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Commentary: Segmental pulmonary endarterectomy: Going out on the limb

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De Perrot and colleagues¹ report a large series of pulmonary endarterectomies (PEAs), emphasizing the excellent results that were achieved in patients with segmental disease (2.8% operative mortality). Patients with segmental disease are technically more challenging (note the longer circulatory arrest times, intensive care unit stay, and hospital stay), but despite the surgical challenge the results were essentially the same as those with more proximal disease. The reason why segmental disease rose from 7% to 41% in their last cohort is not discussed, but I postulate that this was due to an increased surgical confidence in tackling more difficult patients. Their center is a high-volume center of excellence with a nationwide referral pattern that represents the ideal paradigm to treat this complex disease. That preoperative medical therapy is a risk factor for a worse result in segmental disease is intriguing and has important clinical implications. I agree with their recommendation that prompt referral to an

Right pulmonary angiogram demonstrating segmental disease.

CENTRAL MESSAGE

The early results of PEA in segmental CTEPH are essentially equivalent to more proximal disease, but at 10 years many segmental patients require medical therapy for residual pulmonary hypertension.

experienced chronic thromboembolic pulmonary hypertension (CTEPH) center once the diagnosis is suspected or confirmed before initiation of medical therapy is prudent. An early decision favoring an operative approach may obviate the development of distal vasculopathy and the need for later medical therapy. This concept is opposite that of the current balloon pulmonary angioplasty (BPA) paradigm where many now favor medical therapy to reduce pulmonary artery pressure in patients with high pulmonary artery pressure to reduce procedure-related complications.

Of particular importance in this study is the long-term follow-up facilitated by the close collaboration with referring physicians. It is challenging to obtain long-term clinical follow-up in CTEPH patients because they typically

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are referred from distant centers and communication is lost. The 79% 10-year overall survival is impressive, and the need for medical therapy at 10 years in the segmental patients of 38% is new, important information and clearly defines these patients requiring close observation.

There remain many unresolved issues regarding the evaluation of CTEPH, and the decision regarding the optimal therapy, including imaging (the Toronto group now relies on the computed tomography pulmonary angiogram and not the pulmonary angiogram), the assessment of distal vasculopathy (currently approximated by a PAP out of proportion to the imaging), and the role of BPA versus PEA in segmental disease. The somewhat artificial delineation of CTEPH disease found at PEA into 4 subtypes, with distal disease divided into 3 and 4

is perhaps too complicated and does not mirror the intra-operative findings in my opinion. Main pulmonary artery disease is rare and lobar disease is relatively common and both are easy to diagnose on imaging. Distal disease is almost always a continuum and telling precisely where it starts, and especially where it stops is difficult and can be different in each segmental vessel. Interpreting imaging studies is also more challenging in distal patients. What is clear is that patients with segmental disease require more surgical expertise, but can greatly benefit from PEA.

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