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 located below the clavicular. 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].

JEAN BACHET, PARIS, FRANCE

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 the 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 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.

PAUL P. URBANSKI, BAD NEUSTADT, GERMANY

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
with an increased risk of local injuries of adjoining nerves and vessels. I agree, however, that an infracavicular approach to the right axillary artery can also be difficult, especially in obese patients. This is one of several reasons why I prefer a common carotid artery for cannulation and the access on the neck [2, 3]. This approach is the fastest and simplest access to a large artery in the human body, taking just few minutes even in obese patients. Especially in these patients, the groin access to femoral artery takes more time, and is associated with an increased risk of infection, which, to date, we have never observed on the neck. As I emphasized in my contribution to the Great Debate [2], we used it in a lot of obese patients, and have never encountered a problem. Recently, we used this approach without considerable difficulties in an acute dissection patient, who weighed 180 kg and was only 178 cm tall. Moreover, the adjoining jugular vein offers the possibility of venous cannulation and establishment of cardiopulmonary bypass before opening the chest without the necessity of femoral cannulation [4]. Such an approach can be advantageous in redo or emergent aortic surgeries as opposed to Almdahl’s suggestion to perform the sternotomy first. Putting an unstable patient with tamponade on bypass before sternotomy ensures the establishment of sufficient organ perfusion, and even prevents an uncontrolled increase of blood pressure after opening the chest and subsequent aortic rupture risk. I am aware that some surgeons are still reluctant to use the carotid artery for cannulation, but after using it in more than 1000 cases, I can just repeatedly state: try it and make your own opinion.

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Reply to Hamaji

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We would like to thank Hamaji [1] for his interest in our study and for his enquiry regarding the role of postoperative (adjuvant) chemotherapy (CT) with or without radiotherapy (RT) following complete resections in thymic malignancies [2].

The European Society of Thoracic Surgeons (ESTS) Thymic retrospective database was designed to include all thymic tumours submitted to surgical resection from 1990 to 2010 from 35 European and non-European institutions. A total of 2265 patients were included in the data set and analysed.

THYMOMA

Among 1519 patients with thymoma receiving a complete resection (R0) and with complete vital status information, 582 (38%) received any form of adjuvant therapy after resection. Of these, 28 (5%) received CT only, 118 (20%) CT + RT and 436 (75%) RT only. Univariate analysis, using no treatment as reference, showed that the addition of postoperative CT to radical surgery did not result in a significant survival advantage [HR: 1.92; 95% (Confidence Interval) CI: 0.78–4.75, P = 0.16]. The multivariate-adjusted model indicated an independent
tumours. Compared with radiotherapy for thymic epithelial tumours, chemotherapy has been less investigated [2, 3].

They mentioned in the paper that the effect of adjuvant radiotherapy was nearly as identical as that of the whole adjuvant therapy. I am interested in the effect of adjuvant chemotherapy (alone or with radiotherapy) on overall survival of thymic epithelial tumours or any histological subtype. Previously, a significant benefit of adjuvant chemotherapy on overall survival was not shown for thymoma or thymic carcinoma patients [2, 4]. In their study, was adjuvant chemotherapy as effective as adjuvant radiotherapy and significantly effective on overall survival of thymic epithelial tumours or any histological subtype? Also was the effect of adjuvant chemotherapy different between histological subtypes? I would appreciate any input from the authors in these regards.

Again I would like to thank the authors for the opportunity to read and comment on this paper.

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I read with great interest the recent article by Ruffini et al. [1] regarding a cohort study of thymic epithelial tumours using the large database of the European Society of Thoracic Surgeons. I would like to thank the authors for publishing the invaluable data.

They analysed the largest database of patients with thymic epithelial tumours and their findings indicate that adjuvant therapy provides significant benefit on overall survival. In their forest plot with propensity score, there was no effect modification by specific subgroup, which may mean that adjuvant therapy will benefit both thymoma patients and thymic carcinoma patients.

Notably included in the large database was information on adjuvant chemotherapy, whereas it is often lacking in other databases on thymic epithelial