An alternative technique for cannulation in type A dissection

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In a recent issue, there was a Great Debate article about cannulation techniques in patients with type A dissection complicated by cerebral malperfusion [1]. Paul P. Urbanski argues for cannulation of the common carotid artery by using a separate incision along the medial margin of the sternocleidomastoid muscle. Jean Bachet gives arguments for the right axillary artery as cannulation site by an infraclavicular opening. It is not mentioned that these approaches can be combined by extending the sternal incision into the right side of the jugulum. The common carotid—and the right subclavian artery (which becomes the axillary artery at the lateral border of the first rib)—can be exposed, and cannulation performed by attaching a graft to one of these arteries, preferably to the subclavian artery as the cerebral circulation is interrupted to a lesser degree. The disadvantage is the scar in the jugulum compared with a more unseen scar in the neck. On the other hand, the axillary cannulation can be somewhat time-consuming, particularly in obese and very muscular individuals. In addition, many type A dissection patients have an element of cardiac tamponade at operation and there will be no delay in relieving this by the proposed approach.

REFERENCE

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Reply to Almdahl

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We read with great interest the letter by Almdahl [1] concerning the Great Debate article about cannulation techniques in patients with type A dissection complicated by cerebral malperfusion [2].

Almdahl et al. [1] suggests a method by which ‘the cannulation sites for the carotid or the subclavian artery could be combined by extending the sternal incision into the right side of the Jugulum’. This is right but, in my humble opinion, the suggested method has several drawbacks and irrelevances.

(i) It is not necessary to combine both sites of cannulation. Either the carotid artery or the subclavian one is used and not both. So an approach allowing the cannulation of both arteries is useless.

(ii) Extending the sternal incision to the right in order to reach a proper site of cannulation in the subclavian artery would imply a large muscle attrition (Sterno-cleido-mastoid, and possibly the anterior scalene muscles with the risk for the surrounding structures and in particular the nerves).

(iii) By using the extension of the sternal incision, it is likely that only one subclavian artery could be controlled and cannulated. I propose to cannulate the right axillary artery. This artery can easily be found, controlled and cannulated through an incision in the deltopectoral sulcus without any (or very limited) muscle dissection and spreading.

(iv) At this site, the right axillary artery is never or almost never impaired by the dissecting process. Therefore, cannulating this vessel distally may guarantee that the blood will flow into the true lumen of the right carotid, the innominate artery and the aorta during cardiopulmonary bypass and cerebral perfusion. This may not be the case in more proximal vessels such as the right subclavian artery.

(v) The fact that the approach and control of the right axillary artery can be time-consuming and difficult in obese patients is true. But all modes of cannulation, including the femoral artery one, are difficult and time-consuming in severely obese patients. In addition, those patients often have a short neck and the extension of the sternal incision in this part of their body might prove to be as difficult, time-consuming and dangerous as the distal approach.

(vi) Even though this may appear as a secondary argument when survival is at stake, the cosmetic results of both approaches cannot be compared. It is quite easy (and almost systematic and natural) for any male or female patient returning to a normal life after an operation to hide a scar located below the right extremity of his/her right clavicle. This is hardly possible with a large scar in the neck.

(vii) Last but not least, we are convinced that patients in severe haemodynamic condition, because of cardiac tamponade, should be put on cardiopulmonary bypass before the chest is opened. In those cases, the surgeon must adapt his strategy and, most probably, those cases deserve another cannulation site such as the groin, which will allow one to rapidly perform not only an arterial cannulation but also a venous one.

Therefore I maintain that, in most patients, approaching the right axillary cannulation through the deltopectoral sulcus remains the simplest, less invasive and most efficient method.

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The title of this letter [1] suggests that there is an alternative technique of cannulation in acute aortic dissection surgery, which was not mentioned in our contributions. Yet, it is misleading. The author does not describe a new cannulation method but just an approach to the right subclavian and right common artery by extending the sternotomy incision to the neck. He neither gives the reasons for accessing both arteries when using only one for cannulation, nor describes his personal experience with doing so. This approach was not mentioned in the Great Debate paper because we do not recommend it. Such an access does not offer any advantages when compared with separate incisions, neither in elective aortic arch surgery, nor in emergent one, in which fast and simple installation of cardiopulmonary bypass is of utmost importance. The separation of the right common artery and, especially, the right subclavian artery above their origins can be very difficult, time-consuming and connected.