**Supplementary Table 2. Association between five different classified assays of the extent of retraction clefts and standard clinical, pathological and biological features of invasive breast carcinoma**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Category** | **Total** | **Assay I** | **Assay II** | **Assay III** | **Assay IV** | **Assay V** |
| **≤25% RCs** | **25%-50% RCs** | **50%-75% RCs** | **>75% RCs** | ***p*** | **≤25% RCs** | **>25%RCs** | ***p*** | **≤30% RCs** | **>30%RCs** | ***p*** | **≤40% RCs** | **>40%RCs** | ***p*** | **≤50% RCs** | **>50%RCs** | ***p*** |
| **N****Age (years)****Tumor stages****Lymph node** **status"****Tumor size****Molecular subtypes****ER****PR****HER2****Ki67****NPI** | **Median (IQR)****I****II****III****Unknown****0****1-3****>3****Unknown****<2cm****2-5cm****≥5cm****Unknown****Luminal A****Luminal B****HER2-enriched****Triple Negative****Unknown****Positive****Negative****Unknown****Positive****Negative****Unknown****Positive****Negative****Unknown****≤30%****>30%****Unknown****Good (2-3.4)****Moderate (3.4-5.4)****Poor (>5.4)****Unknown** | 54154(43-56)13206291312471181403613234958278325706623671686298235818134713273246227823417455 | 16(19.0%)46.5(44-51)1(6%)7(44%)7(44%)1(6%)9(56%)4(25%)2(13%)1(6%)5(31%)11(69%)0(NA)0(NA)5(31%)10(63%)0(NA)1(6%)0(NA)14(88%)2(13%)0(NA)11(69%)5(31%)0(NA)4(25%)12(75%)0(NA)10(63%)6(38%)0(NA)4(25%)8(50%)3(19%)1(6%) | 23(27.4%)49(44-54.5)0(NA)7(30%)15(65%)1(4%)9(39%)6(26%)7(30%)1(4%)6(26%)16(70%)1(4%)0(NA)1(4%)17(74%)5(22%)0(NA)0(NA)17(74%)6(26%)0(NA)12(52%)11(48%)0(NA)10(43%)13(57%)0(NA)11(48%)11(48%)1(4%)2(9%)13(57%)6(26%)2(9%) | 19(22.6%)51(45-64.5)0(NA)8(42%)9(47%)2(11%)7(37%)6(32%)6(32%)0(NA)2(11%)16(84%)1(5%)0(NA)6(32%)10(53%)3(16%)0(NA)0(NA)16(84%)2(11%)1(5%)12(63%)6(32%)1(5%)4(21%)14(74%)1(5%)9(47%)9(47%)1(5%)1(5%)11(58%)5(26%)2(11%) | 26(31.0%)47(42-52)0(NA)12(46%)12(46%)2(8%)14(54%)3(12%)9(35%)0(NA)4(15%)19(73%)3(12%)0(NA)1(4%)15(58%)9(35%)1(4%)0(NA)12(46%)14(54%)0(NA)9(35%)17(65%)0(NA)15(58%)11(42%)0(NA)13(50%)12(46%)1(4%)4(15%)12(46%)8(31%)2(8%) | -0.2900.4000.5010.499**0.024****0.005**0.0910.0600.8650.681 | 16(19.0%)46.5(44-51)1(6%)7(44%)7(44%)1(6%)9(56%)4(25%)2(13%)1(6%)5(31%)11(69%)0(NA)0(NA)5(31%)10(63%)0(NA)1(6%)0(NA)14(88%)2(13%)0(NA)11(69%)5(31%)0(NA)4(25%)12(75%)0(NA)10(63%)6(38%)0(NA)4(25%)8(50%)3(19%)1(6%) | 68(81.0%)49(45-56)0(NA)27(40%)36(53%)5(7%)30(44%)15(22%)22(32%)1(1%)12(18%)51(75%)5(7%)0(NA)8(12%)42(62%)17(25%)1(1%)0(NA)45(66%)22(32%)1(1%)33(49%)34(50%)1(1%)29(43%)38(56%)1(1%)33(49%)32(47%)3(4%)7(10%)36(53%)19(28%)6(9%) | -0.9280.1060.3190.297**0.038**0.1070.1600.1790.4000.283 | 23(27.4%)47(43.5-52)1(4%)10(43%)11(48%)1(4%)13(57%)4(17%)5(22%)1(4%)8(35%)15(65%)0(NA)0(NA)5(22%)17(74%)0(NA)1(4%)0(NA)21(91%)2(9%)0(NA)14(61%)9(39%)0(NA)7(30%)16(70%)0(NA)13(57%)9(39%)1(4%)6(26%)11(48%)5(22%)1(4%) | 61(72.6%)49(45-57)0(NA)24(39%)32(52%)5(8%)26(43%)15(25%)19(31%)1(2%)9(15%)47(77%)5(8%)0(NA)8(13%)35(57%)17(28%)1(2%)0(NA)38(62%)22(36%)1(2%)30(49%)30(49%)1(2%)26(43%)34(56%)1(2%)30(49%)29(48%)2(3%)5(8%)33(54%)17(28%)6(10%) | -0.9050.2570.4490.064**0.037****0.012**0.3750.2830.5080.118 | 28(33.3%)48.5(44-54)1(4%)12(43%)14(50%)1(4%)15(54%)6(21%)6(21%)1(4%)10(36%)18(64%)0(NA)0(NA)6(21%)19(68%)2(7%)1(4%)0(NA)23(82%)5(18%)0(NA)16(57%)12(43%)0(NA)10(36%)18(64%)0(NA)16(57%)11(39%)1(4%)6(21%)16(57%)5(18%)1(4%) | 56(66.7%)49(45-58)0(NA)22(39%)29(52%)5(9%)24(43%)13(23%)18(32%)1(2%)7(13%)44(79%)5(9%)0(NA)7(13%)33(59%)15(27%)1(2%)0(NA)36(64%)19(34%)1(2%)28(50%)27(48%)1(2%)23(41%)32(57%)1(2%)27(48%)27(48%)2(4%)5(9%)28(50%)17(30%)6(11%) | -0.9160.3720.538**0.018**0.1710.1130.5910.5910.4310.189 | 39(46.4%)48(43.5-54)1(3%)14(36%)22(56%)2(5%)18(46%)10(26%)9(23%)2(5%)11(28%)27(69%)1(3%)0(NA)6(15%)27(69%)5(13%)1(3%)0(NA)31(79%)8(21%)0(NA)23(59%)16(41%)0(NA)14(36%)25(64%)0(NA)21(54%)17(44%)1(3%)6(15%)21(54%)9(23%)3(8%) | 45(53.6%)49(45-59)0(NA)20(44%)21(47%)4(9%)21(47%)9(20%)15(33%)0(NA)6(13%)35(78%)4(9%)0(NA)7(16%)25(56%)12(27%)1(2%)0(NA)28(62%)16(36%)1(2%)21(47%)23(51%)1(2%)19(42%)25(56%)1(2%)22(49%)21(47%)2(4%)5(11%)23(51%)13(29%)4(9%) | -0.6760.3900.6030.1430.4540.1120.3060.4990.7120.746 |

Note: *p*<0.05 was considered statistically significant and those values are shown in bold.

Abbreviations: RCs, retraction clefts; IQR, interquartile range; NA, not available; ER, estrogen receptor; HER2, human epidermal growth factor receptor 2; PR, progesterone receptor; NPI, Nottingham Prognostic Index