**Supplementary tables**

**Table 1: Dosimetric parameters indicative of Planning Target Volume (PTV) coverage wrt to type of surgery.**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | BCS | MRM |
| PTV\_Primary | Volume cc | 1477(253-14535) | 523(229-1105) |
|  | Mean(Gy) | 51.7(49.8-53.3) | 49.6(47.6-50.5) |
|  | Min(Gy) | 59.2(21.2-87.7) | 46.4(17.5-84.3) |
|  | Max(Gy) | 92.1(55.1-123.7) | 75.9(52.5-109.7) |
|  | V95% | 94.6(92.4-96.4) | 92.9(79.1-97.4) |
|  | V90%  | 98(96.1-99.5) | 97.4(91.2-99.5) |
|  | V107 (cc) | 7.7(0-83.8) | 1.5(0-27) |
|  | D2 (Gy) | 55.5(52.1-63.4) | 53(51-55.4) |
|  | D98 (Gy) | 46.5(34.6-51.8) | 45.1(39.8-50.2) |
| PTV\_SCF | Volume (cc) | 74.4(51.2-120.5) | 79.8(47.0-253.1) |
|  | Mean (Gy) | 50.2(48.5-52.1) | 49.2(46-51.6) |
|  | Min (Gy) | 72.7(34.5-96.3) | 60.2(31.6-92) |
|  | Max (Gy) | 87.8(53.2-108.8) | 74.4(51.4-107.3) |
|  | V95% | 97.2(90.3-99.8) | 96.6(90.1-99.9) |
|  | V90%  | 99(96.5-100.0) | 99.2(96.3-100.0) |
|  | V107 (cc) | 0.48(0.0-5.7) | 0.07(0.0-1.4) |
|  | D2 (Gy) | 52.4(50.6-54.0) | 52.0(50.2-53.3) |
|  | D98 (Gy) | 48.2(46.3-50.0) | 47.8(44.2-50.6) |
| PTV\_IMN | Volume (cc) | 41.1(3.1-60.9) | 43.1(18.2-92.2) |
|  | Mean (Gy) | 50.0(48.0-52.1) | 48.7(43.2-51.1) |
|  | Min (Gy) | 63.5(28.2-90.1) | 52.4(29.8-89.8) |
|  | Max (Gy) | 88.4(51.5-109.2) | 74.7(50.1-109.3) |
|  | V95% | 91.7(84.8-99.7) | 90.2(74.9-99.9) |
|  | V90%  | 97.1(92.0-100.0) | 96.9(89.0-100.0) |
|  | V107 (cc) | 0.8(0.0-9.1) | .7(0.0-26.0) |
|  | D2 (Gy) | 52.3(49.9-55.6) | 51.9(48.1-53.4) |
|  | D98 (Gy) | 45.4(39.2-50.1) | 45.8(36.4-50.1) |

TB: Tumour bed, SCF: Supraclavicular Fossa, IMN: Internal Mammary Node.

BCS: Breast Conserving surgery, MRM: Modified Radical Mastectomy.

**Table 2: Dose and volume parameters for organs at risk wrt to type of surgery.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Parameter | BCS | MRM |
| B/L Tot Lung | Mean dose(Range) | 9.1(7.8-10.6) | 11.0(9.0-13.7) |
|  | V5Gy (Range) | 61.2(46.8-76.9) | 55.2(41.9-84.0) |
|  | V10 Gy (Range) | 33.5(18.6-53.0) | 33.4(25.8-60.1) |
|  | V20 Gy (Range) | 14.8(7.9-25.1) | 18.3(11.2-30.5) |
|  | V30 Gy (Range) | 8.9(4.2-15.3) | 12.0(6.4-20.2) |
|  | V40 Gy (Range) | 5.3(1.5-10.4) | 6.8(2.3-16.5) |
| Heart | Mean dose(Range) | 7.8(3.4-14.8) | 6.6(2.3-13.4) |
|  | V5Gy (Range) | 53.5(28.3-87.8) | 45.0(16.5-91.0) |
|  | V10 Gy (Range) | 29.1(10.3-57.0) | 22.3(1.5-65.4) |
|  | V20 Gy (Range) | 12.0(2.7-26.7) | 8.6(0.0-28.6) |
|  | V30 Gy (Range) | 5.2(0.03-15.3) | 3.7(0.0-18.7) |
|  | V40 Gy (Range) | 2.0(0.0-9.5) | 1.1(0.0-7.9) |
| C/L Breast | Mean dose(Range) | 4.1(3.2-5.3) | 4.4(2.0-10.6) |
|  | V5Gy (Range) | 46.3(17.5-78.0) | 46.5(2.1-88.0) |
|  | V10 Gy (Range) | 16.4(0.2-32.3) | 16.9(0.0-39.5) |
|  | V20 Gy (Range) | 3.4(0.0-8.9) | 3.4(0.0-10.9) |
|  | V30 Gy (Range) | 0.7(0.0-2.0) | 0.8(0.0-3.3) |
|  | V40 Gy (Range) | 0.1(0.0-0.9) | 0.2(0.0-1.0) |
| LAD | Mean dose(Range) | 23.6(8.1-41.2) | 22.1(5.3-52.6) |
|  | V5Gy (Range) | 72.3(17.2-97.0) | 52.7(3.0-100.0) |
|  | V10 Gy (Range) | 34.0(1.2-58.5) | 31.1(0.0-100.0) |
|  | V20 Gy (Range) | 9.7(0.0-23.2) | 18.6(0.0-81.3) |
|  | V30 Gy (Range) | 1.9(0.0-5.1) | 9.2(0.0-46.7) |
|  | V40 Gy (Range) | 0.04(0.0-0.16) | 3.0(0.0-34.3) |

BCS: Breast Conserving surgery, MRM: Modified Radical Mastectomy.

C/L: Contralateral, LAD: Left anterior descending artery.

**Table 3: Dosimetric parameters indicative of Planning Target Volume (PTV) coverage wrt to metastasis status.**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | M0 | M1 |
| PTV\_Primary | Volume cc | 792.9(229.2-14535.4) | 617.5(269.0-1105.8) |
|  | Mean(Gy) | 50.2(47.6-53.3) | 49.6(48.9-50.3) |
|  | Min(Gy) | 51.8(17.5-87.7) | 39.1(19.1-69.5) |
|  | Max(Gy) | 82.5(52.5-123.7) | 67.9(53.8-108.7) |
|  | V95% | 93.9(79.1-97.4) | 90.3(82.0-95.6) |
|  | V90%  | 97.8(92.5-99.5) | 96.0(91.2-98.9) |
|  | V107 (cc) | 2.9(0-83.8) | 4.0(0-27) |
|  | D2 (Gy) | 53.8(51.0-63.4) | 52.8(52.5-53.5) |
|  | D98 (Gy) | 45.5(34.6-51.8) | 45.0(40.7-50.0) |
| PTV\_SCF | Volume (cc) | 76.8(47.0-253.1) | 92.7(50.4-225.8) |
|  | Mean (Gy) | 49.5(46.0-52.1) | 49.9(48.6-51.6) |
|  | Min (Gy) | 65.5(34.5-96.3) | 52.2(31.6-90.7) |
|  | Max (Gy) | 80.1(51.4-108.8) | 66.5(52.2-107.3) |
|  | V95% | 96.8(90.1-99.9) | 96.6(90.6-99.3) |
|  | V90%  | 99.2(96.3-100.0) | 99.0(97.4-100.0) |
|  | V107 (cc) | 0.17(0.0-5.7) | 0.25(0.0-1.4) |
|  | D2 (Gy) | 52.1(50.6-54.0) | 52.1(50.2-53.3) |
|  | D98 (Gy) | 48.0(44.2-50.6) | 47.5(44.4-49.5) |
| PTV\_IMN | Volume (cc) | 41.3(3.1-69.7) | 52.3(19.2-92.2) |
|  | Mean (Gy) | 49.1(43.2-52.1) | 48.7(43.2-51.1) |
|  | Min (Gy) | 56.7(28.2-90.1) | 47.6(31.6-78.4) |
|  | Max (Gy) | 80.5(50.1-109.4) | 67.1(52.1-107.6) |
|  | V95% | 90.6(76.0-99.9) | 91.4(74.9-98.5) |
|  | V90%  | 97.0(89.0-100.0) | 97.2(91.4-99.7) |
|  | V107 (cc) | 0.4(0.0-9.1) | 3.6(0.0-26.0) |
|  | D2 (Gy) | 52.1(49.0-55.6) | 52.0(48.1-53.4) |
|  | D98 (Gy) | 45.7(36.4-50.1) | 45.2(38.4-49.1) |

TB: Tumour bed, SCF: Supraclavicular Fossa, IMN: Internal Mammary Node.

**Table 4: Dose and volume parameters for organs at risk wrt metastasis status.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Parameter | M0 | M1 |
| B/L Tot Lung | Mean dose(Range) | 14.3(5.1-18.8) | 15.6(13.0-17.9) |
|  | V5Gy (Range) | 82.9(50.3-99.3) | 73.9(54.3-89.0) |
|  | V10 Gy (Range) | 59.0(28.8-89.4) | 48.5(40.7-58.2) |
|  | V20 Gy (Range) | 32.7(15.9-76.1) | 34.8(26.2-49.8) |
|  | V30 Gy (Range) | 11.0(4.2-20.2) | 13.0(11.7-16.0) |
|  | V40 Gy (Range) | 6.4(1.5-16.5) | 7.2(5.6-8.7) |
| Heart | Mean dose(Range) | 6.8(2.3-14.8) | 7.7(4.8-12.3) |
|  | V5Gy (Range) | 46.9(16.5-91.0) | 48.4(30.4-62.3) |
|  | V10 Gy (Range) | 23.9(1.5-65.4) | 23.6(8.5-49.9) |
|  | V20 Gy (Range) | 9.3(0.0-28.6) | 9.5(1.9-25.5) |
|  | V30 Gy (Range) | 4.0(0.0-18.7) | 4.4(0.1-14.6) |
|  | V40 Gy (Range) | 1.4(0.0-9.5) | 1.3(0.0-5.0) |
| C/L Breast | Mean dose(Range) | 4.2(2.0-10.6) | 4.7(2.3-7.0) |
|  | V5Gy (Range) | 47.2(6.1-87.8) | 40.2(2.1-88.0) |
|  | V10 Gy (Range) | 17.2(0.0-39.5) | 13.7(0.0-24.5) |
|  | V20 Gy (Range) | 3.6(0.0-10.9) | 2.8(0.0-7.6) |
|  | V30 Gy (Range) | 0.8(0.0-3.5) | 0.5(0.0-2.3) |
|  | V40 Gy (Range) | 0.2(0.0-1.6) | 0.2(0.0-1.0) |

C/L: Contralateral.