# 

# Appendix S1: Supplementary figures and tables

# Supplementary Figure 1: Neoadjuvant therapy regimen by cancer location, in all operated patients receiving neoadjuvant treatment.

Diagram

Description automatically generated

# Supplementary Figure 2: Multivariate logistic regression model exploring the association between delay to surgery and resectability for patients receiving elective surgery, adjusting for patient and disease factors.

Table

Description automatically generated with medium confidence

Number in dataframe = 3375, Number in model = 3375, Missing = 0, AIC = 1313.8, C-statistic = 0.768. Full model presented in Supplementary table 4. Delay was defined as a time from decision to treat to surgery of >4 weeks. Data reported as odds ratio (95% confidence interval, P value). OR>1 means higher odds of resectability for delayed patients, OR<1 means lower odds of resectability for delayed patients. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index

# Supplementary Table 1: Demographic features of patients receiving and not receiving an operation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **Operated**  **(n=5095)** | **Not Operated**  **(n=358)** | **P value** |
| Site | Colon | 3446 (67.6) | 170 (47.5) | <0.001 |
| Rectum | 1649 (32.4) | 188 (52.5) |
| Age | <70 years | 2726 (53.5) | 209 (58.4) | 0.083 |
| ≥70 years | 2369 (46.5) | 149 (41.6) |
| Sex | Female | 2182 (42.8) | 145 (40.5) | 0.421 |
| Male | 2913 (57.2) | 213 (59.5) |
| ASA grade | 1-2 | 3413 (67.1) | 206 (60.1) | 0.009 |
| 3-5 | 1672 (32.9) | 137 (39.9) |
| Missing | 10 | 15 |
| ECOG Score | 0 | 2581 (51.3) | 135 (39.8) | <0.001 |
| 1-2 | 2298 (45.7) | 184 (54.3) |
| 3-4 | 148 (2.9) | 20 (5.9) |
| Missing | 68 | 19 |
| Revised Cardiac Risk Index | 1-2 | 4728 (92.8) | 327 (91.3) | 0.358 |
| ≥3 | 367 (7.2) | 31 (8.7) |
| BMI | Underweight | 174 (3.5) | 30 (9.3) | <0.001 |
| Normal | 2111 (42.3) | 120 (37.0) |
| Overweight | 1756 (35.1) | 111 (34.3) |
| Obese | 955 (19.1) | 63 (19.4) |
| Missing | 99 | 34 |
| Stage group | Stage I | 1572 (31.9) | 92 (26.4) | 0.004 |
| Stage II | 1044 (21.2) | 61 (17.5) |
| Stage III | 1808 (36.7) | 145 (41.5) |
| Stage IV | 507 (10.3) | 51 (14.6) |
| Missing | 164 | 9 |
| Country Income | High income | 4337 (85.1) | 265 (74.0) | <0.001 |
| Upper middle income | 472 (9.3) | 28 (7.8) |
| Low/lower-middle income | 286 (5.6) | 65 (18.2) |

Data reported as n (%). Percentages expressed of column total. P values calculated using Chi-square test. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group.

# Supplementary Table 2: Reasons why patients did not receive their operation.

|  |  |
| --- | --- |
|  | Number (%) (n=358) |
| Multidisciplinary team decision to cancel surgery due to patient risk | 260 (72.6) |
| Disease progression | 104 (29.1) |
| Patient unable to travel to hospital related to COVID-19 | 94 (26.3) |
| Patient choice to avoid surgery during COVID-19 pandemic | 82 (22.9) |
| Watch and wait surveillance only | 78 (21.8) |
| Performed local excision | 75 (20.9) |
| No bed/critical care bed/OR/theatre space available | 53 (14.8) |
| Change of recommendations in society guidelines related to COVID-19 | 38 (10.6) |
| Patient decision not related to COVID | 11 (3.1) |
| Delayed due to COVID-19 infection | 10 (2.8) |
| Collateral impact on services causing delay | 6 (1.7) |
| Other medical/surgical condition presented whilst waiting for surgery causing delay | 5 (1.4) |
| Patient unable to afford surgery | 3 (0.8) |
| Remission leading to decision not to operate | 2 (0.6) |
| Regression leading to change in plan and delay | 1 (0.3) |
| Awaiting restaging and/or surgical plan | 1 (0.3) |

Data reported as n (%). Patients could have had multiple of these reasons to not receive an operation.

# Supplementary Table 3: Reasons why patients received emergency surgery.

|  |  |
| --- | --- |
|  | Number (%) (n=663) |
| Gastrointestinal obstruction | 396 (59.7) |
| Tumour progression | 136 (20.5) |
| Bleeding | 100 (15.1) |
| Organ perforation | 64 (9.7) |
| Pain | 58 (8.7) |
| Sepsis | 28 (4.2) |
| Uncertain elective capacity | 2 (0.3) |

Data reported as n (%). Emergency surgery was any emergency surgery for colorectal cancer performed whilst awaiting the planned elective surgery, with or without resection.

# Supplementary Table 4: Full multivariate logistic regression model exploring the association between delay to surgery and resectability, adjusting for patient and disease factors.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Non-resectable (n=297)** | **Resectable**  **(n=3669)** | **OR (univariable)** | **OR (multivariable)** |
| Delay | Non-delayed | 193 (8.2) | 2154 (91.8) | - | - |
| Delayed | 104 (6.4) | 1515 (93.6) | 1.31 (1.02-1.68, p=0.035) | 1.18 (0.90-1.55, p=0.224) |
| Site | Colon | 200 (6.6) | 2846 (93.4) | - | - |
| Rectum | 97 (10.5) | 823 (89.5) | 0.60 (0.46-0.77, p<0.001) | 0.51 (0.38-0.67, p<0.001) |
| Age | <70 years | 158 (7.9) | 1850 (92.1) | - | - |
| ≥70 years | 139 (7.1) | 1819 (92.9) | 1.12 (0.88-1.42, p=0.358) | 1.03 (0.78-1.36, p=0.833) |
| Sex | Female | 127 (7.3) | 1604 (92.7) | - | - |
| Male | 170 (7.6) | 2065 (92.4) | 0.96 (0.76-1.22, p=0.749) | 0.92 (0.71-1.19, p=0.510) |
| ASA grade | 1-2 | 187 (7.1) | 2437 (92.9) | - | - |
| 3-5 | 110 (8.2) | 1232 (91.8) | 0.86 (0.67-1.10, p=0.226) | 0.99 (0.73-1.36, p=0.972) |
| ECOG grade | 0 | 129 (6.4) | 1874 (93.6) | - | - |
| 1-2 | 144 (7.9) | 1690 (92.1) | 0.81 (0.63-1.03, p=0.090) | 0.74 (0.55-0.99, p=0.041) |
| 3-4 | 24 (18.6) | 105 (81.4) | 0.30 (0.19-0.50, p<0.001) | 0.29 (0.17-0.53, p<0.001) |
| RCRI grade | 1-2 | 278 (7.6) | 3387 (92.4) | - | - |
| ≥3 | 19 (6.3) | 282 (93.7) | 1.22 (0.77-2.03, p=0.421) | 1.17 (0.70-2.07, p=0.558) |
| Stage group | Stage I | 39 (2.7) | 1418 (97.3) | - | - |
| Stage II | 35 (4.0) | 838 (96.0) | 0.66 (0.41-1.05, p=0.078) | 0.65 (0.40-1.03, p=0.066) |
| Stage III | 102 (7.8) | 1205 (92.2) | 0.32 (0.22-0.47, p<0.001) | 0.33 (0.23-0.49, p<0.001) |
| Stage IV | 121 (36.8) | 208 (63.2) | 0.05 (0.03-0.07, p<0.001) | 0.05 (0.03-0.07, p<0.001) |

Number in dataframe = 3966, Number in model = 3966, Missing = 0, AIC = 1786.9, C-statistic = 0.776. Delay was defined as a time from decision to treat to surgery of >4 weeks. Data reported as odds ratio (95% confidence interval, P value). OR>1 means higher odds of resectability for delayed patients, OR<1 means lower odds of resectability for delayed patients. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index

# Supplementary Table 5: Demographic features of patients having delayed and non-delayed, elective surgery only.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **Non-delayed**  **(n=1973)** | **Delayed**  **(n=1663)** | **P value** |
| Site | Colon | 1511 (76.6) | 1213 (72.9) | 0.013 |
| Rectum | 462 (23.4) | 450 (27.1) |
| Age | <70 years | 1050 (53.2) | 778 (46.8) | <0.001 |
| ≥70 years | 923 (46.8) | 885 (53.2) |
| Sex | Female | 886 (44.9) | 672 (40.4) | 0.007 |
| Male | 1087 (55.1) | 991 (59.6) |
| ASA grade | 1-2 | 1390 (70.6) | 1031 (62.1) | <0.001 |
| 3-5 | 579 (29.4) | 629 (37.9) |
| Missing | 4 | 3 |
| ECOG Score | 0 | 1118 (57.3) | 763 (46.7) | <0.001 |
| 1-2 | 784 (40.2) | 825 (50.5) |
| 3-4 | 49 (2.5) | 47 (2.9) |
| Missing | 22 | 28 |
| Revised Cardiac Risk Index | 1-2 | 1845 (93.5) | 1520 (91.4) | 0.019 |
| ≥3 | 128 (6.5) | 143 (8.6) |
| Body Mass Index | Underweight | 61 (3.2) | 44 (2.7) | <0.001 |
| Normal | 860 (44.5) | 607 (37.2) |
| Overweight | 670 (34.7) | 610 (37.4) |
| Obese | 341 (17.7) | 372 (22.8) |
| Missing | 41 | 30 |
| Stage group | Stage I | 697 (36.8) | 683 (42.3) | 0.002 |
| Stage II | 407 (21.5) | 354 (21.9) |
| Stage III | 641 (33.8) | 472 (29.2) |
| Stage IV | 151 (8.0) | 105 (6.5) |
| Missing | 77 | 49 |
| Country Income | High income | 1721 (87.2) | 1512 (90.9) | 0.002 |
| Upper middle income | 168 (8.5) | 102 (6.1) |
| Low/lower-middle income | 84 (4.3) | 49 (2.9) |
| Approach | Open | 786 (39.9) | 743 (44.7) | 0.01 |
| Minimally invasive | 1080 (54.8) | 829 (49.9) |
| Converted to open | 104 (5.3) | 89 (5.4) |
| Missing | 3 | 2 |
| Anastomosis | Yes (with defunctioning stoma) | 260 (13.5) | 181 (11.1) | <0.001 |
| Yes (without defunctioning stoma) | 1413 (73.2) | 1152 (70.4) |
| No | 258 (13.4) | 304 (18.6) |
| Missing | 42 | 26 |
| Anastomotic method | Stapled | 1373 (82.2) | 1084 (81.4) | 0.613 |
| Handsewn | 298 (17.8) | 248 (18.6) |
| Missing | 302 | 331 |

Delay was defined as a time from decision to treat to surgery of >4 weeks. Data reported as n (%). Percentages expressed of column total. P values calculated using Chi-square test. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group.

# Supplementary Table 6: Multivariate logistic regression model exploring the association between delay to surgery and resectability in colon cancer patients, adjusting for patient and disease factors.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Non-resectable (n=200)** | **Resectable**  **(n=2846)** | **OR (univariable)** | **OR (multivariable)** |
| Delay | Non-delayed | 142 (7.6) | 1720 (92.4) | - | - |
| Delayed | 58 (4.9) | 1126 (95.1) | 1.60 (1.18-2.21, p=0.003) | 1.33 (0.95-1.87, p=0.101) |
| Age | <70 years | 100 (6.8) | 1375 (93.2) | - | - |
| ≥70 years | 100 (6.4) | 1471 (93.6) | 1.07 (0.80-1.43, p=0.645) | 1.06 (0.75-1.48, p=0.753) |
| Sex | Female | 93 (6.8) | 1276 (93.2) | - | - |
| Male | 107 (6.4) | 1570 (93.6) | 1.07 (0.80-1.43, p=0.647) | 0.95 (0.70-1.30, p=0.767) |
| ASA grade | 1-2 | 121 (6.2) | 1842 (93.8) | - | - |
| 3-5 | 79 (7.3) | 1004 (92.7) | 0.83 (0.62-1.12, p=0.228) | 0.94 (0.65-1.37, p=0.740) |
| ECOG grade | 0 | 78 (5.3) | 1400 (94.7) | - | - |
| 1-2 | 104 (7.1) | 1354 (92.9) | 0.73 (0.53-0.98, p=0.038) | 0.69 (0.48-0.98, p=0.041) |
| 3-4 | 18 (16.4) | 92 (83.6) | 0.28 (0.17-0.51, p<0.001) | 0.33 (0.17-0.66, p=0.001) |
| RCRI grade | 1-2 | 184 (6.6) | 2618 (93.4) | - | - |
| ≥3 | 16 (6.6) | 228 (93.4) | 1.00 (0.61-1.76, p=0.995) | 1.00 (0.56-1.88, p=0.999) |
| Stage group | Stage I | 24 (2.2) | 1061 (97.8) | - | - |
| Stage II | 21 (3.0) | 682 (97.0) | 0.73 (0.41-1.34, p=0.308) | 0.77 (0.42-1.41, p=0.390) |
| Stage III | 63 (6.3) | 941 (93.7) | 0.34 (0.21-0.54, p<0.001) | 0.36 (0.22-0.58, p<0.001) |
| Stage IV | 92 (36.2) | 162 (63.8) | 0.04 (0.02-0.06, p<0.001) | 0.04 (0.03-0.07, p<0.001) |

Number in dataframe = 3046, Number in model = 3046, Missing = 0, AIC = 1227.6, C-statistic = 0.784. Delay was defined as a time from decision to treat to surgery of >4 weeks. Data reported as odds ratio (95% confidence interval, P value). OR>1 means higher odds of resectability for delayed patients, OR<1 means lower odds of resectability for delayed patients. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index

# Supplementary Table 7: Multivariate logistic regression model exploring the association between delay to surgery and resectability in rectal cancer patients, adjusting for patient and disease factors.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Non-resectable (n=97)** | **Resectable**  **(n=823)** | **OR (univariable)** | **OR (multivariable)** |
| Delay | Non-delayed | 51 (10.5) | 434 (89.5) | - | - |
| Delayed | 46 (10.6) | 389 (89.4) | 0.99 (0.65-1.52, p=0.977) | 0.91 (0.58-1.44, p=0.692) |
| Age | <70 years | 58 (10.9) | 475 (89.1) | - | - |
| ≥70 years | 39 (10.1) | 348 (89.9) | 1.09 (0.71-1.68, p=0.695) | 0.96 (0.59-1.56, p=0.857) |
| Sex | Female | 34 (9.4) | 328 (90.6) | - | - |
| Male | 63 (11.3) | 495 (88.7) | 0.81 (0.52-1.26, p=0.360) | 0.80 (0.50-1.27, p=0.356) |
| ASA grade | 1-2 | 66 (10.0) | 595 (90.0) | - | - |
| 3-5 | 31 (12.0) | 228 (88.0) | 0.82 (0.52-1.30, p=0.379) | 1.08 (0.62-1.94, p=0.783) |
| ECOG grade | 0 | 51 (9.7) | 474 (90.3) | - | - |
| 1-2 | 40 (10.6) | 336 (89.4) | 0.90 (0.58-1.41, p=0.650) | 0.88 (0.53-1.47, p=0.619) |
| 3-4 | 6 (31.6) | 13 (68.4) | 0.23 (0.09-0.69, p=0.005) | 0.18 (0.06-0.64, p=0.006) |
| RCRI grade | 1-2 | 94 (10.9) | 769 (89.1) | - | - |
| ≥3 | 3 (5.3) | 54 (94.7) | 2.20 (0.79-9.15, p=0.191) | 2.32 (0.74-10.32, p=0.197) |
| Stage group | Stage I | 15 (4.0) | 357 (96.0) | - | - |
| Stage II | 14 (8.2) | 156 (91.8) | 0.47 (0.22-1.00, p=0.048) | 0.47 (0.22-1.01, p=0.049) |
| Stage III | 39 (12.9) | 264 (87.1) | 0.28 (0.15-0.52, p<0.001) | 0.29 (0.15-0.53, p<0.001) |
| Stage IV | 29 (38.7) | 46 (61.3) | 0.07 (0.03-0.13, p<0.001) | 0.07 (0.03-0.13, p<0.001) |

Number in dataframe = 920, Number in model = 920, Missing = 0, AIC = 567.8, C-statistic = 0.745. Delay was defined as a time from decision to treat to surgery of >4 weeks. Data reported as odds ratio (95% confidence interval, P value). OR>1 means higher odds of resectability for delayed patients, OR<1 means lower odds of resectability for delayed patients. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index

# Supplementary Table 8: Multivariate logistic regression model exploring the association between delay to surgery and resectability in patients with early disease, adjusting for patient and disease factors.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Non-resectable (n=49)** | **Resectable**  **(n=2006)** | **OR (univariable)** | **OR (multivariable)** |
| Delay | Non-delayed | 28 (2.5) | 1090 (97.5) | - | - |
| Delayed | 21 (2.2) | 916 (97.8) | 1.12 (0.63-2.01, p=0.697) | 1.20 (0.67-2.18, p=0.537) |
| Site | Colon | 28 (1.8) | 1513 (98.2) | - | - |
| Rectum | 21 (4.1) | 493 (95.9) | 0.43 (0.25-0.78, p=0.004) | 0.41 (0.23-0.74, p=0.003) |
| Age | <70 years | 22 (2.2) | 975 (97.8) | - | - |
| ≥70 years | 27 (2.6) | 1031 (97.4) | 0.86 (0.48-1.52, p=0.608) | 0.93 (0.50-1.71, p=0.805) |
| Sex | Female | 21 (2.4) | 837 (97.6) | - | - |
| Male | 28 (2.3) | 1169 (97.7) | 1.05 (0.58-1.85, p=0.874) | 1.01 (0.56-1.80, p=0.970) |
| ASA grade | 1-2 | 29 (2.2) | 1280 (97.8) | - | - |
| 3-5 | 20 (2.7) | 726 (97.3) | 0.82 (0.46-1.48, p=0.507) | 0.86 (0.44-1.70, p=0.651) |
| ECOG grade | 0 | 21 (1.9) | 1058 (98.1) | - | - |
| 1-2 | 26 (2.8) | 894 (97.2) | 0.68 (0.38-1.22, p=0.198) | 0.66 (0.34-1.27, p=0.213) |
| 3-4 | 2 (3.6) | 54 (96.4) | 0.54 (0.15-3.40, p=0.407) | 0.48 (0.12-3.28, p=0.367) |
| RCRI grade | 1-2 | 46 (2.5) | 1817 (97.5) | - | - |
| ≥3 | 3 (1.6) | 189 (98.4) | 1.59 (0.58-6.61, p=0.437) | 1.93 (0.66-8.25, p=0.292) |
| Stage group | Stage I | 30 (2.3) | 1286 (97.7) | - | - |
| Stage II | 19 (2.6) | 720 (97.4) | 0.88 (0.50-1.61, p=0.678) | 0.86 (0.48-1.56, p=0.603) |

Number in dataframe = 2055, Number in model = 2055, Missing = 0, AIC = 470.7, C-statistic = 0.634. Delay was defined as a time from decision to treat to surgery of >4 weeks. Advanced disease was defined as T4, N1/2 or M1 disease; early disease was all other stages. Data reported as odds ratio (95% confidence interval, P value). OR>1 means higher odds of resectability for delayed patients, OR<1 means lower odds of resectability for delayed patients. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index

# Supplementary Table 9: Multivariate logistic regression model exploring the association between delay to surgery and resectability in patients with advanced disease, adjusting for patient and disease factors.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Non-resectable (n=239)** | **Resectable**  **(n=1531)** | **OR (univariable)** | **OR (multivariable)** |
| Delay | Non-delayed | 158 (13.9) | 979 (86.1) | - | - |
| Delayed | 81 (12.8) | 552 (87.2) | 1.10 (0.83-1.47, p=0.516) | 1.11 (0.81-1.52, p=0.517) |
| Site | Colon | 165 (12.0) | 1212 (88.0) | - | - |
| Rectum | 74 (18.8) | 319 (81.2) | 0.59 (0.44-0.80, p=0.001) | 0.51 (0.37-0.71, p<0.001) |
| Age | <70 years | 131 (13.8) | 821 (86.2) | - | - |
| ≥70 years | 108 (13.2) | 710 (86.8) | 1.05 (0.80-1.38, p=0.732) | 1.02 (0.74-1.40, p=0.915) |
| Sex | Female | 104 (12.9) | 704 (87.1) | - | - |
| Male | 135 (14.0) | 827 (86.0) | 0.90 (0.69-1.19, p=0.476) | 0.91 (0.67-1.22, p=0.530) |
| ASA grade | 1-2 | 154 (12.7) | 1056 (87.3) | - | - |
| 3-5 | 85 (15.2) | 475 (84.8) | 0.81 (0.61-1.09, p=0.161) | 1.10 (0.77-1.58, p=0.594) |
| ECOG grade | 0 | 103 (12.1) | 749 (87.9) | - | - |
| 1-2 | 114 (13.5) | 733 (86.5) | 0.88 (0.66-1.18, p=0.398) | 0.76 (0.55-1.06, p=0.103) |
| 3-4 | 22 (31.0) | 49 (69.0) | 0.31 (0.18-0.54, p<0.001) | 0.24 (0.12-0.46, p<0.001) |
| RCRI grade | 1-2 | 226 (13.5) | 1443 (86.5) | - | - |
| ≥3 | 13 (12.9) | 88 (87.1) | 1.06 (0.60-2.02, p=0.848) | 1.16 (0.61-2.34, p=0.669) |
| Stage group | Stage II | 16 (11.9) | 118 (88.1) | - | - |
| Stage III | 102 (7.8) | 1205 (92.2) | 1.60 (0.89-2.73, p=0.099) | 1.83 (1.01-3.16, p=0.037) |
| Stage IV | 121 (36.8) | 208 (63.2) | 0.23 (0.13-0.40, p<0.001) | 0.25 (0.14-0.44, p<0.001) |

Number in dataframe = 1770, Number in model = 1770, Missing = 0, AIC = 1236.1, C-statistic = 0.743. Delay was defined as a time from decision to treat to surgery of >4 weeks. Advanced disease was defined as T4, N1/2 or M1 disease. Data reported as odds ratio (95% confidence interval, P value). OR>1 means higher odds of resectability for delayed patients, OR<1 means lower odds of resectability for delayed patients. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index

# Supplementary Table 10: Demographic features of patients stratified by length of delay.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **0-4 weeks (n=2559)** | **5-8 weeks (n=1089)** | **9-12 weeks (n=384)** | **>12 weeks**  **(n=271)** | **P value** |
| Site | Colon | 2028 (79.2) | 798 (73.3) | 289 (75.3) | 187 (69.0) | <0.001 |
| Rectum | 531 (20.8) | 291 (26.7) | 95 (24.7) | 84 (31.0) |
| Age | <70 years | 1374 (53.7) | 532 (48.9) | 167 (43.5) | 120 (44.3) | <0.001 |
| ≥70 years | 1185 (46.3) | 557 (51.1) | 217 (56.5) | 151 (55.7) |
| Sex | Female | 1162 (45.4) | 468 (43.0) | 150 (39.1) | 102 (37.6) | 0.014 |
| Male | 1397 (54.6) | 621 (57.0) | 234 (60.9) | 169 (62.4) |
| ASA grade | 1-2 | 1764 (69.1) | 696 (64.0) | 222 (58.0) | 166 (61.5) | <0.001 |
| 3-5 | 789 (30.9) | 392 (36.0) | 161 (42.0) | 104 (38.5) |
| Missing | 6 | 1 | 1 | 1 |
| ECOG Score | 0 | 1343 (53.1) | 528 (49.3) | 150 (39.6) | 117 (44.7) | <0.001 |
| 1-2 | 1101 (43.5) | 511 (47.7) | 216 (57.0) | 140 (53.4) |
| 3-4 | 85 (3.4) | 32 (3.0) | 13 (3.4) | 5 (1.9) |
| Missing | 30 | 18 | 5 | 9 |
| RCRI | 1-2 | 2382 (93.1) | 1010 (92.7) | 351 (91.4) | 237 (87.5) | 0.008 |
| ≥3 | 177 (6.9) | 79 (7.3) | 33 (8.6) | 34 (12.5) |
| BMI | Underweight | 92 (3.7) | 28 (2.6) | 8 (2.1) | 9 (3.5) | <0.001 |
| Normal | 1121 (44.7) | 414 (38.5) | 134 (35.7) | 86 (33.1) |
| Overweight | 858 (34.2) | 390 (36.3) | 150 (40.0) | 106 (40.8) |
| Obese | 437 (17.4) | 243 (22.6) | 83 (22.1) | 59 (22.7) |
| Missing | 51 | 14 | 9 | 11 |
| Stage group | Stage I | 806 (32.8) | 431 (40.8) | 170 (45.5) | 108 (41.1) | <0.001 |
| Stage II | 560 (22.8) | 241 (22.8) | 78 (20.9) | 46 (17.5) |
| Stage III | 863 (35.1) | 312 (29.5) | 104 (27.8) | 87 (33.1) |
| Stage IV | 230 (9.4) | 72 (6.8) | 22 (5.9) | 22 (8.4) |
| Missing | 100 | 33 | 10 | 8 |
| Country Income | High income | 2143 (83.7) | 987 (90.6) | 350 (91.1) | 234 (86.3) | <0.001 |
| Upper middle income | 259 (10.1) | 67 (6.2) | 22 (5.7) | 27 (10.0) |
| Low/lower-middle income | 157 (6.1) | 35 (3.2) | 12 (3.1) | 10 (3.7) |
| Approach | Open | 1203 (47.1) | 501 (46.0) | 161 (42.0) | 138 (51.1) | 0.299 |
| Minimally invasive | 1216 (47.6) | 535 (49.1) | 196 (51.2) | 119 (44.1) |
| Converted to open | 137 (5.4) | 53 (4.9) | 26 (6.8) | 13 (4.8) |
| Missing | 3 | 0 | 1 | 1 |
| Anastomosis | Yes (with defunctioning stoma) | 330 (13.1) | 116 (10.8) | 43 (11.4) | 40 (14.9) | 0.1 |
| Yes (without defunctioning stoma) | 1716 (68.3) | 756 (70.5) | 265 (70.5) | 166 (61.7) |
| No | 467 (18.6) | 200 (18.7) | 68 (18.1) | 63 (23.4) |
| Missing | 46 | 17 | 8 | 2 |
| Anastomotic method | Stapled | 1646 (80.5) | 714 (82.0) | 244 (79.2) | 167 (81.1) | 0.711 |
| Handsewn | 398 (19.5) | 157 (18.0) | 64 (20.8) | 39 (18.9) |
| Missing | 515 | 218 | 76 | 65 |

Delay was measured from decision to treat to surgery. The total of patients reported in the table is 4303 (missing data for length of delay n=1). Data reported as n (%). Percentages expressed of column total. P values calculated using Chi-square test. ASA=American Society of Anaesthesiologists classification, ECOG=Eastern Cooperative Oncology Group, RCRI=Revised Cardiac Risk Index.

# Supplementary Table 11: Unadjusted outcomes compared by length of delay to surgery.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **0-4 weeks (n=2559)** | **5-8 weeks (n=1089)** | **9-12 weeks (n=384)** | **>12 weeks**  **(n=271)** | **P value** |
| Resectability | Complete resection | 2261 (91.9) | 993 (93.7) | 352 (94.9) | 238 (92.2) | 0.094 |
| Incomplete resection | 199 (8.1) | 67 (6.3) | 19 (5.1) | 20 (7.8) |
| Missing | 99 | 29 | 13 | 13 |
| Resection margins | Positive | 107 (4.4) | 48 (4.6) | 12 (3.3) | 14 (5.5) | 0.58 |
| Negative | 2310 (95.6) | 1004 (95.4) | 356 (96.7) | 239 (94.5) |
| Missing | 142 | 37 | 16 | 18 |
| Progression to unresectable disease | Yes | 127 (5.0) | 24 (2.2) | 8 (2.1) | 8 (3.0) | <0.001 |
| No | 2432 (95.0) | 1064 (97.8) | 376 (97.9) | 263 (97.0) |
| Missing | 0 | 1 | 0 | 0 |
| Stage change  (from baseline to pathology) | Downstaged | 393 (18.1) | 200 (20.9) | 82 (23.9) | 53 (23.3) | 0.007 |
| No change | 1236 (56.9) | 501 (52.4) | 166 (48.4) | 108 (47.6) |
| Upstaged | 543 (25.0) | 255 (26.7) | 95 (27.7) | 66 (29.1) |
| Missing | 387 | 133 | 41 | 44 |
| New metastatic disease | Yes | 229 (10.1) | 63 (6.4) | 18 (5.1) | 17 (7.2) | <0.001 |
| No | 2036 (89.9) | 919 (93.6) | 334 (94.9) | 219 (92.8) |
| Missing | 294 | 107 | 32 | 35 |
| 30-day mortality | Died | 56 (2.2) | 17 (1.6) | 3 (0.8) | 6 (2.2) | 0.21 |
| Alive | 2502 (97.8) | 1072 (98.4) | 381 (99.2) | 265 (97.8) |
| Missing | 1 | 0 | 0 | 0 |
| 30-day major postoperative complications | Yes | 251 (9.8) | 100 (9.2) | 33 (8.6) | 30 (11.1) | 0.69 |
| No | 2307 (90.2) | 989 (90.8) | 351 (91.4) | 241 (88.9) |
| Missing | 1 | 0 | 0 | 0 |
| Urgency | Emergency | 585 (22.9) | 53 (4.9) | 14 (3.7) | 11 (4.1) | <0.001 |
| Elective | 1973 (77.1) | 1035 (95.1) | 368 (96.3) | 260 (95.9) |
| Missing | 1 | 1 | 2 | 0 |

Delay was measured from decision to treat to surgery. The total of patients reported in the table is 4303 (missing data for length of delay n=1). Data reported as n (%). Percentages expressed of column total. P values calculated using Chi-square test.