INVITED COMMENTARY

TAVI and the Vascular Surgeon

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Raju et al.[1] report a retrospective analysis of vascular complications (VCs) following transcatheter aortic valve implantation (TAVI). This is an important topic for vascular surgeons because of the relative frequency of vascular complications following TAVI compared with the open surgical approach. Furthermore, indications for TAVI instead of open valve replacement have expanded to encompass patients classified as intermediate risk for open surgery, with recent calls for the low risk cohort to be considered as well.[2]

The authors' rate of major vascular complications (3.38%) compares favourably with early studies and with the more recent PARTNER 2 trial, which reported a 7.9% incidence of major VCs at 30 days.[3] They attribute these excellent results to their multidisciplinary approach and the involvement of vascular surgeons in planning intervention, though the specific role played or how this altered management is not examined in their analysis. Perhaps also of relevance is the relatively low rate of transfemoral access in this cohort: 61%, compared with 76.3% for those eligible for randomisation in the PARTNER 2 trial[3] and 84.7% in recently reported registry data.[4] Avoiding challenging access by choosing a transthoracic access may be reflective of a multidisciplinary approach but it is also noteworthy that in the PARTNER 2 trial TAVI was associated with a lower rate of death and disabling stroke when compared with surgery only in patients who had undergone transfemoral access.[3]

Use of the Valve Academic Research Consortium (VARC) guidelines[5] in the definition of what constitutes a major vascular complication allows comparison of these results with other studies. While these guidelines only consider major vascular complications as important clinical endpoints, some vascular surgeons will find them ambiguous and may not agree that complications requiring surgical intervention should qualify as minor, for example *distal embolisation treated by embolectomy/thrombectomy*. The authors' further sub-classification of complications into peri-operative (within 24 h) and post-operative (subsequent to this time period) is not part of the VARC criteria, indeed the VARC guidelines classify peri-operative as within 72 h of intervention. The reasons for this 24 h cut off are not clear as it seems unlikely that a pseudoaneurysm, a dissection or even a haematoma would arise spontaneously after this time as their "post-operative" designation would suggest.

An association between female gender (38%) and vascular complications is described; we know that for both cardiac and vascular interventions higher complication rates have been reported previously. It is interesting that when the largest sheath was advanced from the left this was predictive of minor post-operative VC and that four of the six patients with a major VC had access from the left. The authors do not specify the reasons for choosing left sided access instead of the more standard right sided approach; one assumes a severely diseased access vessel on the right, reflecting a greater overall burden of vascular disease and increased risk of VC.

The advent of pre-closure devices in place of surgical cut down did not appear to impact on VC incidence, which did not vary significantly over time. Registry data ($n = 96\ 256$) have shown that paradoxically the rate of unplanned surgery or intervention for vascular complications was lower at hospitals in the lowest volume quartile than at hospitals in the highest volume quartile (2.6% *vs.* 3.4%). A proposed explanation is that the use of surgical cutdown for femoral access was more common in the lowest volume quartile (26.7% *vs*. 9.1%).[4] Together with the findings of the present study, we can surmise that identification of the high risk femoral access might allow for planned cut down as opposed to percutaneous access, or alternatively a transthoracic approach. Either way, the inclusion of vascular surgeons in the decision making process as Raju et al. suggest would seem prudent, a recommendation borne out by their impressive results.

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