**Supplement Table 1** Comparison of clinicopathological characteristics before and after PSM of <30%G-HMiNEN patients in surgical group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| <30%G-HMiNEN (n=38) | Gastric adenocarcinoma  (n=308) | *P* value |  | <30%G-HMiNEN (n=34) | Gastric adenocarcinoma  (n=61) | *P* value |  |
| Age (year), mean±SD | 59.9±11.1 | 55.2±10.8 | 0.012 |  | 59.3±11.4 | 59.2±10.5 | 0.977 |  |
| Gender (male/female) | 29/9 | 282/26 | 0.003 |  | 27/7 | 52/9 | 0.466 |  |
| BMI, mean±SD | 23.9±2.9 | 23.6±3.6 | 0.543 |  | 23.7±2.8 | 23.7±3.5 | 0.984 |  |
| Adjuvant therapy |  |  | <0.001 |  |  |  | 0.315 |  |
| Yes | 26 (68.4) | 109 (35.4) |  |  | 22 (64.7) | 33 (54.1) |  |  |
| No | 12 (31.6) | 199 (64.6) |  |  | 12 (35.5) | 28 (45.9) |  |  |
| Tumor location |  |  | <0.001 |  |  |  | 0.902 |  |
| Upper third | 22 (57.9) | 74 (24.0) |  |  | 19 (55.9) | 34 (55.7) |  |  |
| Middle third | 5 (13.2) | 41 (13.3) |  |  | 5 (14.7) | 9 (14.8) |  |  |
| Lower third | 10 (26.3) | 192 (62.3) |  |  | 10 (29.4) | 17 (27.9) |  |  |
| Entire | 1 (2.6) | 1 (0.3) |  |  | 0 (0.0) | 1 (1.6) |  |  |
| Tumor size |  |  | 0.271 |  |  |  | 0.980 |  |
| < 5cm | 27 (71.1) | 243 (78.9) |  |  | 25 (73.5) | 45 (73.8) |  |  |
| ≥5cm | 11 (28.9) | 65 (21.1) |  |  | 9 (26.5) | 16 (26.2) |  |  |
| Type of gastrectomy |  |  | <0.001 |  |  |  | 0.126 |  |
| Total gastrectomy | 26 (68.4) | 79 (25.6) |  |  | 23 (67.6) | 29 (47.5) |  |  |
| Distal gastrectomy | 9 (23.7) | 206 (66.9) |  |  | 9 (26.5) | 22 (36.1) |  |  |
| Proximal gastrectomy | 3 (7.9) | 23 (7.5) |  |  | 2 (5.9) | 10 (16.4) |  |  |
| Surgical procedure |  |  | 0.003 |  |  |  | 0.029 |  |
| Open | 35 (92.1) | 212 (68.6) |  |  | 31 (91.2) | 44 (72.1) |  |  |
| Laparoscopic | 3 (7.9) | 96 (32.2) |  |  | 3 (8.8) | 17 (27.9) |  |  |
| T stage |  |  | <0.001 |  |  |  | 0.008 |  |
| T1 | 7 (18.4) | 195 (63.3) |  |  | 6 (17.6) | 28 (45.9) |  |  |
| T2 | 9 (23.7) | 18 (5.8) |  |  | 9 (26.5) | 4 (6.6) |  |  |
| T3 | 11 (28.9) | 49 (15.9) |  |  | 9 (26.5) | 16 (26.2) |  |  |
| T4 | 11 (28.9) | 46 (14.9) |  |  | 10 (29.4) | 13 (21.3) |  |  |
| N stage |  |  | 0.038 |  |  |  | 0.661 |  |
| N0 | 18 (47.4) | 210 (68.2) |  |  | 16 (47.1) | 29 (47.5) |  |  |
| N1 | 5 (13.2) | 26 (8.4) |  |  | 4 (11.8) | 12 (19.7) |  |  |
| N2 | 8 (21.1) | 27 (8.8) |  |  | 7 (20.6) | 8 (13.1) |  |  |
| N3 | 7 (18.4) | 45 (14.6) |  |  | 7 (20.6) | 12 (19.7) |  |  |
| M stage |  |  | 0.480 |  |  |  |  |  |
| M0 | 38 (100.0) | 304 (98.7) |  |  | 34 (100.0) | 61 (100.0) |  |  |
| M1 | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (9.9) |  |  |
| pTNM stage |  |  | <0.001 |  |  |  | 0.537 |  |
| I | 12 (31.6) | 202 (65.6) |  |  | 12 (35.3) | 28 (45.9) |  |  |
| II | 9 (23.7) | 32 (10.4) |  |  | 6 (17.6) | 11 (18.0) |  |  |
| III | 17 (44.7) | 70 (22.7) |  |  | 16 (47.1) | 22 (36.1) |  |  |
| IV | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| **BMI**: Body Mass Index; **PSM**: Propensity Score Matching; **<30%G-HMiNEN**: Gastric high-grade mixed neuroendocrine-non-neuroendocrine neoplasm with neuroendocrine carcinoma components less than 30% | | | | | | | | |

**Supplement Table 2** Comparison of clinicopathological characteristics before and after PSM of G-HMiNEN patients in surgical group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| G-HMiNEN  (n=43) | Gastric adenocarcinoma  (n=308) | *P* value |  | G-HMiNEN  (n=34) | Gastric adenocarcinoma  (n=62) | *P* value |  |
| Age (year), mean±SD | 61.9±9.3 | 55.2±10.8 | <0.001 |  | 60.2±8.9 | 59.0±8.3 | 0.520 |  |
| Gender (male/female) | 37/6 | 282/26 | 0.239 |  | 29/5 | 56/6 | 0.459 |  |
| BMI, mean±SD | 24.5±3.4 | 23.6±3.6 | 0.115 |  | 24.8±3.0 | 23.6±3.5 | 0.088 |  |
| Adjuvant therapy |  |  | <0.001 |  |  |  | 0.288 |  |
| Yes | 33 (76.7) | 109 (35.4) |  |  | 24 (70.6) | 37 (59.7) |  |  |
| No | 10 (23.3) | 199 (64.6) |  |  | 10 (29.4) | 25 (40.3) |  |  |
| Tumor location |  |  | <0.001 |  |  |  | 0.179 |  |
| Upper third | 27 (62.8) | 74 (24.0) |  |  | 20 (58.8) | 26 (41.9) |  |  |
| Middle third | 8 (18.6) | 41 (13.3) |  |  | 6 (17.6) | 10 (16.1) |  |  |
| Lower third | 8 (18.6) | 192 (62.3) |  |  | 8 (23.5) | 26 (41.9) |  |  |
| Entire | 0 (0.0) | 1 (0.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Tumor size |  |  | 0.019 |  |  |  | 0.180 |  |
| < 5cm | 27 (62.8) | 243 (78.9) |  |  | 22 (64.7) | 48 (77.4) |  |  |
| ≥5cm | 16 (37.2) | 65 (21.1) |  |  | 12 (35.3) | 14 (22.6) |  |  |
| Type of gastrectomy |  |  | <0.001 |  |  |  | 0.641 |  |
| Total gastrectomy | 29 (67.4) | 79 (25.6) |  |  | 21 (61.8) | 34 (54.8) |  |  |
| Distal gastrectomy | 10 (23.3) | 206 (66.9) |  |  | 10 (29.4) | 24 (38.7) |  |  |
| Proximal gastrectomy | 4 (9.3) | 23 (7.5) |  |  | 3 (8.8) | 4 (6.5) |  |  |
| Surgical procedure |  |  | 0.008 |  |  |  | 0.007 |  |
| Open | 38 (88.4) | 212 (68.6) |  |  | 31 (91.2) | 40 (64.5) |  |  |
| Laparoscopic | 5 (11.6) | 96 (32.2) |  |  | 3 (8.8) | 22 (35.5) |  |  |
| T stage |  |  | <0.001 |  |  |  | 0.035 |  |
| T1 | 6 (14.0) | 195 (63.3) |  |  | 6 (17.6) | 25 (40.3) |  |  |
| T2 | 7 (16.3) | 18 (5.8) |  |  | 6 (17.6) | 5 (8.1) |  |  |
| T3 | 25 (58.1) | 49 (15.9) |  |  | 17 (50.0) | 18 (29.0) |  |  |
| T4 | 5 (11.6) | 46 (14.9) |  |  | 5 (14.7) | 14 (22.6) |  |  |
| N stage |  |  | <0.001 |  |  |  | 0.608 |  |
| N0 | 16 (37.2) | 210 (68.2) |  |  | 13 (38.2) | 31 (50.0) |  |  |
| N1 | 15 (34.9) | 26 (8.4) |  |  | 9 (26.5) | 14 (22.6) |  |  |
| N2 | 4 (9.3) | 27 (8.8) |  |  | 4 (11.8) | 8 (12.9) |  |  |
| N3 | 8 (18.6) | 45 (14.6) |  |  | 8 (23.5) | 9 (14.5) |  |  |
| M stage |  |  | 0.452 |  |  |  | 1.000 |  |
| M0 | 43 (100.0) | 304 (98.7) |  |  | 34 (100.0) | 62 (100.0) |  |  |
| M1 | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| pTNM stage |  |  | <0.001 |  |  |  | 0.521 |  |
| I | 10 (23.3) | 202 (65.6) |  |  | 10 (29.4) | 25 (40.3) |  |  |
| II | 54 (51.2) | 32 (10.4) |  |  | 13 (38.2) | 22 (35.5) |  |  |
| III | 11 (25.6) | 70 (22.7) |  |  | 11 (32.4) | 15 (24.2) |  |  |
| IV | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| **BMI**: Body Mass Index; **PSM**: Propensity Score Matching; **G-HMiNEN**: Gastric high-grade mixed neuroendocrine-non-neuroendocrine neoplasm | | | | | | | | |

**Supplement Table 3** Comparison of clinicopathological characteristics before and after PSM of >70%G-HMiNEN plus pure NEC patients in surgical group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| >70%G-HMiNEN plus pure NEC (n=36) | Gastric adenocarcinoma  (n=308) | *P* value |  | >70%G-HMiNEN plus pure NEC  (n=27) | Gastric adenocarcinoma  (n=49) | *P* value |  |
| Age (year), mean±SD | 63.3±7.6 | 55.2±10.8 | <0.001 |  | 61.4±7.6 | 61.0±9.0 | 0.884 |  |
| Gender (male/female) | 34/2 | 282/26 | 0.549 |  | 25/2 | 46/3 | 0.829 |  |
| BMI, mean±SD | 24.0±3.0 | 23.6±3.6 | 0.452 |  | 24.5±3.0 | 23.0±3.3 | 0.044 |  |
| Adjuvant therapy |  |  | <0.001 |  |  |  | 0.653 |  |
| Yes | 28 (77.8) | 109 (35.4) |  |  | 19 (70.4) | 32 (65.3) |  |  |
| No | 8 (22.2) | 199 (64.6) |  |  | 8 (29.6) | 17 (34.7) |  |  |
| Tumor location |  |  | <0.001 |  |  |  | 0.501 |  |
| Upper third | 21 (58.3) | 74 (24.0) |  |  | 13 (48.1) | 18 (36.7) |  |  |
| Middle third | 5 (13.9) | 41 (13.3) |  |  | 4 (14.8) | 6 (12.2) |  |  |
| Lower third | 10 (27.8) | 192 (62.3) |  |  | 10 (37.0) | 25 (51.0) |  |  |
| Entire | 0 (0.0) | 1 (0.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Tumor size |  |  | 0.359 |  |  |  | 0.434 |  |
| < 5cm | 26 (72.2) | 243 (78.9) |  |  | 21 (77.8) | 34 (69.4) |  |  |
| ≥5cm | 10 (27.8) | 65 (21.1) |  |  | 6 (22.2) | 15 (30.6) |  |  |
| Type of gastrectomy |  |  | <0.001 |  |  |  | 0.776 |  |
| Total gastrectomy | 23 (63.9) | 79 (25.6) |  |  | 14 (51.9) | 23 (46.9) |  |  |
| Distal gastrectomy | 10 (27.8) | 206 (66.9) |  |  | 10 (37.0) | 22 (44.9) |  |  |
| Proximal gastrectomy | 3 (8.3) | 23 (7.5) |  |  | 3 (11.1) | 4 (8.2) |  |  |
| Surgical procedure |  |  | 0.004 |  |  |  | 0.011 |  |
| Open | 33 (91.7) | 212 (68.6) |  |  | 24 (88.9) | 30 (61.2) |  |  |
| Laparoscopic | 3 (8.3) | 96 (32.2) |  |  | 3 (11.1) | 19 (38.8) |  |  |
| T stage |  |  | <0.001 |  |  |  | 0.002 |  |
| T1 | 3 (8.3) | 195 (63.3) |  |  | 3 (11.1) | 17 (34.7) |  |  |
| T2 | 10 (27.8) | 18 (5.8) |  |  | 10 (37.0) | 3 (6.7) |  |  |
| T3 | 12 (33.3) | 49 (15.9) |  |  | 5 (18.5) | 16 (32.7) |  |  |
| T4 | 11 (30.6) | 46 (14.9) |  |  | 9 (33.3) | 13 (26.5) |  |  |
| N stage |  |  | <0.001 |  |  |  | 0.199 |  |
| N0 | 14 (38.9) | 210 (68.2) |  |  | 10 (37.0) | 21 (42.9) |  |  |
| N1 | 12 (33.3) | 26 (8.4) |  |  | 10 (37.0) | 11 (22.4) |  |  |
| N2 | 8 (22.2) | 27 (8.8) |  |  | 6 (22.2) | 8 (16.3) |  |  |
| N3 | 2 (5.6) | 45 (14.6) |  |  | 1 (3.7) | 9 (18.4) |  |  |
| M stage |  |  | 0.492 |  |  |  | 1.000 |  |
| M0 | 36 (100.0) | 304 (98.7) |  |  | 27 (100.0) | 49 (100.0) |  |  |
| M1 | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| pTNM stage |  |  | <0.001 |  |  |  | 0.834 |  |
| I | 8 (22.2) | 202 (65.6) |  |  | 8 (29.6) | 17 (34.7) |  |  |
| II | 16 (44.4) | 32 (10.4) |  |  | 10 (37.0) | 15 (30.6) |  |  |
| III | 12 (33.3) | 70 (22.7) |  |  | 9 (33.3) | 17 (34.7) |  |  |
| IV | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| **BMI**: Body Mass Index; **NEC**: neuroendocrine carcinoma; **PSM**: Propensity Score Matching; **>70%G-HMiNEN**: Gastric high-grade mixed neuroendocrine-non-neuroendocrine neoplasm with neuroendocrine carcinoma components over 70% | | | | | | | | |

**Supplement Table 4** Comparison of clinicopathological characteristics before and after PSM of pure NEC patients in surgical group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| pure NEC  (n=28) | Gastric adenocarcinoma  (n=308) | *P* value |  | pure NEC  (n=25) | Gastric adenocarcinoma  (n=43) | *P* value |  |
| Age (year), mean±SD | 62.9±7.5 | 55.2±10.8 | <0.001 |  | 62.5±7.8 | 60.7±8.0 | 0.387 |  |
| Gender (male/female) | 26/2 | 282/26 | 0.812 |  | 23/2 | 39/4 | 0.855 |  |
| BMI, mean±SD | 24.5±2.8 | 23.6±3.6 | 0.191 |  | 24.5±2.8 | 23.3±3.7 | 0.115 |  |
| Adjuvant therapy |  |  | <0.001 |  |  |  | 0.725 |  |
| Yes | 22 (78.6) | 109 (35.4) |  |  | 19 (76.0) | 31 (72.1) |  |  |
| No | 6 (21.4) | 199 (64.6) |  |  | 6 (24.0) | 12 (27.9) |  |  |
| Tumor location |  |  | 0.001 |  |  |  | 0.071 |  |
| Upper third | 17 (60.7) | 74 (24.0) |  |  | 14 (56.0) | 12 (27.9) |  |  |
| Middle third | 2 (7.1) | 41 (13.3) |  |  | 2 (8.0) | 5 (11.6) |  |  |
| Lower third | 9 (32.1) | 192 (62.3) |  |  | 9 (36.0) | 26 (60.5) |  |  |
| Entire | 0 (0.0) | 1 (0.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Tumor size |  |  | 0.393 |  |  |  | 0.631 |  |
| < 5cm | 24 (85.7) | 243 (78.9) |  |  | 22 (88.0) | 36 (83.7) |  |  |
| ≥5cm | 4 (14.3) | 65 (21.1) |  |  | 3 (12.0) | 7 (16.3) |  |  |
| Type of gastrectomy |  |  | <0.001 |  |  |  | 0.090 |  |
| Total gastrectomy | 17 (60.7) | 79 (25.6) |  |  | 14 (56.0) | 13 (30.2) |  |  |
| Distal gastrectomy | 9 (32.1) | 206 (66.9) |  |  | 9 (36.0) | 27 (62.8) |  |  |
| Proximal gastrectomy | 2 (7.1) | 23 (7.5) |  |  | 2 (8.0) | 3 (7.0) |  |  |
| Surgical procedure |  |  | 0.007 |  |  |  | 0.112 |  |
| Open | 26 (92.9) | 212 (68.6) |  |  | 23 (92.0) | 33 (76.7) |  |  |
| Laparoscopic | 2 (7.1) | 96 (32.2) |  |  | 2 (8.0) | 10 (23.3) |  |  |
| T stage |  |  | <0.001 |  |  |  | 0.188 |  |
| T1 | 3 (10.7) | 195 (63.3) |  |  | 3 (12.0) | 12 (27.9) |  |  |
| T2 | 8 (28.6) | 18 (5.8) |  |  | 8 (32.0) | 6 (14.0) |  |  |
| T3 | 11 (39.3) | 49 (15.9) |  |  | 8 (32.0) | 17 (39.5) |  |  |
| T4 | 6 (21.4) | 46 (14.9) |  |  | 8 (18.6) | 8 (18.6) |  |  |
| N stage |  |  | <0.001 |  |  |  | 0.261 |  |
| N0 | 11 (39.9) | 210 (68.2) |  |  | 8 (32.0) | 16 (37.2) |  |  |
| N1 | 11 (39.3) | 26 (8.4) |  |  | 11 (44.0) | 12 (27.9) |  |  |
| N2 | 5 (17.9) | 27 (8.8) |  |  | 5 (20.0) | 7 (16.3) |  |  |
| N3 | 1 (3.6) | 45 (14.6) |  |  | 1 (4.0) | 8 (18.6) |  |  |
| M stage |  |  | 0.544 |  |  |  | 1.000 |  |
| M0 | 28 (100.0) | 304 (98.7) |  |  | 25 (100.0) | 43 (100.0) |  |  |
| M1 | 0 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| pTNM stage |  |  | <0.001 |  |  |  | 0.913 |  |
| I | 6 (21.4) | 202 (65.6) |  |  | 6 (24.0) | 12 (27.9) |  |  |
| II | 14 (50.0) | 32 (10.4) |  |  | 11 (44.0) | 19 (44.2) |  |  |
| III | 8 (28.6) | 70 (22.7) |  |  | 8 (32.0) | 12 (27.9) |  |  |
| IV | 9 (0.0) | 4 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| **BMI**: Body Mass Index; **NEC**: neuroendocrine carcinoma; **PSM**: Propensity Score Matching | | | | | | | | |

**Supplement Table 5** Comparison of clinicopathological characteristics before and after PSM of <30%G-HMiNEN patients in neoadjuvant group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| <30%G-HMiNEN  (n=12) | Gastric adenocarcinoma  (n=477) | *P* value |  | <30%G-HMiNEN  (n=10) | Gastric adenocarcinoma  (n=18) | *P* value |  |
| Age (year), mean±SD | 61.7±13.3 | 58.3±10.3 | 0.267 |  | 66.0±7.7 | 66.1±7.4 | 0.970 |  |
| Gender (male/female) | 12/0 | 367/110 | 0.059 |  | 10/0 | 18/0 | 1.000 |  |
| BMI, mean±SD | 25.1±3.4 | 23.5±3.4 | 0.099 |  | 24.4±3.3 | 23.6±3.0 | 0.527 |  |
| Adjuvant therapy |  |  | 0.420 |  |  |  | 0.172 |  |
| Yes | 11 (91.7) | 459 (96.2) |  |  | 9 (90.0) | 18 (100.0) |  |  |
| No | 1 (8.3) | 18 (3.8) |  |  | 1 (10.0) | 0 (0.0) |  |  |
| Tumor location |  |  | 0.120 |  |  |  | 0.689 |  |
| Upper third | 9 (75.0) | 222 (46.5) |  |  | 8 (80.0) | 14 (77.8) |  |  |
| Middle third | 1 (8.3) | 50 (10.5) |  |  | 0 (0.0) | 2 (11.1) |  |  |
| Lower third | 1 (8.3) | 189 (39.6) |  |  | 1 (10.0) | 1 (5.6) |  |  |
| Entire | 1 (8.3) | 16 (3.4) |  |  | 1 (10.0) | 1 (5.6) |  |  |
| Tumor size |  |  | 0.033 |  |  |  | 0.638 |  |
| < 5cm | 4 (33.3) | 303 (63.5) |  |  | 3 (30.0) | 7 (38.9) |  |  |
| ≥5cm | 8 (66.7) | 174 (36.5) |  |  | 7 (70.0) | 11 (61.1) |  |  |
| Type of gastrectomy |  |  | 0.013 |  |  |  | 0.662 |  |
| Total gastrectomy | 11 (91.7) | 239 (50.1) |  |  | 9 (90.0) | 17 (94.4) |  |  |
| Distal gastrectomy | 0 (0.0) | 181 (37.9) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Proximal gastrectomy | 1 (8.3) | 57 (11.9) |  |  | 1 (10.0) | 1 (5.6) |  |  |
| Surgical procedure |  |  | 0.316 |  |  |  | 0.274 |  |
| Open | 12 (100.0) | 440 (92.2) |  |  | 10 (100.0) | 16 (88.9) |  |  |
| Laparoscopic | 0 (0.0) | 37 (7.8) |  |  | 0 (0.0) | 2 (11.1) |  |  |
| T stage |  |  | 0.545 |  |  |  | 0.523 |  |
| T1 | 0 (0.0) | 28 (5.9) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| T2 | 1 (8.3) | 60 (12.6) |  |  | 1 (10.0) | 4 (22.2) |  |  |
| T3 | 6 (50.0) | 154 (32.3) |  |  | 6 (60.0) | 7 (38.9) |  |  |
| T4 | 5 (41.7) | 235 (49.6) |  |  | 3 (30.0) | 7 (38.9) |  |  |
| N stage |  |  | 0.641 |  |  |  | 0.299 |  |
| N0 | 5 (41.7) | 158 (33.1) |  |  | 5 (50.0) | 6 (33.3) |  |  |
| N1 | 1 (8.3) | 99 (20.8) |  |  | 1 (10.0) | 4 (22.2) |  |  |
| N2 | 3 (25.0) | 80 (16.8) |  |  | 3 (30.0) | 2 (11.1) |  |  |
| N3 | 3 (25.0) | 140 (29.4) |  |  | 1 (10.0) | 6 (33.3) |  |  |
| M stage |  |  | <0.001 |  |  |  | 1.000 |  |
| M0 | 10 (83.3) | 471 (98.7) |  |  | 10 (100.0) | 18 (100.0) |  |  |
| M1 | 2 (16.7) | 6 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| ypTNM stage |  |  | <0.001 |  |  |  | 0.901 |  |
| I | 1 (8.3) | 52 (10.9) |  |  | 1 (10.0) | 1 (5.6) |  |  |
| II | 5 (41.7) | 163 (34.2) |  |  | 5 (50.0) | 9 (50.0) |  |  |
| III | 4 (33.3) | 256 (53.7) |  |  | 4 (40.0) | 8 (44.4) |  |  |
| IV | 2 (16.7) | 6 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| **BMI**: Body Mass Index; **PSM**: Propensity Score Matching; **<30%G-HMiNEN**: Gastric high-grade mixed neuroendocrine-non-neuroendocrine neoplasm with neuroendocrine carcinoma components less than 30% | | | | | | | | |

**Supplement Table 6** Comparison of clinicopathological characteristics before and after PSM of G-HMiNEN patients in neoadjuvant group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| G-HMiNEN  (n=19) | Gastric adenocarcinoma  (n=477) | *P* value |  | G-HMiNEN  (n=18) | Gastric adenocarcinoma  (n=36) | *P* value |  |
| Age (year), mean±SD | 63.1±8.5 | 58.3±10.3 | 0.043 |  | 62.3±7.9 | 62.2±8.2 | 0.944 |  |
| Gender (male/female) | 16/3 | 367/110 | 0.459 |  | 15/3 | 27/9 | 0.487 |  |
| BMI, mean±SD | 25.0±4.0 | 23.5±3.4 | 0.060 |  | 25.0±4.1 | 23.3±3.3 | 0.123 |  |
| Adjuvant therapy |  |  | 0.388 |  |  |  | 1.000 |  |
| Yes | 19 (100.0) | 459 (96.2) |  |  | 18 (100.0) | 36 (100.0) |  |  |
| No | 0 (0.0) | 18 (3.8) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Tumor location |  |  | 0.002 |  |  |  | 0.155 |  |
| Upper third | 12 (63.2) | 222 (46.5) |  |  | 11 (61.1) | 21 (58.3) |  |  |
| Middle third | 6 (31.6) | 50 (10.5) |  |  | 6 (33.3) | 5 (13.9) |  |  |
| Lower third | 1 (5.3) | 189 (39.6) |  |  | 1 (5.6) | 8 (22.2) |  |  |
| Entire | 0 (0.0) | 16 (3.4) |  |  | 0 (0.0) | 2 (5.6) |  |  |
| Tumor size |  |  | 0.974 |  |  |  | 0.845 |  |
| < 5cm | 12 (63.2) | 303 (63.5) |  |  | 11 (61.1) | 21 (58.3) |  |  |
| ≥5cm | 7 (36.8) | 174 (36.5) |  |  | 7 (38.9) | 15 (41.7) |  |  |
| Type of gastrectomy |  |  | 0.109 |  |  |  | 0.755 |  |
| Total gastrectomy | 14 (73.7) | 239 (50.1) |  |  | 13 (72.2) | 27 (75.0) |  |  |
| Distal gastrectomy | 3 (15.8) | 181 (37.9) |  |  | 3 (16.7) | 7 (19.4) |  |  |
| Proximal gastrectomy | 2 (10.5) | 57 (11.9) |  |  | 2 (11.1) | 2 (5.6) |  |  |
| Surgical procedure |  |  | 0.689 |  |  |  | 0.610 |  |
| Open | 18 (94.7) | 440 (92.2) |  |  | 17 (94.4) | 35 (97.2) |  |  |
| Laparoscopic | 1 (5.3) | 37 (7.8) |  |  | 1 (5.6) | 1 (2.8) |  |  |
| T stage |  |  | 0.257 |  |  |  | 0.469 |  |
| T1 | 0 (0.0) | 28 (5.9) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| T2 | 2 (10.5) | 60 (12.6) |  |  | 2 (11.1) | 2 (5.6) |  |  |
| T3 | 10 (52.6) | 154 (32.3) |  |  | 9 (50.0) | 14 (38.9) |  |  |
| T4 | 7 (36.8) | 235 (49.6) |  |  | 7 (38.9) | 20 (55.6) |  |  |
| N stage |  |  | 0.021 |  |  |  | 0.319 |  |
| N0 | 1 (5.3) | 158 (33.1) |  |  | 1 (5.6) | 7 (19.4) |  |  |
| N1 | 6 (31.6) | 99 (20.8) |  |  | 6 (33.3) | 8 (22.2) |  |  |
| N2 | 7 (36.8) | 80 (16.8) |  |  | 6 (33.3) | 7 (19.4) |  |  |
| N3 | 5 (26.3) | 140 (29.4) |  |  | 5 (27.8) | 14 (38.9) |  |  |
| M stage |  |  | 0.623 |  |  |  | 1.000 |  |
| M0 | 19 (100.0) | 471 (98.7) |  |  | 18 (100.0) | 36 (100.0) |  |  |
| M1 | 0 (0.0) | 6 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| ypTNM stage |  |  | 0.380 |  |  |  | 0.836 |  |
| I | 0 (0.0) | 52 (10.9) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| II | 6 (31.6) | 163 (34.2) |  |  | 6 (33.3) | 11 (30,6) |  |  |
| III | 13 (68.4) | 256 (53.7) |  |  | 12 (66.7) | 25 (69.4) |  |  |
| IV | 0 (0.0) | 6 (1.3) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| **BMI**: Body Mass Index; **PSM**: Propensity Score Matching; **G-HMiNEN**: Gastric high-grade mixed neuroendocrine-non-neuroendocrine neoplasm | | | | | | | | |

**Supplement Table 7** Comparison of clinicopathological characteristics before and after PSM of >70%G-HMiNEN plus pure NEC patients in neoadjuvant group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| >70%G-HMiNEN plus pure NEC  (n=32) | Gastric adenocarcinoma  (n=477) | *P* value |  | >70%G-HMiNEN plus pure NEC  (n=31) | Gastric adenocarcinoma  (n=62) | *P* value |  |
| Age (year), mean±SD | 59.8±8.8 | 58.3±10.3 | 0.427 |  | 60.0±8.8 | 58.6±10.2 | 0.502 |  |
| Gender (male/female) | 24/8 | 367/110 | 0.801 |  | 24/7 | 46/16 | 0.734 |  |
| BMI, mean±SD | 23.1±4.0 | 23.5±3.4 | 0.526 |  | 23.0±4.0 | 23.6±3.6 | 0.475 |  |
| Adjuvant therapy |  |  | 0.019 |  |  |  | 0.071 |  |
| Yes | 28 (87.5) | 459 (96.2) |  |  | 28 (90.3) | 61 (98.4) |  |  |
| No | 4 (12.5) | 18 (3.8) |  |  | 3 (9.7) | 1 (1.6) |  |  |
| Tumor location |  |  | 0.006 |  |  |  | 0.746 |  |
| Upper third | 25 (78.1) | 222 (46.5) |  |  | 24 (77.4) | 45 (72.6) |  |  |
| Middle third | 2 (6.3) | 50 (10.5) |  |  | 2 (6.5) | 3 (4.8) |  |  |
| Lower third | 5 (15.6) | 189 (39.6) |  |  | 5 (16.1) | 14 (22.6) |  |  |
| Entire | 0 (0.0) | 16 (3.4) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Tumor size |  |  | 0.907 |  |  |  | 0.881 |  |
| < 5cm | 20 (62.5) | 303 (63.5) |  |  | 19 (61.3) | 37 (59.7) |  |  |
| ≥5cm | 12 (37.5) | 174 (36.5) |  |  | 12 (38.7) | 25 (40.3) |  |  |
| Type of gastrectomy |  |  | 0.007 |  |  |  | 0.899 |  |
| Total gastrectomy | 25 (78.1) | 239 (50.1) |  |  | 24 (77.4) | 47 (75.8) |  |  |
| Distal gastrectomy | 4 (12.5) | 181 (37.9) |  |  | 4 (12.9) | 10 (16.1) |  |  |
| Proximal gastrectomy | 3 (9.4) | 57 (11.9) |  |  | 3 (9.7) | 5 (8.1) |  |  |
| Surgical procedure |  |  |  |  |  |  | 0.470 |  |
| Open | 30 (93.8) | 440 (92.2) |  |  | 29 (93.5) | 60 (96.8) |  |  |
| Laparoscopic | 2 (6.3) | 37 (7.8) |  |  | 2 (6.5) | 2 (3.2) |  |  |
| T stage |  |  | <0.001 |  |  |  | 0.007 |  |
| T0 | 1 (3.1) | 0 (0.0) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| T1 | 3 (9.4) | 28 (5.9) |  |  | 3 (9.7) | 5 (8. 1) |  |  |
| T2 | 0 (0.0) | 60 (12.6) |  |  | 0 (0.0) | 10 (16.1) |  |  |
| T3 | 19 (59.4) | 154 (32.3) |  |  | 19 (61.3) | 18 (29.0) |  |  |
| T4 | 9 (28.1) | 235 (49.6) |  |  | 9 (29.0) | 29 (46.8) |  |  |
| N stage |  |  | 0.002 |  |  |  | 0.008 |  |
| N0 | 11 (34.4) | 158 (33.1) |  |  | 10 (32.3) | 34 (54.8) |  |  |
| N1 | 15 (46.9) | 99 (20.8) |  |  | 15 (48.4) | 11 (17.7) |  |  |
| N2 | 4 (12.5) | 80 (16.8) |  |  | 4 (12.9) | 5 (8.1) |  |  |
| N3 | 2 (6.3) | 140 (29.4) |  |  | 2 (6.5) | 12 (19.4) |  |  |
| M stage |  |  | 0.380 |  |  |  | 1.000 |  |
| M0 | 31 (96.9) | 471 (98.7) |  |  | 30 (96.8) | 60 (96.8) |  |  |
| M1 | 1 (3.1) | 6 (1.3) |  |  | 1 (3.2) | 2 (3.2) |  |  |
| ypTNM stage |  |  | <0.001 |  |  |  | 0.921 |  |
| 0 | 1 (3.1) | 0 (0.0) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| I | 3 (9.4) | 52 (10.9) |  |  | 3 (9.7) | 9 (14.5) |  |  |
| II | 20 (62.5) | 163 (34.2) |  |  | 20 (64.5) | 39 (62.9) |  |  |
| III | 7 (21.9) | 256 (53.7) |  |  | 7 (22.6) | 12 (19.4) |  |  |
| IV | 1 (3.1) | 6 (1.3) |  |  | 1 (3.2) | 2 (3.2) |  |  |
| **BMI**: Body Mass Index; **NEC**: neuroendocrine carcinoma; **PSM**: Propensity Score Matching; **>70%G-HMiNEN**: Gastric high-grade mixed neuroendocrine-non-neuroendocrine neoplasm with neuroendocrine carcinoma components over 70% | | | | | | | | |

**Supplement Table 8** Comparison of clinicopathological characteristics before and after PSM of pure NEC patients in neoadjuvant group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristics | Unmatched comparison | | |  | Matched comparison | | |  |
| pure NEC  (n=27) | Gastric adenocarcinoma  (n=477) | *P* value |  | pure NEC  (n=26) | Gastric adenocarcinoma  (n=52) | *P* value |  |
| Age (year), mean±SD | 59.8±8.4 | 58.3±10.3 | 0.453 |  | 60.1±8.4 | 59.5±11.1 | 0.786 |  |
| Gender (male/female) | 19/8 | 367/110 | 0.433 |  | 19/7 | 38/14 | 1.000 |  |
| BMI, mean±SD | 23.3±4.2 | 23.5±3.4 | 0.818 |  | 23.2±4.3 | 23.1±3.2 | 0.874 |  |
| Adjuvant therapy |  |  | 0.006 |  |  |  | 0.191 |  |
| Yes | 23 (85.2) | 459 (96.2) |  |  | 23 (88.5) | 50 (96.2) |  |  |
| No | 4 (14.8) | 18 (3.8) |  |  | 3 (11.5) | 2 (3.8) |  |  |
| Tumor location |  |  | 0.015 |  |  |  | 0.630 |  |
| Upper third | 21 (77.8) | 222 (46.5) |  |  | 20 (76.9) | 37 (71.2) |  |  |
| Middle third | 2 (7.4) | 50 (10.5) |  |  | 2 (7.7) | 8 (15.4) |  |  |
| Lower third | 4 (14.8) | 189 (39.6) |  |  | 4 (15.4) | 7 (13.5) |  |  |
| Entire | 0 (0.0) | 16 (3.4) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| Tumor size |  |  | 0.741 |  |  |  | 1.000 |  |
| < 5cm | 18 (66.7) | 303 (63.5) |  |  | 17 (65.4) | 34 (65.4) |  |  |
| ≥5cm | 9 (33.3) | 174 (36.5) |  |  | 9 (34.6) | 18 (34.9) |  |  |
| Type of gastrectomy |  |  | 0.019 |  |  |  | 0.943 |  |
| Total gastrectomy | 21 (77.8) | 239 (50.1) |  |  | 20 (76.9) | 40 (76.9) |  |  |
| Distal gastrectomy | 4 (14.8) | 181 (37.9) |  |  | 4 (15.4) | 7 (13.5) |  |  |
| Proximal gastrectomy | 2 (7.4) | 57 (11.9) |  |  | 2 (7.7) | 5 (9.6) |  |  |
| Surgical procedure |  |  | 0.947 |  |  |  | 0.212 |  |
| Open | 25 (92.6) | 440 (92.2) |  |  | 24 (92.3) | 51 (98.1) |  |  |
| Laparoscopic | 2 (7.4) | 37 (7.8) |  |  | 2 (7.7) | 1 (1.9) |  |  |
| T stage |  |  | <0.001 |  |  |  | 0.039 |  |
| T0 | 1 (3.7) | 0 (0.0) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| T1 | 3 (11.1) | 28 (5.9) |  |  | 3 (11.5) | 3 (5.8) |  |  |
| T2 | 0 (0.0) | 60 (12.6) |  |  | 0 (0.0) | 10 (19.2) |  |  |
| T3 | 15 (55.6) | 154 (32.3) |  |  | 15 (57.7) | 18 (34.6) |  |  |
| T4 | 8 (29.6) | 235 (49.6) |  |  | 8 (30.8) | 21 (40.4) |  |  |
| N stage |  |  | 0.009 |  |  |  | 0.041 |  |
| N0 | 10 (37.0) | 158 (33.1) |  |  | 9 (34.6) | 28 (53.8) |  |  |
| N1 | 12 (44.4) | 99 (20.8) |  |  | 12 (46.2) | 9 (17.3) |  |  |
| N2 | 3 (11.1) | 80 (16.8) |  |  | 3 (11.5) | 5 (9.6) |  |  |
| N3 | 2 (7.4) | 140 (29.4) |  |  | 2 (7.7) | 10 (19.2) |  |  |
| M stage |  |  | 0.291 |  |  |  | 0.717 |  |
| M0 | 26 (96.3) | 471 (98.7) |  |  | 25 (96.2) | 49 (94.2) |  |  |
| M1 | 1 (3.7) | 6 (1.3) |  |  | 1 (3.8) | 3 (5.8) |  |  |
| ypTNM stage |  |  | <0.001 |  |  |  | 0.890 |  |
| 0 | 1 (3.7) | 0 (0.0) |  |  | 0 (0.0) | 0 (0.0) |  |  |
| I | 3 (11.1) | 52 (10.9) |  |  | 3 (11.5) | 9 (17.3) |  |  |
| II | 16 (59.3) | 163 (34.2) |  |  | 16 (61.5) | 29 (55.8) |  |  |
| III | 6 (22.2) | 256 (53.7) |  |  | 6 (23.1) | 11 (21.2) |  |  |
| IV | 1 (3.7) | 6 (1.3) |  |  | 1 (3.8) | 3 (5.8) |  |  |
| **BMI**: Body Mass Index; **NEC**: neuroendocrine carcinoma; **PSM**: Propensity Score Matching | | | | | | | | |