|  |  |  |  |
| --- | --- | --- | --- |
| **Specimen** | **Group** | **Area at Risk Full 17 Segments** | **Area at Risk**  **(% of LV Area)** |
| **PSEA12** | Hydrogel | 6 | 18% |
| **PSEA13** | Hydrogel | 6, 12, 1 | 22% |
| **PSEA14** | Hydrogel | 6, 1 | 25% |
| **PSEA15** | Hydrogel | 6, 12, 1 | 21% |
| **PSEA16** | Hydrogel | 6, 11, 5 | 23% |
| **PSEA17** | Hydrogel | 6, 12 | 15% |
| **PSEA23** | Hydrogel | 6, 1 | 15% |
| **PSEA24** | Hydrogel | 6, 5, 11 | 15% |
| **PSEA18** | Control | **5, 11** | 24% |
| **PSEA19** | Control | **6, 12** | 23% |
| **PSEA20** | Control | **6, 12** | 14% |
| **PSEA21** | Control | **6, 5** | 17% |
| **PSEA22** | Control | **6, 12** | 22% |
| **PSEA25** | Control | **6, 5, 11, 12** | 14% |
| **PSEA26** | Control | **6, 5, 11, 12** | 16% |
| **PSEA27** | Control | **6, 12** | 19% |
| **Average** | - | **6, 12** | 18.9±3.9% |

Table S1, Area at risk and affected segments in the 17 segments of each heart.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hydrogel Group (N=8)** | **Baseline (BL)** | **Post MI (MI)** | **Post Gel (G)** |
| **LV Hemodynamics & Volume** | **Average** | **Average** | **Average** |
| **Max Pressure, MP (mmHg)** | 97.4±6.4 | 81.6±5.2 | 77.4±9.1 |
| **End-Diastolic Pressure, EDP (mmHg)** | 21.8±4.0 | 24.9±3.9 | 23.9±2.4 |
| **Heart Rate, HR (bpm)** | 96.0±16.6 | 70.7±10.6 | 77.0±13.9 |
| **Isovolumetric contraction time, IVCT (ms)** | 48.5±12.0 | 67.7±24.7 | 56.9±21.9 |
| **Ejection Time, ET (ms)** | 286.6±36.3 | 326.0±25.3 | 331.2±40.1 |
| **Isovolumetric relaxation time, IVRT (ms)** | 95.1±20.2 | 108.5±20.5 | 93.8±18.8 |
| **Filling Time, FT (ms)** | 209.5±73.1 | 361.5±112.9 | 317.3±76.6 |
| **Tei Index, (IVCT+IVRT)/ET** | 0.50±0.10 | 0.54±0.11 | 0.46±0.09 |
| **Systolic Demand, SPTI (mmHg-sec)** | 26.0±3.0 | 24.7±2.4 | 23.5±2.1 |
| **Diastolic Supply, DPTI (mmHg-sec)** | 19.1±5.1 | 20.9±4.9 | 16.4±2.8 |
| **Supply/Demand, S/D Ratio, DPTI/SPTI** | 0.73±0.18 | 0.85±0.21 | 0.70±0.12 |
| **End Diastolic Volume, EDV (mL)** | 91.3±12.1 | 83.3±9.2 | 81.1±11.0 |
| **Stroke Volume, SV (mL)** | 50.7±7.0 | 39.6±6.2 | 39.5±4.6 |
| **Ejection Fraction, EF (%)** | 0.56±0.05 | 0.48±0.07 | 0.49±0.06 |
| **P-V Loop Area, PVA (mL-mmHg)** | 3188±644 | 1679±253 | 1747±334 |
| **Control Group (N=5)** | **Baseline (BL)** | **Post MI (MI)** | **Control (C)** |
| **LV Hemodynamics & Volume** | **Average** | **Average** | **Average** |
| **Max Pressure, MP (mmHg)** | 101.7±15.7 | 79.2±13.2 | 80.8±11.1 |
| **End-Diastolic Pressure, EDP (mmHg)** | 25.9±5.2 | 24.8±3.9 | 25.7±3.5 |
| **Heart Rate, HR (bpm)** | 96.9±7.5 | 85.3±12.0 | 87.3±11.0 |
| **Isovolumetric contraction time, IVCT (ms)** | 44.2±15.6 | 58.8±10.6 | 58.7±9.2 |
| **Ejection Time, ET (ms)** | 287.4±10.8 | 287.8±21.5 | 285.6±27.3 |
| **Isovolumetric relaxation time, IVRT (ms)** | 83.8±12.8 | 79.9±5.3 | 82.2±5.9 |
| **Filling Time, FT (ms)** | 206.5±33.6 | 287.0±69.5 | 268.0±57.9 |
| **Tei Index, (IVCT+IVRT)/ET** | 0.45±0.11 | 0.48±0.07 | 0.50±0.09 |
| **Systolic Demand, SPTI (mmHg-sec)** | 26.8±3.2 | 20.9±2.9 | 21.2±2.8 |
| **Diastolic Supply, DPTI (mmHg-sec)** | 17.8±7.7 | 14.7±3.0 | 14.6±3.0 |
| **Supply/Demand, S/D Ratio, DPTI/SPTI** | 0.65±0.21 | 0.70±0.11 | 0.68±0.07 |
| **End Diastolic Volume, EDV (mL)** | 94.9±14.3 | 81.0±13.8 | 71.2±9.0 |
| **Stroke Volume, SV (mL)** | 47.1±9.5 | 36.1±7.9 | 23.9±12.0 |
| **Ejection Fraction, EF (%)** | 0.50±0.07 | 0.45±0.07 | 0.33±0.17 |
| **P-V Loop Area, PVA (mL-mmHg)** | 3097±510 | 1558±508 | 1054±717 |

Table S2, LV Hemodynamic and Pressure-Volume measures at Baseline (BL), Post MI (MI), and Post Treatment Hydrogel (G) or Control (C) in the Hydrogel and Control groups. Numerical changes and their statistical comparisons are shown in Supplemental Table S5.

✕ CTA scans at baseline were not repeated after Thoracotomy.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Strain** | **Hydrogel (N=8)** | **Baseline (BL)** | **Post MI (MI)** | **Post Gel (G)** |
| **Measure** | **3D 17-Segment Strain** | **Average** | **Average** | **Average** |
| **Err** | **Average** | 14.1±3.0% | 13.2±6.0% | 12.2±3.2% |
| **Ecc** | **Average** | -8.4±1.9% | -7.9±1.3% | -8.3±2.5% |
| **Err** | **Infarct Region** | 21.7±6.3% | 10.3±4.4% | 15.8±3.7% |
| **Ecc** | **Infarct Region** | -9.3±2.9% | -6.0±3.1% | -9.0±3.1% |
| **Err** | **NonInfarcted Regions** | 13.1±3.0% | 13.5±6.6% | 11.6±3.8% |
| **Ecc** | **NonInfarcted Regions** | -8.3±2.0% | -8.3±1.4% | -8.3±2.7% |
| **ENrr** | **Infarct Region** | 1.58±0.50 | 0.90±0.38 | 1.38±0.48 |
| **ENcc** | **Infarct Region** | 1.12±0.33 | 0.76±0.33 | 1.09±0.22 |
| **ENrr** | **NonInfarcted Regions** | 0.93±0.05 | 1.01±0.05 | 0.93±0.10 |
| **ENcc** | **NonInfarcted Regions** | 0.99±0.04 | 1.05±0.06 | 0.99±0.04 |
| **Strain** | **Control (N=5)** | **Baseline (BL)** | **Post MI (MI)** | **Control (C)** |
| **Measure** | **3D 17-Segment Strain** | **Average** | **Average** | **Average** |
| **Err** | **Average** | 11.6±4.0% | 8.8±5.8% | 7.0±3.3% |
| **Ecc** | **Average** | -7.0±0.9% | -6.2±1.3% | -6.5±2.0% |
| **Err** | **Infarct Region** | 14.7±5.2% | 6.6±3.2% | 4.7±1.5% |
| **Ecc** | **Infarct Region** | -8.5±1.8% | -5.4±1.3% | -4.2±2.0% |
| **Err** | **NonInfarcted Regions** | 11.2±3.9% | 9.1±6.2% | 7.2±3.6% |
| **Ecc** | **NonInfarcted Regions** | -6.8±0.8% | -6.3±1.3% | -6.8±2.1% |
| **ENrr** | **Infarct Region** | 1.29±0.26 | 0.86±0.24 | 0.77±0.34 |
| **ENcc** | **Infarct Region** | 1.21±0.15 | 0.88±0.19 | 0.66±0.29 |
| **ENrr** | **NonInfarcted Regions** | 0.96±0.04 | 1.02±0.03 | 1.03±0.05 |
| **ENcc** | **NonInfarcted Regions** | 0.97±0.02 | 1.01±0.03 | 1.05±0.04 |

Table S3, 3D average strain (Err, Ecc) and normalized strain (ENrr, ENcc) in infarcted and noninfarcted 17 segments at Baseline (BL), Post MI (MI), and Post Gel (G) or Control (C) in the Hydrogel and Control groups. Numerical changes and their statistical comparisons are shown in Supplemental Table S5.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hydrogel (N=8)** | **Baseline (BL)** | **Post MI (MI)** | **Post Gel (G)** |
| **LV ED Thickness Changes** | **Average** | **Average** | **Average** |
| **Infarct Region (mm)** | 6.83±0.52 | 7.44±1.12 | 8.26±1.09 |
| **NonInfarcted Region (mm)** | 6.73±0.49 | 7.10±0.55 | 7.29±0.60 |
| **Average (mm)** | 6.74±0.46 | 7.13±0.59 | 7.43±0.64 |
| **Control (N=5)** | **Baseline (BL)** | **Post MI (MI)** | **Control (C)** |
| **LV ED Thickness Changes** | **Average** | **Average** | **Average** |
| **Infarct Region (mm)** | 6.71±0.63 | 8.07±0.81 | 7.74±1.11 |
| **NonInfarcted Region (mm)** | 6.84±0.48 | 7.31±0.42 | 6.98±0.79 |
| **Average (mm)** | 6.83±0.49 | 7.38±0.32 | 7.06±0.79 |

Table S4, LV ED thickness measures in 17 segments at Baseline (BL), Post MI (MI), and Post Gel (G) or Control (C) in the Hydrogel and Control groups. Numerical changes and their statistical comparisons are shown in Supplemental Table S5.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hydrogel Group (N=8)** | **Change** | **Change** | **Change** |
| **LV Hemos, Pressure-Volume, Strain Changes** | **MI - BL** | **G - BL** | **G - MI** |
| **Max Pressure, MP (mmHg)** | -15.8\*\*\* | -20.0\*\*\* | -4.2\* |
| **End-Diastolic Pressure, EDP (mmHg)** | +3.1\* | +2.1\* | -1.0 |
| **Heart Rate, HR (bpm)** | -25.2\*\*\* | -19.0\*\* | +6.3 |
| **Isovolumetric contraction time, IVCT (ms)** | +19.3\*\* | +8.4 | -10.9\* |
| **Ejection Time, ET (ms)** | +39.4\*\* | +44.5\*\* | +5.1 |
| **Isovolumetric relaxation time, IVRT (ms)** | +13.4\*\*\* | -1.3 | -14.7\*\*\* |
| **Filling Time, FT (ms)** | +151.9\*\*\* | +107.8\*\* | -44.2 |
| **Tei Index, (IVCT+IVRT)/ET** | +0.04 | -0.05 | -0.08\*\*\* |
| **Systolic Demand, SPTI (mmHg-sec)** | -1.3 | -2.5\*\* | -1.1 |
| **Diastolic Supply, DPTI (mmHg-sec)** | +1.8 | -2.6 | -4.5\*\* |
| **Supply/Demand, S/D Ratio, DPTI/SPTI** | +0.12\*\* | -0.03 | -0.15\* |
| **End Diastolic Volume, EDV (mL)** | -8.0\*\* | -10.2\*\* | -2.2 |
| **Stroke Volume, SV (mL)** | -11.1\*\*\* | -11.2\*\*\* | -0.1 |
| **Ejection Fraction, EF (%)** | -0.08\*\*\* | -0.07\*\* | +0.01 |
| **P-V Loop Area, PVA (mL-mmHg)** | -1509\*\*\* | -1441\*\*\* | +68 |
| **Err Average** | -0.9% | -1.9% | -1.0% |
| **Ecc Average** | +0.5% | +0.0% | -0.5% |
| **ENrr  Infarct Region** | -0.68\*\* | -0.20 | +0.47\*\* |
| **ENcc Infarct Region** | -0.37\*\*\* | -0.03 | +0.33\*\* |
| **ENrr NonInfarcted Regions** | +0.08\*\* | +0.00 | -0.08 |
| **ENcc NonInfarcted Regions** | +0.06\*\*\* | +0.00 | -0.06 |
| **ED Thickness, Infarct Region (mm)** | +0.60\* | +1.43\*\*\* | +0.83\*\*\* |
| **ED Thickness, NonInfarcted Region (mm)** | +0.36\*\* | +0.56\*\*\* | +0.20 |
| **ED Thickness, Average (mm)** | +0.39\*\* | +0.69\*\*\* | +0.30\*\* |
| **Control Group (N=5)** | **Change** | **Change** | **Change** |
| **LV Hemos, Pressure-Volume, Strain Changes** | **MI - BL** | **C - BL** | **C - MI** |
| **Max Pressure, MP (mmHg)** | -22.5\* | -20.8\*\* | +1.6 |
| **End-Diastolic Pressure, EDP (mmHg)** | -1.1 | -0.2 | +1.0 |
| **Heart Rate, HR (bpm)** | -11.6 | -9.6 | +2.0 |
| **Isovolumetric contraction time, IVCT (ms)** | +14.6 | +14.5 | -0.1 |
| **Ejection Time, ET (ms)** | +0.4 | -1.8 | -2.2 |
| **Isovolumetric relaxation time, IVRT (ms)** | -3.9 | -1.5 | +2.4 |
| **Filling Time, FT (ms)** | +80.5 | +61.5 | -19.0 |
| **Tei Index, (IVCT+IVRT)/ET** | +0.04 | +0.05 | +0.02 |
| **Systolic Demand, SPTI (mmHg-sec)** | -5.9\*\* | -5.6\*\* | +0.3 |
| **Diastolic Supply, DPTI (mmHg-sec)** | -3.1 | -3.2 | -0.1 |
| **Supply/Demand, S/D Ratio, DPTI/SPTI** | +0.05 | +0.04 | -0.02 |
| **End Diastolic Volume, EDV (mL)** | -13.9\*\* | -23.7\*\*\* | -9.8\* |
| **Stroke Volume, SV (mL)** | -11.0\* | -23.2\*\* | -12.2\*\* |
| **Ejection Fraction, EF (%)** | -0.05 | -0.16 | -0.11\* |
| **P-V Loop Area, PVA (mL-mmHg)** | -1558\*\* | -2043\*\* | -504\* |
| **Err Average** | -2.8% | -4.7%\*\* | -1.8% |
| **Ecc Average** | +0.8% | +0.5% | -0.3% |
| **ENrr  Infarct Region** | -0.43\*\*\* | -0.52\*\* | -0.09 |
| **ENcc Infarct Region** | -0.33\*\* | -0.55\*\* | -0.23\* |
| **ENrr NonInfarcted Regions** | +0.06\*\* | +0.07\* | +0.01 |
| **ENcc NonInfarcted Regions** | +0.04\* | +0.08\*\* | +0.03\* |
| **ED Thickness, Infarct Region (mm)** | +1.37\* | +1.03\*\* | -0.33 |
| **ED Thickness, NonInfarcted Region (mm)** | +0.46 | +0.13 | -0.33 |
| **ED Thickness, Average (mm)** | +0.55\* | +0.24 | -0.31 |

Table S5, Change in LV Hemodynamic, Pressure-Volume, Strain, and ED Thickness measures at Baseline, Post MI, and Post Treatment in the Hydrogel and Control group.

Significance Levels: \*\*\* = p < 0.01, \*\* = p < 0.05, \* = p < 0.1.