**Supplementary Table 1 Comparison of the R status distribution for tumor location and N stage in PD**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Tumor location** | | | *p* | **N stage** | | | *p* |
| Head | Neck | Uncinate | N0 | N1 | N2 |
| **Total** (%) | 183(76.3) | 13(5.4) | 44(18.3) |  | 83(34.6) | 87(36.3) | 70(29.2) |  |
| **Number of R1 Margin** |  |  |  | **<0.001** |  |  |  | **<0.001** |
| 0(%) | 139(76.0) | 3(23.1) | 24(54.5) |  | 71(85.5) | 60(69.0) | 35(21.1) |  |
| 1(%) | 31(16.9) | 6(46.2) | 15(34.1) |  | 9(10.8) | 21(24.1) | 22(31.4) |  |
| 2(%) | 11(6.0) | 0(0) | 3(6.8) |  | 2(2.4) | 5(5.7) | 7(10.0) |  |
| ≥3(%) | 2(1.1 ) | 4(30.8) | 2(4.5) |  | 1(1.2 ) | 1(1.1) | 6(8.6) |  |
| **Transection margin** |  |  |  | **<0.001** |  |  |  | 0.300 |
| R0(%) | 180(98.4) | 8(61.5) | 43(97.7) |  | 82(98.1) | 83(95.4) | 66(94.3) |  |
| R1(%) | 3(1.6) | 5(38.5) | 1(2.3) |  | 1(1.2) | 4(4.6) | 4(5.7) |  |
| **Anterior surface** |  |  |  | 0.099 |  |  |  | 0.148 |
| R0(%) | 168(91.8) | 10(76.9) | 37(84.1) |  | 78(94.0) | 78(89.7) | 59(84.3) |  |
| R1(%) | 15(8.2) | 3(23.1) | 7(15.9) |  | 5(6.0) | 9(10.3) | 11(15.7) |  |
| **Posterior margin** |  |  |  | **0.021** |  |  |  | **<0.001** |
| R0(%) | 169(92.3) | 9(69.2) | 39(88.6) |  | 82(98.8) | 81(93.1) | 54(77.1) |  |
| R1(%) | 14(7.7) | 4(30.8) | 5(11.4) |  | 1(1.2) | 6(6.9) | 16(22.9) |  |
| **Medial margin** |  |  |  | **<0.001** |  |  |  | **0.002** |
| R0(%) | 157(85.8) | 6(46.2) | 30(68.2) |  | 74(89.2) | 72(82.8) | 47(67.1) |  |
| R1(%) | 26(14.2) | 7(53.8) | 14(31.8) |  | 9(10.8) | 15(17.2) | 23(32.9) |  |
| **Bile duct margin** |  |  |  | **0.019** |  |  |  | 0.086 |
| R0(%) | 182(99.5) | 12(92.3) | 44(100) |  | 83(100) | 87(100) | 68(97.1) |  |
| R1(%) | 1(0.5) | 1(7.7) | 0(0) |  | 0(0) | 0(0) | 2(2.9) |  |

**Supplementary Table 2 Comparison of the R status distribution for T stage in DP**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **T 1/2** | **T3** | **P** |
| **Total** (%) | 66(45.2) | 80(54.8) |  |
| **Number of R1 Margin** |  |  | **<0.001** |
| 0(%) | 54(81.8) | 40(50.0) |  |
| 1(%) | 8(12.1) | 27(33.8) |  |
| 2(%) | 4(6.1) | 13(16.3) |  |
| **Transection margin** |  |  | 0.251 |
| R0(%) | 66(100.0) | 77(96.3) |  |
| R1(%) | 0(0.0) | 3(3.8) |  |
| **Anterior surface** |  |  | **0.002** |
| R0(%) | 57(86.4) | 51(63.8) |  |
| R1(%) | 9 (13.6) | 29(36.3) |  |
| **Posterior margin** |  |  | **0.017** |
| R0(%) | 59(89.4) | 59(73.8) |  |
| R1(%) | 7(10.6) | 21(26.3) |  |