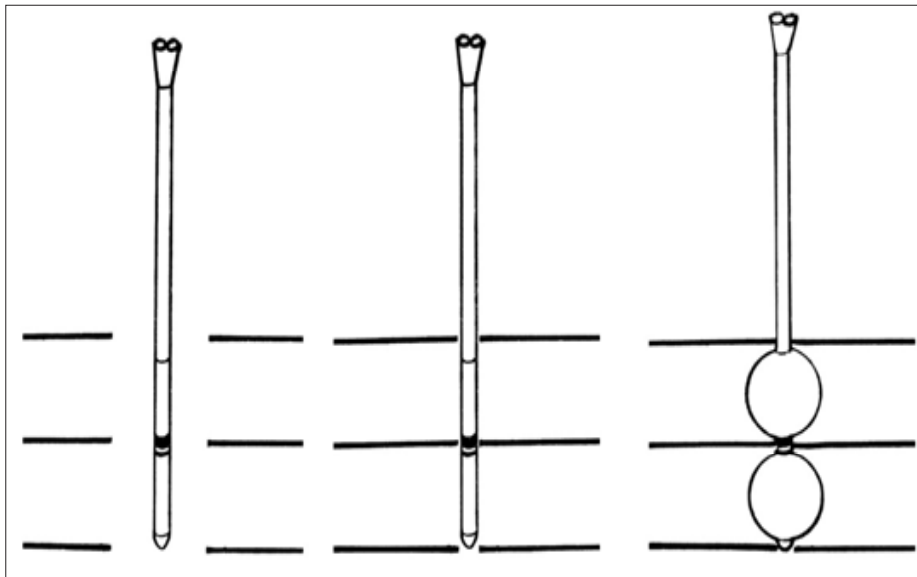
Now we describe an apparatus designed to prevent bleeding from the orifices produced by trocars in laparoscopic surgery (approved by ethical committee).

The device (Fig. 1) consists of a 2 mm-diameter catheter that has two inflatable balloons at the tip, separated by a 3 mm-space (the interballoon area). When applied to the trocar orifice, one balloon is situated above the aponeurosis and the other one below it, thus closing the aponeurosis in the interglobal area.



On concluding a laparoscopic intervention, if one of the trocars provokes uncontrolled bleeding, the aponeurosis can be closed with loose, unknotted sutures. We then insert the catheter, such that the interballoon zone (marked with a blue stripe) is level with the aponeurosis. The sutures are then knotted and

the skin is closed. Once the aponeurosis and the skin, with the catheter in place, are closed, the two balloons are inflated. One remains above the aponeurosis, compressing the subcutaneous area, and the other is situated below the aponeurosis, compressing the muscular and preperitoneal areas (Fig. 2).



The balloons remain inflated for 24-48 hours. When they are deflated, the catheter is extracted and, due to its small diameter, the skin and the aponeurosis remain closed.

During these 24-48 hours, the inflation pressure of the balloons produces haemostasis above and below the aponeurosis.

In our opinion, the device we describe is inexpensive, simple and very useful for controlling trocar bleeding.

Furthermore, it saves significant surgical time that would otherwise be consumed in attempting to control the bleeding.

It could also be usefully applied in cases in which, even if the trocar orifice does not bleed during the intervention, in view of the patient's medical history (such as treatment with anticoagulants, the deficit of a coagulation factor or a history of bleeding in previous surgery), there is considered to be significant risk of bleeding during the immediate postoperative period.

REFERENCES

- [1] McBrearty A, Blake G. Avoiding port site bleeding in laparoscopic cholecystectomy. *Annals* 2014; 96(2): 170-170.
- [2] Vazquez-Frias JA, Huete-Echandi F, Cueto-Garcia J, Padilla-Paz LA. Prevention and treatment of abdominal wall bleeding complications at trocar sites: review of the literature. *Surg Laparosc Endosc Percutan Tech*. 2009;19(3):195-7.
- [3] Geraci GSC, Pisello F, Li Volsi F, Facella T, Modica G. Trocar-related abdominal wall bleeding in 200 patients after laparoscopic cholecystectomy: Personal experience. *World J Gastroenterol*. 2006; 28(12):7165-7.
- [4] Pérez Lara FJ, Ferrer Berges A, Oehling H, Del Rey Moreno A, Oliva Muñoz H. Haemostatic Patch Envolving Laparoscopic Trocar to Stop Hemorrhage in the Port Site at the Beginning of the Operation. *J Minim Invasive Surg Sci*. 2016; 5(4):e34138.

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