

INVITED COMMENTARY

Carotid Body Tumours: Benign but Challenging

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In a landmark publication back in 1971, Shamblin et al. reported that carotid body tumour (CBT) resection is associated with a high mortality rate, which is "usually related to carotid arterial damage or ligation".¹ Based on this observation, they developed the renowned classification scheme that we all use nowadays. They also suggested that Shamblin 3 tumours should not be resected because the nature of the CBT rarely warrants the mortality associated with the inevitable, at that time, interruption of the internal carotid circulation and subsequent re-establishment through Dacron or autogenous vein grafts.

In their systematic review, Robertson et al. have put into perspective the issue of peri-operative risk following CBT resection, addressing both the problems of stroke and cranial nerve injury (CNI), as well as how to prevent them.² The mean 30 day mortality appears to be 2.29% and mean 30 day stroke rate 3.53%. Although these rates are not negligible, they are much lower than the reported prevalence of persisting CNI at 30 days, which appears to be 11.15%. Compared with carotid endarterectomy, the risk of persistent CNI is more than 10 times higher.³

The Shamblin classification has been verified as an accurate tool for prediction of both major peri-operative adverse events: stroke and cranial nerve injury. Remarkably, although the stroke rate is doubled as the CBT moves from class 1 (1.89%) to class 3 (3.99%), the risk of cranial nerve injury is increased by 4.5 times, from 3.76% to an impressive 17.1%. It is noteworthy that the Shamblin classification appears to be predictive of something it was not initially designed to predict: the risk of cranial nerve injury. Several attempts to find new predictors of complications of CBT resection have been made based on CT, MRI, and ultrasound features. Tumour distance to the base of the skull has been associated with both CNI and blood loss, whereas tumour volume has been associated with blood loss.⁴ A combination of all three predictors, namely Shamblin classification, CBT distance to the skull, and CBT volume, appears to give a more complete picture of the peri-operative risk.

Whereas prediction of complications is important for decision making, pre-operative planning as well as for the informed consent process, prevention of complications is even more important. In this context, pre-operative embolisation has been proposed as a means to reduce peri-operative bleeding. Robertson et al.² have not confirmed any beneficial effect of pre-operative embolisation, either on the prevalence of re-exploration for neck haematomas or the mean blood loss. Meticulous surgical technique and operating as early as possible when the CBT is still small remain the best way to minimise complications.

Several limitations of the systematic review have been acknowledged by the authors, related to the methodological quality of the included studies. Several other problems of the literature could be added. There is hardly any reporting of independent post-operative neurological assessment or of the repeatability and reliability of the assessment of the Shamblin classification, or even who made it. There are also no reports on the type of stroke that complicates the procedure.⁵ Issues that are elementary for papers reporting on carotid stenosis remain elusive in papers reporting on CBTs.

Taken together, the Leicester group is to be commended for summarizing the evidence on all major issues of CBT presentation and resection: a usually benign and non-functioning painless mass that poses a serious threat to the cranial nerves during surgery. CBT is not the poor relation of carotid stenosis. CBT resection is probably more demanding and certainly more dangerous.

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