**Appendix B.Equations of Regional Flow Model at ICA Occlusion for Patient #1 and #2**

There are no changes on any peripheral regional resistances between baseline and ICA occlusion which makes for 11 equations:

PRECr = QRECr RRECr (B1)

PRPCr = QRPCr RRPCr (B2)

PROPr = QROPr RROPr (B3)

PRMCr = QRMCr RRMCr (B4)

PRACr = QRACr RRACr (B5)

PLACr = QLACr RLACr (B6)

PLMCr = QLMCr RLMCr (B7)

PLOPr = QLOPr RLOPr (B8)

PLPCr = QLPCr RLPCr (B9)

PSCEr = QSCEr RSCEr (B10)

PICEr = QICEr RICEr (B11)

There are 11 regional pressure equations:

 PRECr = Paortic – Pvenous – QRCCARRCCA (B12)

 PROPr = PRECr - QRICA1RRICA1 (B13)

 PRMCr = PROPr - QRICA2RRICA2 (B14)

 PRACr = PRMCr - QRACA1RRACA1 (B15)

 PLACr = PRACr - QACoARACoA (B16)

 PLMCr = PLACr – QLACA1RLACA1 (B17)

 PLOPr = PLMCr – QLICA2RLICA2 (B18)

 PICEr = Paortic – Pvenous – QRVARRVA – QBAIRBAI (B19)

 PSCEr = PICEr – QBARBA (B20)

 PLPCr = PSCEr – QBASRBAS (B21)

 PRPCr = PLPCr – QRPCA1RRPCA1 (B22)

Flows from LICA2 to RICA2 can be found from:

QLICA2 = QLOPr (B23)

QLACA1 = QLICA2 + QLMCr (B24)

QACoA = QLACA1 + QLACr (B25)

QRACA1= QACoA+ QRACr (B26)

QRICA2 = QRACA1 + QRMCr (B27)

There are additional 9 equations:

QRVA + QLVA – QBAI = 0 (B28)

QBAI – QBA = QICEr (B29)

QBA – QBAS = QSCEr (B30)

QBAS – QRPCA1= QLPCr (B31)

QRPCA1 – QRPCoA = QRPCr (B32)

QRCCA – QRICA1= QRECr (B33)

QRICA1 + QRPCoA = QRICA2 + QROPr (B34)

QRVARRVA – QLVARLVA = 0 (B35)

QRVARRVA+QBAIRBAI+QBARBA+QBASRBAS+QRPCA1RRPCA1+QRPCoARRPCoA-

(QRCCARRCCA+QRICA1RRICA1) = 0 (B36)