Letter to the Editor

Keeping an ‘eye’ on type A dissections

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We read with interest the how-to-do-it article ‘Angioscopy – a valuable tool in guiding hybrid stent grafting and decision making during type A aortic dissection surgery’ by Tsagakis and colleagues, and the conference discussion with Professor von Segesser [1].

Currently, each form of endoscope for the purpose of angioscopy during circulatory arrest for type A dissection repair has its pros and cons. The bronchoscope has a good length, is thin, flexible and easy to manipulate. However, there are potential issues about its sterility, and its illumination and image quality are relatively inferior. The modified gastroscope has a biplanar, flexible, distal section for optimal positioning. In addition, it has a suction irrigation system, which allows for in situ washing without the need to remove it. Nevertheless, it is a bulkier device with a thicker scope [2].

In our experience, the choice of angioscope for inspection of and open-stent deployment for the arch and descending aorta is the flexible-tip 5-mm EndoEYE™ (Olympus America Inc.) endoscope. The device is a new-generation high-definition video endoscope with a miniaturized charge-coupled device (CCD) chip at the tip of the scope, which provides the very best picture quality and superior lighting. It is also thin and lightweight, as well as being fully autoclavable. The disadvantage is its limited scope flexibility, which may not allow it to visualize the distal aorta.

Hybrid procedures for aortic dissection repair are increasing in popularity. There remain many shortcomings in the available endoscopes for the purpose of angioscopy. The future device should be a surgeon-friendly scope that is specifically designed for the task of intra-operative aortic exploration.

References


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Reply to the Letter to the Editor

Reply to Ng et al.

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We thank Ng et al. [1] for their interest regarding our method for intra-operative visualization of the downstream aorta in acute aortic dissection. We agree that the available endoscopes demonstrate shortcomings and that the development of specifically designed devices would improve the exploration of the intraluminal aortic characteristics.

In our ‘How to do it’ article [2], a flexible bronchovideoscope had been used for intra-operative angioscopy, which had to fulfill the following criteria: (1) sterility, (2) atraumatic guidance in the downstream aorta, and (3) adequate optical field allowing visualization of the proximal and distal downstream aorta.

The used BF type Q180-AC flexible videocendoscope from Olympus®, so-called ‘angioscope’, fulfilled these criteria. It is completely autoclavable with a separate monitor/video display placed away from the surgical table. The diameter of the endoscope is thin (5.5 mm), the working length (60 cm) enables evaluation up to the distal abdominal aorta, and the flexibility as well the angulation range (310°) enable atraumatic insertion, guidance, and visualization beyond aortic abnormalities, such as in case of aortic kinking or in aneurysmal cases with adherent thrombus formation.

In addition, the used angioscope has a suction irrigation system, which has been not routinely used in our patients. The suction of blood by the angioscope disturbs the optical field, requiring additional wash of the endoscope’s tip, which may result in time loss. Therefore, we perform angioscopy under hypothermic circulatory arrest and after establishment of bilateral selective cerebral perfusion to achieve a bloodless field in the downstream aorta. In cases with severe collateral backlight of blood into the descending aorta via side branches, complete circulatory arrest may be required to visualize the distal aortic part. Therefore, a wide field for technical industrial improvements exists, especially to achieve blood suction and free view simultaneously.

The EndoEYE endoscope from Olympus® suggested by Ng et al. represents a rigid videoaparoscope with a 5.4- or 10-mm outer diameter. In our department, we use the 10-mm high-definition EndoEYE LTF-VH in thoracoscopic, minimal-invasive cardiac-valve surgery. The flexibility of the system is limited to the short tip, which, in case of angioscopy, may allow only an overview of the very proximal descending aorta. An atraumatic insertion of the device into the downstream aorta is not guaranteed. Thereby, the visualization of the middle and distal descending aortic part, the evaluation of the landing zone in case of antegrade stent grafting, as well as the supported guidance of the stent graft.