The IABP was first used to support the failing heart in 1968 [2]. In the 1990s, the introduction of the percutaneous method of insertion broadened the availability and feasibility of IABP use, and nowadays it represents the most usable tool amongst temporary mechanical circulatory support devices for patients suffering from low cardiac output syndrome. However, the use of IABP is not without complications [3], which include bleeding at the site of insertion, local or systemic infection, stoke, aortic or iliac dissection or rupture (occurring in less than 1% but usually fatal) and entrapment of the balloon (associated with balloon rupture and clot formation). Neuropathy and chronic leg pain occur less frequently.

Acute limb ischaemia is the most common complication of IABP use, occurring in 8–42% of cases. More than 30% of patients with limb ischaemia secondary to balloon insertion required surgical intervention [3]. To reduce morbidity of the IABP, heparinization is generally associated with the use of the balloon. Apart from the reduction of the outer diameter of the balloon (11 Fr), another major step to reduce the incidence of vascular complications is the sheathless insertion technique. This technique was recommended by Erdogan et al. [4] in high-risk patients, particularly female patients with peripheral vascular disease. The sheathless insertion technique reduced the incidence of device-related complications to less than 10% in a study by Nash et al. [5]. Furthermore this modification could be a useful alternative to the use of heparin in patients with a high risk of bleeding.

A prospective clinical trial is required to address the issue of anticoagulation at a higher level of evidence in patients with IABP with or without a sheath.

**Conflict of Interest:** None declared

**References**


eComment. Re: Is heparin needed for patients with an intra-aortic balloon pump?

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The article by Pucher et al. [1] showed the expected results of heparin need for patients with an intra-aortic balloon pump (IABP). At the same time, they observed that the use of heparinization with IABP, which was intended to reduce the risk of thrombus, thromboembolus or limb ischaemia, will concomitantly increase the risk of bleeding as a side-effect. They therefore concluded from the studies that omitting or implementing a selective use strategy of heparinization during IABP counterpulsation could significantly decrease the incidence of bleeding without an increase in limb ischaemic events [1].

It is important to state that the use of IABP showed be holistic, especially when considering ischaemic complications such as limb ischaemia. While it is true that judicious use of an adjunct like heparin should be seriously considered in light of the attendant complications, the physical properties of the IAPB should also be seriously considered vis a vie the size of the balloon/catheter and sheathless technique. In particular, the height/body surface area of the patients should be taken into account to avoid the occlusive effect of the balloon/catheter, which can lead to an increased effect of limb ischaemia. Scholz et al. observed that using thinner catheters for percutaneous placement was associated with a reduction in the rate of complications, from 20.7% (17 of 82 patients) for 12 French catheters to 9.9% (10 of 101 patients) for 10.5 French catheters (P = 0.04), and 8.4% (14 of 167 patients) for 9.5 French catheters (P = 0.006) and with multivariate logistic regression analysis identified catheter size (odds ratio 3.4 for 12 French catheters) and other factors were independent risk factors for counterpulsation-associated complications [2]. Nash et al., whilst stating that IABP was helpful for controlling myocardial ischaemia and providing haemodynamic support, pointed out that its applicability was limited by lower extremity ischemic complications in a significant percentage of patients. They developed a new sheathless technique for percutaneous intra-aortic balloon catheter insertion, which reduced the effective catheter size. A pilot study conducted using this new technique resulted in a 10% rate of limb ischemia, without compromise of balloon function. They concluded that the technique was useful in reducing the incidence of limb ischaemia associated with IABP [3].

Thus in the use of IABP, especially when heparinization is to be discouraged or omitted for fear of bleeding, the balloon/catheter size, and possibly the avoidance of a sheath should be considered.

**Conflict of Interest:** None declared

**References**

