PREOPERATIVE PREDICTION OF SURGICAL SPECIMEN PRIOR TO PULMONARY ENDARTERECTOMY

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Objective: Operability assessment for chronic thromboembolic pulmonary hypertension (CTEPH) relies on numerous factors, including high quality imaging to assess the location of disease potentially amenable to pulmonary endarterectomy (PEA). Jamieson classification (types I-IV) is determined at the time of surgery and depends on the specimen removed with PEA (see figure)[1]. The ability to pre-operatively predict the anticipated Jamieson surgical classification has not been examined. Methods: We prospectively examined 15 consecutive patients who were referred for PEA. After the pre-operative assessment at UCSD and before PEA, the attending CTEPH physician who has reviewed all clinical and imaging data (all had VQ scan and pulmonary angiogram performed at UCSD; CT angiogram reviewed when available) assigned a predicted Jamieson classification for each side. The attending PEA surgeon, without knowledge of the physician's predictions then reported the operative classification immediately following PEA. Results: The overall accuracy of the pre-operative classification was 38.9% (14 correct classifications out of 36). The prediction for both sides was correct in 4 cases (22.2%). Of 12 pre-operative predictions for Jamieson type III disease, just 3 had type III at the time of surgery – with the rest having more proximal, types I or II disease. Conversely, there were 2 cases of type III disease that were predicted as being more proximal by the preoperative assessment. Despite these inaccuracies, all of the patients had significant hemodynamic benefit from PEA. Conclusions: In CTEPH, the Jamieson surgical classification is difficult to predict prior to PEA. Furthermore, the extent of proximal versus more distal, segmental disease is difficult to discern in all cases even by experienced CTEPH physicians using multiple imaging modalities including pulmonary angiography. Accordingly, the Jamieson classification should not be used in the pre-operative period to gauge operability in CTEPH.

1) Thistlethwaite PA, et al. Operative classification of thromboembolic disease determines outcome after pulmonary endarterectomy. J Thorac Cardiovasc Surg 2002;124:1203-11.

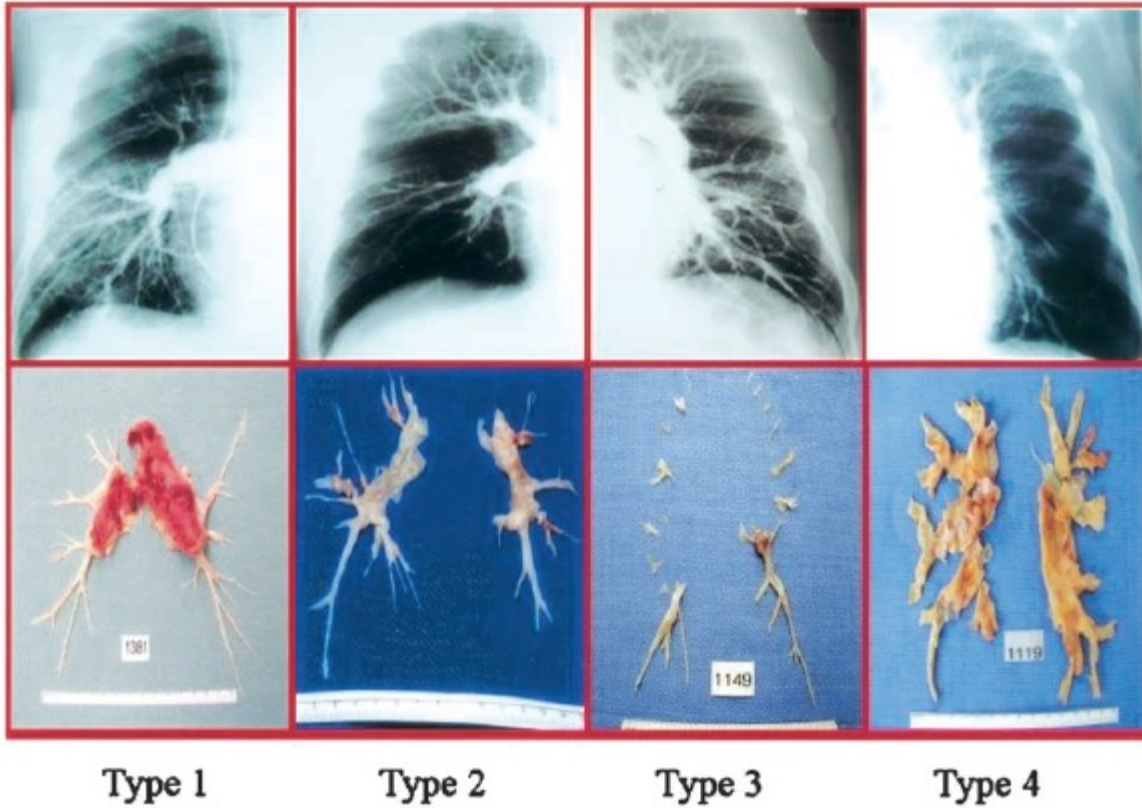2) Figure: Jamieson Pulmonary Endarterectomy Classification

Figure 1. Pulmonary angiograms and corresponding specimens removed at the time of pulmonary endarterectomy: type 1 disease, fresh thrombus in main-lobar arteries (note abrupt cutoff of branches and lack of filling to the periphery on angiography; type 2 disease, organized thrombus and intimal thickening proximal to segmental arteries (note poststenotic dilatation of the lower lobar vessel and lack of filling to the periphery on angiography); type 3 disease, intimal thickening-fibrosis in distal segmental arteries, with surgical plane raised at each segmental level; type 4 disease, distal arteriolar vasculopathy with removal of normal intimal layer and no intraluminal disease.