As the Phase 1 human trial is getting on the way I would summarize the rational for septectomy in an acutely dissected aorta

The central proposition being that septotomy may prevent or, at least, substantially decrease the eventual formation of aneurysm of the false lumen after aortic dissection.

The wall that remains after endarterectomy of the aorta has the same thickness as the false lumen outer wall of a dissection.

But no aneurysms have been reported after thousands of aortic endarterectomies.

The false lumen becomes aneurysmal not because it is thin, but rather because its lateral wall (S2) bears all the stress from the increased pressure caused by the greater outflow resistance of the false lumen.

These two studies report on 28 patients who had surgical fenestration (septectomy) of a dissected aorta. No patient developed an aneurysm over a 10-year follow-up.

Long-term outcomes of surgical fenestration for complicated acute type B aortic dissections

Aortic fenestration for acute or chronic aortic dissection: An uncommon but effective procedure

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In acute aortic dissection, septectomy of the infrarenal aorta equalizes the blood pressure in both lumena. The septectomy can also correct any existing malperfusion. Septectomy eliminates a mechanism responsible for the development of the false wall aneurysm.

Our catheter glides over 2 guide wires that have been placed in the false and true lumena. The guide wires diverge as the catheter approaches the septum and the flexible lips of the catheter open exposing the septum to the cutting element.

Transfemoral aortic septectomy (animation)

Septotomy in a perfusion model of aortic dissection. The flap is mimicked with chicken skin.

The first human trial (Phase 1) of catheter septotomy in acute aortic dissection will be carried out at the University of Texas, at Baylor College and at UCLA under Dr. Kristofer Charlton-Ouw, the Principal Investigator for this study.