



## Invited Commentary

## Carotid Stenosis: An Unknown Disease...

P. De Rango\*

Division of Vascular and Endovascular Surgery, Hospital S. M. Misericordia, Perugia, Italy

Data from VASCUNET, a large registry of vascular practice collecting data from nine European countries and Australia, published in this issue of *EJVES*, alerted on the large variability in indications and treatment of carotid stenosis in national practice of the real world.<sup>1</sup> According to data from 48,185 carotid endarterectomies (CEA) and 4602 carotid stenting (CAS) recorded over a 5-year period (2005–2010) and stratified by participating countries, the proportion of CAS varied from 0.1% to 17.4% of the overall national procedures in each country. Furthermore, although the indication for CEA in the overall registry was mainly symptomatic carotid stenosis (60.1%), the proportion significantly varied from 100% to 31.4% ( $p < 0.001$ ). In addition, there were markedly differences in application of CEA by gender (proportion of women from 39% to 28.8%;  $p < 0.001$ ), age (proportion of >75 y old patients from 45.6% to 18.7%;  $p < 0.001$ ) and in admission mode (emergency of repairs from 2.1% to 24.6%,  $p < 0.001$ ). The large inconsistency in regular practice with carotid surgery among different countries shown by VASCUNET might be overestimated due to reporting bias related to the registry source of data. Registries are not as reliable as clinical trials and may be likely affected by inaccuracy and missing information. However, even with limitations, registry data can provide a picture of current practice in the real world.

Variability in carotid practice found in the VASCUNET registry is probably related to difference in prevalence and characteristics of patients with the disease since data were recorded through the same geographic area and ethnicity groups and only in part can reflect lack of adherence to established carotid guidelines since most of the procedures in each country were performed according to European recommendations (from 70.3% to 100%; overall adherence 92.3%).<sup>1</sup> More likely, the lack of a uniformed practice may be related to weakness in the current evidence in management of carotid disease. Despite multiple randomized clinical trials (RCT) and multiple guidelines published, carotid stenosis is still a largely unknown disease with many controversial issues. There are only few strong certainties (CEA is effective for recurrent stroke prevention in symptomatic severe carotid stenosis) but more unclear features in carotid related stroke for which the evidence of benefit from an intervention is weak and the strength or recommendations for management of carotid stenosis is low, as outlined in the following points:

- One controversial field is the use of interventional therapy for asymptomatic disease: although two RCTs observed that CEA conferred a significant benefit over medical therapy alone, the benefit was small, never balanced with current medical therapy advancements, and failed to achieve the level of multidisciplinary consensus accorded to RCTs for symptomatic carotid stenosis because the overall risk of stroke for patients with asymptomatic carotid disease is low.
- Regarding symptomatic carotid disease, there is increasing evidence suggesting the greatest benefit from surgery if the operation is performed soon after onset of symptoms, but there is no level-I evidence and none of the published studies clearly demonstrated the benefit for the patients in balancing operative early risks in iperacute stroke/TIA patients and the efficacy in late stroke prevention.
- Furthermore, carotid guidelines state that surgery may confer benefit also in old patients and women; however, the proofs of efficacy in these age and sex settings are controversial and the benefit is lower than that achieved in young male patients.
- Finally, what about the indication for CAS, the most debated procedure in the history of vascular surgery, recently instigating guidelines battle amongst American cardiovascular societies? The current American Heart Association (AHA) guidelines state that “carotid artery stenting is an alternative to carotid endarterectomy in symptomatic average and low-risk patients” while the Society for Vascular Surgery (SVS) guidelines recommend that “CAS should be reserved for symptomatic patients with stenosis of 50%–99% at high risk for CEA for anatomic or medical reasons and is not recommended for asymptomatic patients at this time”. There is still confounded and limited evidence on the safety and long-term efficacy of CAS that can difficulty support the widespread use of the procedure especially for asymptomatic carotid stenosis currently overcoming 90% of the carotid interventions in many (especially US) countries.

Opposite of CAS, CEA is today recognized a safe procedure as confirmed by the VASCUNET registry data showing very low peri-procedural risks with narrow ranges by country: 2.3% in symptomatic (from 0.9% to 3.8%) and 0.9% in asymptomatic (from 0.5% to 2.7%).<sup>1</sup> However, the main goal of any carotid procedure is the prevention of stroke. As a preventive strategy, the lack of complication must not translate in acquisition of benefit for the patient if there is no scientific proof of this efficacy point.

DOI of original article: 10.1016/j.ejvs.2012.04.013.

\* Tel.: +39 075 5786436; fax: +39 075 5786435.

E-mail addresses: [pderango@gmail.com](mailto:pderango@gmail.com), [pderango@unipg.it](mailto:pderango@unipg.it).

Data from VASCUNET provide us with valuable lessons. Adherence to guidelines and quality control methods for practice are essential to uniform the management of carotid stenosis among different countries. Nevertheless, despite carotid stenosis has been one of the most studied conditions, we should be aware that the “gray area” is still large and this likely reflects current variability in clinical national practice. More research to help identifying the higher benefit strategy for patients in many yet un-clarified carotid settings would allow more uniform consensus and overcome this variability. In the meantime, the best practice should be to unanimously apply carotid revascularization prevalently to those settings

with higher and clearer evidence of benefit (i.e. symptomatic severe carotid stenosis) and decrease the rate of application for those where the proof of efficacy are weak (e.g. asymptomatic, women, elderly, CAS).

## Reference

- 1 Vikatmaa P, Mitchell D, Jensen LP, Beiles B, Björck M, Hallbakken E, et al. Variation in clinical practice in carotid surgery in nine countries 2005–2010. Lessons from VASCUNET and recommendations for the future of national clinical audit. *Eur J Vasc Endovasc Surg* 2012;**44**:11–7.