The “Big Kowalski”

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Aortic crossclamping is central to most cardiac operations, because a still and bloodless surgical field is essential to efficient completion of cardiac procedures. Although rare, application of the aortic crossclamp may lead to local tissue injury and, in extreme cases aortic dissection. Whether quality of aortic tissue, clamp pressure, or hemodynamic condition is predominantly responsible remains unclear, yet each deserves dedicated attention. In the current issue of the *Journal*, Ryłski and colleagues¹ examine in vitro the pressure along the jaws of a novel Kowalski clamp designed to distribute pressure evenly. This work follows the same group's previous study,² which demonstrated unequal pressure distribution in currently used clamps, which may in turn necessitate excess force during aortic crossclamping, leading to local tissue injury. The newly developed Kowalski clamp incorporates an additional hinge in its design, thus allowing the jaws to approximate with even pressure along the line of contact, rather than the “scissoring” apposition of currently available clamps.

This innovation necessitates increased clamp size and bulkiness, which may in turn hinder ease of application when exposure is limited or in reoperative situations. The human aorta most prone to clamp injury is often dilated, calcified, and nonhomogeneous, and the extrapolation of data from normal, nonpulsatile, pressurized pig aortas should be considered with caution. Aortic crossclamp site dissections are very rare, with one study reporting 4 out of 36 intraoperative dissections directly related to the clamp site in a population of more than 55,000 surgical patients.³ In this light, the equipoise or superiority of the novel clamp with respect to currently used clamps will be difficult to

establish; lack of clinical familiarity, on the other hand, may create unforeseen problems. The presented data do, however, compel surgeons to pause and consider the alternative clamp, because intraoperative aortic dissection is a complication with morbidity and mortality usually far exceeding those of the index operation. Ryłski and colleagues¹ are to be congratulated on an innovative laboratory approach to a rare but lethal iatrogenic complication that has now yielded improved instrument design. Clinical experience will be the test of the novel clamp in routine cardiac practice, but in scenarios with high-risk aortas, it may be helpful to reach for the “Big Kowalski.”

References

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Central Message

A novel aortic crossclamp may provide equal pressure distribution along its jaws and reduce the incidence of iatrogenic aortic injuries during aortic crossclamping.

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