Peripheral Arterial Occlusive Disease, PAOD, is characterized by atherosclerotic plaque build-up which can lead to ischemia. Collateral vessels function as natural bypasses around occlusions by outwardly remodeling to improve efficiency. Outwardly remodeled collaterals have impaired functional vasodilation at day 7, which can be attributed to smooth muscle cell malfunction. Previous work has shown the increase in vessel diameter is not due to cell proliferation.

**Purpose**
- To investigate whether smooth muscle cell mechanoadaptation occurs during the outward remodeling process in the profunda femoris artery.

**Surgery: Femoral Ligation**
- To stimulate occlusion, the mouse femoral artery was ligated distal to the epigastric artery and proximal to the popliteal artery redirecting blood flow through the profunda femoris artery, the stem of the gracilis collateral circulation. All surgeries performed in C57/B6 mice.

**Intravital Microscopy**
- At day 7 post-ligation, the profunda femoris diameter was imaged using intravital microscopy at rest and at maximum dilation using the smooth muscle cell-dependent dilators, sodium nitroprusside (SNP, 10^{-3} M) and papaverine (10^{-2} M).

**Sample Fixation and Processing**
- Following maximal dilation during intravital microscopy, the profunda was perfusion fixed.
- The profunda artery was resected and immunostained with α-smooth muscle actin and imaged using fluorescent microscopy.

**Outwardly Remodeled Collateral Stem Has Impaired Vasodilation at Day 7**

**Confocal Microscopy**
- Smooth muscle cells of the profunda femoris artery were imaged using confocal microscopy at 40x.

**Outwardly Remodeled Collateral Stem Has Smaller Smooth Muscle Cell Overlap at Day 7**

**References**

**Acknowledgements**
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