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EDITORIAL COMMENT

Re: Open aortic arch surgery in chronic dissection with visceral arteries originating from different lumens

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Different eras have different paradigms according to evolving experience as well as to the preferred technology. While surgical connection to both lumina always was the basic principle in classical post-dissection aneurysm surgery, complete exclusion of the false lumen (at least at the thoracic level) is the basic principle for post-dissection aneurysm treatment by thoracic endovascular aortic repair (TEVAR) as it is the case with using the frozen elephant trunk (FET) technique. Both conceptual approaches obviously have their justification and their success rates but it remains to be determined if TEVAR alone in chronic post-dissection aneurysmal formation is able to provide the same excellent long-term results as classical surgery—probably not, but still in selected cases, this approach is effective [1–3]. FET alone may also not be able to claim the same effectiveness, but the concept of applying the technique is more and more frequently used as an intermediate step to make facilitate secondary thoraco-abdominal replacement [4]. Finally, the size of the true lumen may be a limiting factor as in particular true lumen diameter patients with rapid progression to post-dissection aneurysmal formation seem to have a smaller true lumen diameter than the ones remaining with stable diameters.
Inserting a stent-graft in these small true lumina—despite high radial forces of the device—may not induce remodelling but may induce malperfusion by causing pseudocoarctation.

To better understand the discussion on vessel offspring from true and false lumina, one has to have a thorough pathophysiological understanding of the underlying mechanisms. In the initial acute phase of the disease, all vessels do primarily originate from the true lumen, and a secondary tear of the intima–media cylinder creates a visible false lumen offspring. It is crucial to understand that, at the very location where the cylinder tore, the communication between both lumina is still present and, in most cases, will be large enough to maintain branch vessel perfusion even if the primary entry tear is closed by a stent-graft and therefore false lumen thrombosis—at least at the thoracic level—is induced [3]. It is more than interesting that nature sometimes induces flow reversal in these false lumina where peripheral resistance regulation in the very end-organ, blood flow is directed upstream to the area in need. On the contrary, everybody would question this approach in open surgery if the proposal of mere surgical obliteration of either the primary entry tear or a large communication between lumina would be proposed. We will never get an answer as to the potential effectiveness, as acceptance to support such an approach in the community would be more than low.

Summarizing, this report is a very important further step on the road to creating awareness of the continuing improvement of surgical treatment of thoracic aortic pathology. Several ways of transporting messages regarding the effectiveness of a certain technique are known. Some are loud and striking and may not refer to the most durable solutions. The others are resilient and substantiated and—as seen here—refer to a highly durable approach with a very low complication rate despite the obvious invasiveness. For me, this is maybe the main message of this report in addition to the necessary and important discussion regarding true and false lumen vessel offspring.

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