**ASSESSMENT OF VIABILITY IN PATIENTS WITH CHRONIC TOTAL OCCLUSIONS: A CARDIAC MAGNETIC RESONANCE STUDY**

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Background:Conventional thinking has been that patients (pts) with chronic total occlusions (CTO) do not have significant myocardial viability and may not improve contractility with revascularization. Delayed enhancement (DE-) CMR can assess viability with high spatial resolution. We sought to determine if significant viability is present in CTO perfusion territories.

Methods: We studied 50pts with 69 CTO territories (38 men; age 63±11 years; LVEF 47±18%. All pts underwent baseline (BL) cine and DE-CMR (10 minutes after 0.15 mmol/kg gadolinium). Cine and DE-CMR were scored for regional wall thickening and amount of infarction; coronary angiograms were read for CTO perfusion territory and extent of collaterals using the Rentrop (4-point) scoring scheme. To determine if DE-CMR findings predicted functional improvement, 21pts underwent follow-up (FU) cine-CMR 3 months after revascularization.

Results:At baseline, of the 69 CTO territories, 27 (39%) had >50% infarction while 42 (61%) had ≤ 50% infarction; furthermore 13 (19%) had no infarction. At FU the presence of normal or improved contractile function in the 26 CTO territories that were revascularized was inversely related to the transmural extent of infarction (figure). Extent of collateral flow did not relate to amount of viability at BL (p=0.90), or to improvement after revascularization (p=0.85).

Conclusion: The majority of CTO territories have a significant amount of viable myocardium detectable by DE-CMR, independent of collateral flow grade. These viable territories demonstrate functional improvement if myocardial blood supply is restored.