# Univariate Analysis for the VQI FBVAR Dataset

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## p-value

We use Welch's Two Sample t-test for continuous variables and Pearson's Chi-squared Test for categorical variables.

*Mann-Whitney U test*

## Descriptive statistics tables

**population of interest**

| | Overall |
|---|---|
| | (N=3510) |
| PRESENTATION | |
| Asymptomatic | 3026 (86.2%) |
| Symptomatic | 484 (13.8%) |

**Patient demographic and co-morbidities**

**Table: A comparison of the baseline demographic and co-morbidities characteristics for symptomatic versus asymptomatic patients who undergo the F-BEVAR procedure**

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| | (N=3026) | (N=484) | |
| AGE | | | |
| Mean (SD) | 73.1 (8.31) | 68.1 (11.7) | <0.001 |
| Median [Min, Max] | 74.0 [0, 90.0] | 70.0 [33.0, 90.0] | |
| AGECAT | | | |
| <40 | 4 (0.1%) | 15 (3.1%) | <0.001 |
| >89 | 26 (0.9%) | 5 (1.0%) | |
| 40-49 | 27 (0.9%) | 19 (3.9%) | |
| 50-59 | 122 (4.0%) | 59 (12.2%) | |
| 60-69 | 762 (25.2%) | 144 (29.8%) | |
| 70-79 | 1454 (48.1%) | 175 (36.2%) | |
| 80-89 | 631 (20.9%) | 67 (13.8%) | |
| GENDER | | | |
| female | 704 (23.3%) | 184 (38.0%) | <0.001 |
| male | 2322 (76.7%) | 300 (62.0%) | |
| ETHNICITY | | | |
| Hispanic or Latino | 122 (4.0%) | 20 (4.1%) | 1 |
| None Hispanic or Latino | 2900 (95.8%) | 464 (95.9%) | |
| Missing | 4 (0.1%) | 0 (0%) | |
| RACE | | | |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| American Indian or Alaskan Native | 6 (0.2%) | 1 (0.2%) | <0.001 |
| Asian | 71 (2.3%) | 10 (2.1%) | |
| Black or African American | 215 (7.1%) | 109 (22.5%) | |
| More than 1 race | 3 (0.1%) | 2 (0.4%) | |
| Native Hawaiian or other Pacific Islander | 4 (0.1%) | 2 (0.4%) | |
| Unknown/Other | 205 (6.8%) | 41 (8.5%) | |
| White | 2522 (83.3%) | 319 (65.9%) | |
| TRANSFER | | | |
| Hospital | 39 (1.3%) | 238 (49.2%) | <0.001 |
| No | 2985 (98.6%) | 245 (50.6%) | |
| Rehab Unit | 2 (0.1%) | 1 (0.2%) | |
| PRIMARYINSURER | | | |
| Commercial | 846 (28.0%) | 168 (34.7%) | <0.001 |
| Medicaid | 63 (2.1%) | 40 (8.3%) | |
| Medicare | 1675 (55.4%) | 214 (44.2%) | |
| Military/VA | 93 (3.1%) | 12 (2.5%) | |
| Non US Insurance | 207 (6.8%) | 12 (2.5%) | |
| Self Pay | 15 (0.5%) | 17 (3.5%) | |
| Missing | 127 (4.2%) | 21 (4.3%) | |
| LIVINGSTATUS | | | |
| Home | 3003 (99.2%) | 477 (98.6%) | 0.273 |
| Homeless | 2 (0.1%) | 1 (0.2%) | |
| Nursing home | 21 (0.7%) | 6 (1.2%) | |
| PREOP_FUNCSTATUS | | | |
| Assisted care | 49 (1.6%) | 18 (3.7%) | 0.024 |
| Bed bound | 4 (0.1%) | 1 (0.2%) | |
| Full | 2023 (66.9%) | 305 (63.0%) | |
| Light work | 643 (21.2%) | 105 (21.7%) | |
| Self care | 306 (10.1%) | 54 (11.2%) | |
| Missing | 1 (0.0%) | 1 (0.2%) | |
| PRIOR_CVD | | | |
| No | 2724 (90.0%) | 426 (88.0%) | 0.205 |
| Yes | 302 (10.0%) | 58 (12.0%) | |
| PRIOR_CAD | | | |
| No | 2188 (72.3%) | 345 (71.3%) | 0.68 |
| Yes | 838 (27.7%) | 139 (28.7%) | |
| PRIOR_CHF | | | |
| No | 2640 (87.2%) | 408 (84.3%) | 0.088 |
| Yes | 386 (12.8%) | 76 (15.7%) | |
| COPD | | | |
| No | 1893 (62.6%) | 305 (63.0%) | 0.886 |
| Yes | 1133 (37.4%) | 179 (37.0%) | |
| DIABETES | | | |
| No | 2477 (81.9%) | 397 (82.0%) | 0.98 |
| Yes | 549 (18.1%) | 87 (18.0%) | |
| PREOP_DIALYSIS | | | |
| No | 2980 (98.5%) | 453 (93.6%) | <0.001 |
| Yes | 46 (1.5%) | 31 (6.4%) | |
| HTN | | | |
| No | 340 (11.2%) | 42 (8.7%) | 0.115 |
| Yes | 2679 (88.5%) | 439 (90.7%) | |
| Missing | 7 (0.2%) | 3 (0.6%) | |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| PREOP_SMOKING | | | |
| No | 388 (12.8%) | 108 (22.3%) | <0.001 |
| Yes | 2638 (87.2%) | 376 (77.7%) | |
| PRIOR_CABG | | | |
| No | 2515 (83.1%) | 419 (86.6%) | 0.068 |
| Yes | 510 (16.9%) | 65 (13.4%) | |
| Missing | 1 (0.0%) | 0 (0%) | |
| PRIOR_PCI | | | |
| No | 2317 (76.6%) | 403 (83.3%) | 0.001 |
| Yes | 707 (23.4%) | 81 (16.7%) | |
| Missing | 2 (0.1%) | 0 (0%) | |
| PRIOR_ANEURREP | | | |
| No | 2370 (78.3%) | 351 (72.5%) | 0.005 |
| Yes | 656 (21.7%) | 133 (27.5%) | |
| STRESS | | | |
| No | 1519 (50.2%) | 385 (79.5%) | <0.001 |
| Yes | 1505 (49.7%) | 99 (20.5%) | |
| Missing | 2 (0.1%) | 0 (0%) | |
| PREOP_CREAT | | | |
| Mean (SD) | 1.18 (0.624) | 1.20 (0.776) | 0.554 |
| Median [Min, Max] | 1.08 [0, 14.4] | 1.00 [0.300, 7.50] | |
| Missing | 60 (2.0%) | 23 (4.8%) | |
| DC_ASA | | | |
| No | 429 (14.2%) | 78 (16.1%) | 0.2 |
| Yes | 2527 (83.5%) | 383 (79.1%) | |
| Missing | 70 (2.3%) | 23 (4.8%) | |
| DC_P2Y | | | |
| No | 1333 (44.1%) | 265 (54.8%) | <0.001 |
| Yes | 1622 (53.6%) | 196 (40.5%) | |
| Missing | 71 (2.3%) | 23 (4.8%) | |
| DC_STATIN | | | |
| No | 536 (17.7%) | 102 (21.1%) | 0.047 |
| Yes | 2420 (80.0%) | 359 (74.2%) | |
| Missing | 70 (2.3%) | 23 (4.8%) | |

**Operative Variables**

PATHOLOGY_DISSECT_ONSET_DAYS: Dissection Date minus Procedure Date (negative means prior to the procedure). This field is required if Pathology has one of ["Dissection", "Aneurysm from dissection"] AND *Presentation has one of ["Symptomatic", "Rupture"].* Otherwise, this field should be blank.

| | Asymptomatic | Symptomatic |
|---|---|---|
| | (N=3026) | (N=484) |
| PATHOLOGY_DISSECT_ONSET_DAYS | | |
| Mean (SD) | NA (NA) | -298 (1650) |
| Median [Min, Max] | NA [NA, NA] | -6.00 [-16500, 6.00] |
| Missing | 3026 (100%) | 367 (75.8%) |

**Table: A comparison of the operative characteristics for symptomatic versus asymptomatic patients who undergo the F-BEVAR procedure**

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| | (N=3026) | (N=484) | |
| PRIOR_AORSURG | | | |
| Both | 75 (2.5%) | 12 (2.5%) | 0.002 |
| Endo | 292 (9.6%) | 73 (15.1%) | |
| None | 2372 (78.4%) | 348 (71.9%) | |
| Open | 287 (9.5%) | 51 (10.5%) | |
| PATHOLOGY | | | |
| Aneurysm | 2826 (93.4%) | 314 (64.9%) | <0.001 |
| Aneurysm from dissection | 109 (3.6%) | 37 (7.6%) | |
| Dissection | 55 (1.8%) | 100 (20.7%) | |
| PAU/IMH | 36 (1.2%) | 33 (6.8%) | |
| PREOP_MAXAAADIA | | | |
| Mean (SD) | 60.8 (10.7) | 61.6 (18.6) | 0.371 |
| Median [Min, Max] | 60.0 [5.00, 130] | 60.0 [5.50, 126] | |
| Missing | 13 (0.4%) | 13 (2.7%) | |
| URGENCY | | | |
| Elective | 2989 (98.8%) | 243 (50.2%) | <0.001 |
| Emergent | 2 (0.1%) | 55 (11.4%) | |
| Urgent | 35 (1.2%) | 186 (38.4%) | |
| PATHOLOGY_ANEURYSM_TYPE | | | |
| Anastomotic | 39 (1.3%) | 6 (1.2%) | <0.001 |
| Degenerative, fusiform | 2453 (81.1%) | 264 (54.5%) | |
| Degenerative, saccular | 270 (8.9%) | 35 (7.2%) | |
| Intercostal or visceral patch | 16 (0.5%) | 1 (0.2%) | |
| Prior trauma | 1 (0.0%) | 3 (0.6%) | |
| Missing | 247 (8.2%) | 175 (36.2%) | |
| PATHOLOGY_DISSECT_TYPE | | | |
| Acute, <= 30 days | 10 (0.3%) | 85 (17.6%) | <0.001 |
| Chronic, >30 days | 154 (5.1%) | 52 (10.7%) | |
| Missing | 2862 (94.6%) | 347 (71.7%) | |
| PROXZONE_DISEASE | | | |
| Mean (SD) | 6.60 (1.82) | 4.91 (2.18) | <0.001 |
| Median [Min, Max] | 7.00 [2.00, 9.00] | 5.00 [2.00, 9.00] | |
| GENHIST | | | |
| Ehlers-Danlos | 1 (0.0%) | 2 (0.4%) | 0.042 |
| Loeys-Dietz | 1 (0.0%) | 0 (0%) | |
| Marfans | 11 (0.4%) | 3 (0.6%) | |
| Non-specific | 84 (2.8%) | 8 (1.7%) | |
| None | 2929 (96.8%) | 471 (97.3%) | |
| DISTZONE_DISEASE | | | |
| 10B | 600 (19.8%) | 63 (13.0%) | <0.001 |
| 10L | 131 (4.3%) | 26 (5.4%) | |
| 10R | 182 (6.0%) | 31 (6.4%) | |
| 11B | 56 (1.9%) | 12 (2.5%) | |
| 11L | 31 (1.0%) | 8 (1.7%) | |
| 11R | 36 (1.2%) | 10 (2.1%) | |
| 3 | 10 (0.3%) | 3 (0.6%) | |
| 4 | 37 (1.2%) | 14 (2.9%) | |
| 5 | 51 (1.7%) | 38 (7.9%) | |
| 6 | 21 (0.7%) | 10 (2.1%) | |
| 7 | 15 (0.5%) | 23 (4.8%) | |
| 8 | 145 (4.8%) | 32 (6.6%) | |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| 9 | 1711 (56.5%) | 214 (44.2%) | |
| extent | | | |
| Juxtarenal AAA | 1205 (39.8%) | 83 (17.1%) | <0.001 |
| Type 1 TAAA | 84 (2.8%) | 54 (11.2%) | |
| Type 2 TAAA | 165 (5.5%) | 103 (21.3%) | |
| Type 3 TAAA | 477 (15.8%) | 95 (19.6%) | |
| Type 4 TAAA | 871 (28.8%) | 104 (21.5%) | |
| Type 5 TAAA | 44 (1.5%) | 13 (2.7%) | |
| Missing | 180 (5.9%) | 32 (6.6%) | |
| ANESTHESIA | | | |
| General | 2991 (98.8%) | 474 (97.9%) | 0.095 |
| Local | 21 (0.7%) | 8 (1.7%) | |
| Regional | 14 (0.5%) | 2 (0.4%) | |
| CONTRAST | | | |
| Mean (SD) | 123 (70.8) | 119 (74.0) | 0.284 |
| Median [Min, Max] | 110 [0, 677] | 100 [0, 501] | |
| Missing | 56 (1.9%) | 11 (2.3%) | |
| EBL | | | |
| Mean (SD) | 435 (719) | 375 (446) | 0.015 |
| Median [Min, Max] | 250 [0, 25000] | 200 [0, 3000] | |
| Missing | 32 (1.1%) | 8 (1.7%) | |
| FLUOROTIME | | | |
| Mean (SD) | 72.1 (39.2) | 59.7 (43.7) | <0.001 |
| Median [Min, Max] | 64.4 [1.00, 320] | 52.3 [4.00, 285] | |
| Missing | 147 (4.9%) | 15 (3.1%) | |
| INTRAOP_PRBC | | | |
| Mean (SD) | 0.665 (4.11) | 0.983 (1.95) | 0.006 |
| Median [Min, Max] | 0 [0, 200] | 0 [0, 15.0] | |
| Missing | 2 (0.1%) | 2 (0.4%) | |
| TOTALPROCTIME | | | |
| Mean (SD) | 252 (113) | 247 (135) | 0.431 |
| Median [Min, Max] | 230 [25.0, 911] | 213 [41.0, 852] | |
| Missing | 2 (0.1%) | 1 (0.2%) | |
| IVUSTEE | | | |
| Both | 27 (0.9%) | 15 (3.1%) | <0.001 |
| IVUS | 512 (16.9%) | 190 (39.3%) | |
| No | 2445 (80.8%) | 270 (55.8%) | |
| TEE | 32 (1.1%) | 8 (1.7%) | |
| Missing | 10 (0.3%) | 1 (0.2%) | |
| ACCESS | | | |
| Open | 1086 (35.9%) | 170 (35.1%) | 0.315 |
| Percutaneous | 1620 (53.5%) | 226 (46.7%) | |
| Missing | 320 (10.6%) | 88 (18.2%) | |
| ARMNECK_ACCESS | | | |
| For both | 243 (8.0%) | 73 (15.1%) | <0.001 |
| For branch treatment | 514 (17.0%) | 140 (28.9%) | |
| For femoral-brachial wire | 114 (3.8%) | 30 (6.2%) | |
| No | 2155 (71.2%) | 241 (49.8%) | |
| AORDEV_NUM | | | |
| Mean (SD) | 2.25 (0.918) | 2.41 (1.20) | 0.006 |
| Median [Min, Max] | 2.00 [1.00, 6.00] | 2.00 [1.00, 6.00] | |
| AORDEV_CMOD | | | |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| No | 791 (26.1%) | 171 (35.3%) | <0.001 |
| Yes | 2235 (73.9%) | 313 (64.7%) | |
| DEV_GTYPE | | | |
| Custom | 1581 (52.2%) | 97 (20.0%) | <0.001 |
| Physician modified | 577 (19.1%) | 188 (38.8%) | |
| Standard | 868 (28.7%) | 199 (41.1%) | |
| ILIACDEV_END_R | | | |
| Common | 1555 (51.4%) | 133 (27.5%) | 0.085 |
| External, Unintended | 18 (0.6%) | 3 (0.6%) | |
| External,Intended | 200 (6.6%) | 28 (5.8%) | |
| None | 24 (0.8%) | 1 (0.2%) | |
| Missing | 1229 (40.6%) | 319 (65.9%) | |
| ILIACDEV_END_L | | | |
| Common | 1595 (52.7%) | 130 (26.9%) | 0.168 |
| External, Unintended | 9 (0.3%) | 2 (0.4%) | |
| External,Intended | 157 (5.2%) | 20 (4.1%) | |
| None | 21 (0.7%) | 1 (0.2%) | |
| Missing | 1244 (41.1%) | 331 (68.4%) | |
| BRANCH_STAGED | | | |
| No | 2854 (94.3%) | 442 (91.3%) | 0.009 |
| Yes | 167 (5.5%) | 42 (8.7%) | |
| Missing | 5 (0.2%) | 0 (0%) | |
| BRANCH_LSUB | | | |
| No | 2851 (94.2%) | 354 (73.1%) | <0.001 |
| Yes | 175 (5.8%) | 130 (26.9%) | |
| BRANCH_CELIAC | | | |
| No | 1399 (46.2%) | 125 (25.8%) | <0.001 |
| Yes | 1627 (53.8%) | 359 (74.2%) | |
| BRANCH_SMA | | | |
| No | 487 (16.1%) | 83 (17.1%) | 0.605 |
| Yes | 2539 (83.9%) | 401 (82.9%) | |
| BRANCH_RRENAL | | | |
| No | 105 (3.5%) | 80 (16.5%) | <0.001 |
| Yes | 2921 (96.5%) | 404 (83.5%) | |
| BRANCH_LRENAL | | | |
| No | 105 (3.5%) | 80 (16.5%) | <0.001 |
| Yes | 2921 (96.5%) | 404 (83.5%) | |
| ANESTHESIA_GEN_TIMEEXT | | | |
| <12 hrs | 175 (5.8%) | 33 (6.8%) | <0.001 |
| >24 hrs | 67 (2.2%) | 41 (8.5%) | |
| 12-24 hrs | 101 (3.3%) | 24 (5.0%) | |
| In OR | 2641 (87.3%) | 374 (77.3%) | |
| Missing | 42 (1.4%) | 12 (2.5%) | |
| POSTOP_SPINALDRAIN | | | |
| None | 2403 (79.4%) | 290 (59.9%) | <0.001 |
| Post-op for spinal ischemia | 19 (0.6%) | 5 (1.0%) | |
| Post-op, prophylactic | 13 (0.4%) | 6 (1.2%) | |
| Pre-op | 591 (19.5%) | 183 (37.8%) | |
| lrenal | | | |
| Chimney | 35 (1.2%) | 10 (2.1%) | <0.001 |
| None | 323 (10.7%) | 78 (16.1%) | |
| Occluded/Covered | 76 (2.5%) | 25 (5.2%) | |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| Scallop/Fen/Branch | 2480 (82.0%) | 290 (59.9%) | |
| Missing | 112 (3.7%) | 81 (16.7%) | |
| rrenal | | | |
| Chimney | 32 (1.1%) | 9 (1.9%) | <0.001 |
| None | 357 (11.8%) | 96 (19.8%) | |
| Occluded/Covered | 72 (2.4%) | 22 (4.5%) | |
| Scallop/Fen/Branch | 2374 (78.5%) | 265 (54.8%) | |
| Missing | 191 (6.3%) | 92 (19.0%) | |
| sma | | | |
| Chimney | 18 (0.6%) | 6 (1.2%) | <0.001 |
| None | 267 (8.8%) | 76 (15.7%) | |
| Occluded/Covered | 3 (0.1%) | 0 (0%) | |
| Scallop/Fen/Branch | 2243 (74.1%) | 319 (65.9%) | |
| Missing | 495 (16.4%) | 83 (17.1%) | |
| celiac | | | |
| Chimney | 9 (0.3%) | 3 (0.6%) | 0.014 |
| None | 381 (12.6%) | 94 (19.4%) | |
| Occluded/Covered | 69 (2.3%) | 28 (5.8%) | |
| Scallop/Fen/Branch | 1163 (38.4%) | 234 (48.3%) | |
| Missing | 1404 (46.4%) | 125 (25.8%) | |
| lsub | | | |
| Chimney | 6 (0.2%) | 0 (0%) | 0.014 |
| None | 15 (0.5%) | 10 (2.1%) | |
| Occluded/Covered | 3 (0.1%) | 10 (2.1%) | |
| Scallop/Fen/Branch | 125 (4.1%) | 99 (20.5%) | |
| Missing | 2877 (95.1%) | 365 (75.4%) | |

The levels of `lrenal`,`rrenal`,`sma`,`celiac`,`lsub` are really messy.

75 patients have at least one 'Chimney'.

206 patients have at least one 'Occluded/Covered'.

3510 patients have at least one 'Scallop/Fen/Branch'.

0 patients have all 'None'.

**Outcomes**

**Table 3: A comparison of the long term follow-up outcomes for symptomatic versus asymptomatic patients who undergo the F-BEVAR procedure**

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| | (N=3026) | (N=484) | |
| DEAD | | | |
| No | 2651 (87.6%) | 389 (80.4%) | <0.001 |
| Yes | 375 (12.4%) | 95 (19.6%) | |
| PROC_SURVIVALDAYS | | | |
| Mean (SD) | 787 (769) | 673 (747) | 0.002 |
| Median [Min, Max] | 484 [0, 3390] | 400 [0, 3290] | |
| LTF_NUM_REINT | | | |
| Mean (SD) | 1.10 (0.299) | 1.17 (0.384) | 0.332 |
| Median [Min, Max] | 1.00 [1.00, 2.00] | 1.00 [1.00, 2.00] | |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| Missing | 2844 (94.0%) | 455 (94.0%) | |

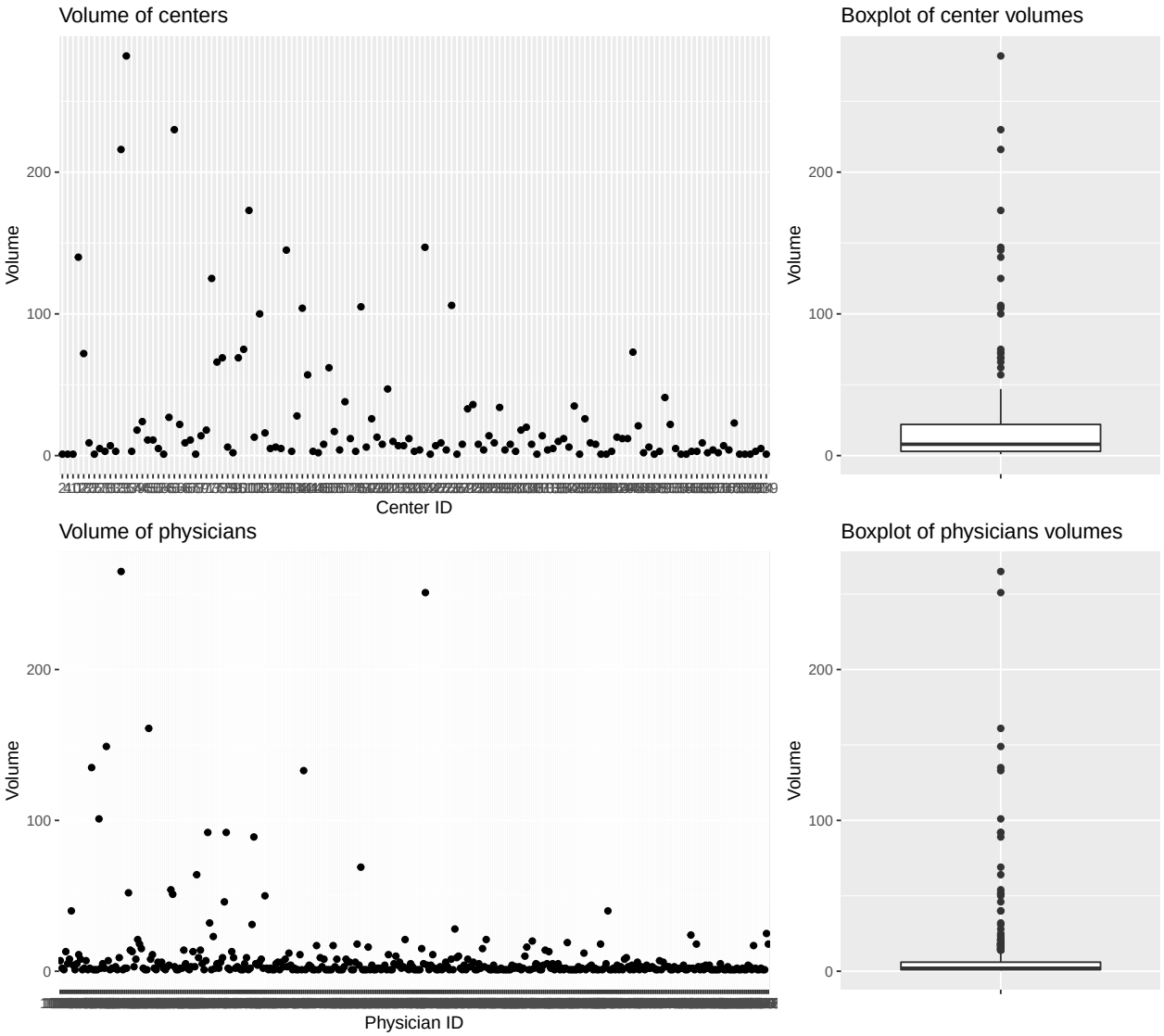
**Table 3: A comparison of the procedure outcomes for symptomatic versus asymptomatic patients who undergo the F-BEVAR procedure**

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| | (N=3026) | (N=484) | |
| TOTAL_LOS | | | |
| Mean (SD) | 6.40 (21.2) | 12.9 (28.0) | <0.001 |
| Median [Min, Max] | 3.00 [0, 372] | 8.00 [1.00, 376] | |
| POSTOP_LOS | | | |
| Mean (SD) | 5.62 (18.6) | 8.04 (8.52) | <0.001 |
| Median [Min, Max] | 3.00 [0, 372] | 5.00 [0, 80.0] | |
| AORDEV_TECHSUCC | | | |
| No | 78 (2.6%) | 17 (3.5%) | 0.231 |
| Yes | 2669 (88.2%) | 403 (83.3%) | |
| Missing | 279 (9.2%) | 64 (13.2%) | |
| CONVTOOPEN | | | |
| No | 3016 (99.7%) | 483 (99.8%) | 0.988 |
| Yes | 10 (0.3%) | 1 (0.2%) | |
| LEAKATCOMP_NONE | | | |
| No | 981 (32.4%) | 105 (21.7%) | 0.189 |
| Yes | 1893 (62.6%) | 240 (49.6%) | |
| Missing | 152 (5.0%) | 139 (28.7%) | |
| ICUSTAY | | | |
| Mean (SD) | 2.12 (4.35) | 4.77 (6.28) | <0.001 |
| Median [Min, Max] | 1.00 [0, 85.0] | 3.00 [0, 49.0] | |
| Missing | 3 (0.1%) | 1 (0.2%) | |
| POSTOP_PRBC | | | |
| Mean (SD) | 1.22 (4.07) | 1.91 (3.85) | <0.001 |
| Median [Min, Max] | 0 [0, 77.0] | 0 [0, 38.0] | |
| Missing | 2 (0.1%) | 0 (0%) | |
| POSTOP_VASO | | | |
| No | 2493 (82.4%) | 333 (68.8%) | <0.001 |
| Yes | 531 (17.5%) | 151 (31.2%) | |
| Missing | 2 (0.1%) | 0 (0%) | |
| POSTOP_HIGHCREAT | | | |
| Mean (SD) | 1.45 (1.10) | 1.88 (1.88) | <0.001 |
| Median [Min, Max] | 1.19 [0.0100, 15.4] | 1.20 [0.450, 11.8] | |
| Missing | 16 (0.5%) | 4 (0.8%) | |
| POSTOP_COMPLICATIONS | | | |
| No | 2410 (79.6%) | 345 (71.3%) | <0.001 |
| Yes | 615 (20.3%) | 139 (28.7%) | |
| Missing | 1 (0.0%) | 0 (0%) | |
| ACCESS_COMPLICATION | | | |
| No | 3026 (100%) | 484 (100%) | <0.001 |
| POSTOP_AH | | | |
| No | 2725 (90.1%) | 436 (90.1%) | 1 |
| Yes | 301 (9.9%) | 48 (9.9%) | |
| POSTOP_CEREBROSX | | | |
| Mean (SD) | 0.0731 (0.642) | 0.153 (0.933) | 0.07 |

| | Asymptomatic | Symptomatic | P-value |
|---|---|---|---|
| Median [Min, Max] | 0 [0, 7.00] | 0 [0, 7.00] | |
| Missing | 1 (0.0%) | 0 (0%) | |
| POSTOP_RESPIRATORY | | | |
| No | 2901 (95.9%) | 440 (90.9%) | <0.001 |
| Yes | 125 (4.1%) | 44 (9.1%) | |
| POSTOP_DIALYSIS | | | |
| No | 2937 (97.1%) | 438 (90.5%) | <0.001 |
| Yes | 50 (1.7%) | 24 (5.0%) | |
| Missing | 39 (1.3%) | 22 (4.5%) | |
| POSTOP_ARMEMBO | | | |
| No | 3013 (99.6%) | 480 (99.2%) | 0.415 |
| Yes | 13 (0.4%) | 4 (0.8%) | |
| POSTOP_LEGEMBO | | | |
| No | 2962 (97.9%) | 464 (95.9%) | 0.011 |
| Yes | 64 (2.1%) | 20 (4.1%) | |
| POSTOP_LEGCOMPART | | | |
| No | 2999 (99.1%) | 480 (99.2%) | 1 |
| Yes | 27 (0.9%) | 4 (0.8%) | |
| POSTOP_INTISCH | | | |
| Mean (SD) | 0.0357 (0.327) | 0.0599 (0.444) | 0.25 |
| Median [Min, Max] | 0 [0, 4.00] | 0 [0, 4.00] | |
| POSTOP_RENALISCH | | | |
| No | 2937 (97.1%) | 467 (96.5%) | 0.59 |
| Yes | 89 (2.9%) | 17 (3.5%) | |
| POSTOP_SPINAL_ISCHEMIA | | | |
| No | 2940 (97.2%) | 453 (93.6%) | <0.001 |
| Yes | 86 (2.8%) | 31 (6.4%) | |
| RETX_R_RTOR | | | |
| No | 2844 (94.0%) | 434 (89.7%) | <0.001 |
| Yes | 181 (6.0%) | 50 (10.3%) | |
| Missing | 1 (0.0%) | 0 (0%) | |
| DC_STATUS | | | |
| Dead | 69 (2.3%) | 22 (4.5%) | <0.001 |
| Home | 2566 (84.8%) | 350 (72.3%) | |
| Homeless | 1 (0.0%) | 1 (0.2%) | |
| Nursing Home | 107 (3.5%) | 38 (7.9%) | |
| Other Hospital | 24 (0.8%) | 17 (3.5%) | |
| Rehab Unit | 259 (8.6%) | 56 (11.6%) | |
| BRANCH_POST | | | |
| No | 2611 (86.3%) | 364 (75.2%) | <0.001 |
| Yes | 412 (13.6%) | 119 (24.6%) | |
| Missing | 3 (0.1%) | 1 (0.2%) | |

**Volume Variables**

Volume Variables: `REGIONID`, `CENTERID`, `PHYSICIANID`




19 regions, 133 centers, 385 physicians.

Quantiles of centers' volume: 1, 3, 8, 22, 282

Quantiles of physicians' volume: 1, 1, 2, 6, 265

## Code Appendix

```
knitr::opts_chunk$set(echo = FALSE,message = FALSE,warning = FALSE,fig.width = 10)
library(tidyverse)
library(table1)
library(survival)
library(Hmisc)
library(ggplot2)
library(ggpubr)

## ------------- working directories for Lily ----------
wd_lily = '/Users/hanyiwang/Desktop/Comparative-analysis-of-treatments-of-CAA'
path_lily = c("../data/FBVAR.csv")


## ------------- working directories for Jenn ----------
#wd_jenn = '/Users/jenniferci/Desktop/Comparative-analysis-of-treatments-of-CAA'
#path_jenn = c(
#  "/Users/jenniferci/Desktop/Comparative-analysis-of-treatments-of-CAA/TEVAR_International_20210712/TE
#  "/Users/jenniferci/Desktop/Comparative-analysis-of-treatments-of-CAA/TEVAR_International_20210712/TE
#  "/Users/jenniferci/Desktop/Comparative-analysis-of-treatments-of-CAA/TEVAR_International_20210901/TE
#  "/Users/jenniferci/Desktop/Comparative-analysis-of-treatments-of-CAA/TEVAR_International_20210901/TE

## ------------- read data ----------
setwd(wd_lily)
FBVAR = read.csv(path_lily)

#setwd(wd_jenn)
#TEVAR_LTF_07 = read.csv(path_jenn[1])
#TEVAR_PROC_07 = read.csv(path_jenn[2])
#TEVAR_LTF_09 = read.csv(path_jenn[3])
#TEVAR_PROC_09 = read.csv(path_jenn[4])
pvalue <- function(x, ...) {
    y <- unlist(x)
    g <- factor(rep(1:length(x), times=sapply(x, length)))
    if (is.numeric(y)) {
        # For numeric variables, Welch's Two Sample t-test
        p <- t.test(y ~ g)$p.value
    } else {
        # For categorical variables, Pearson's Chi-squared Test
        p <- chisq.test(table(y, g))$p.value
    }
    c("", sub("<", "&lt;", format.pval(p, digits=3, eps=0.001)))
}

## ------------- variables labels and units----------
# var.labels = c(AGE="Age", AGECAT="Age category")
# label(FBVAR) = as.list(var.labels[match(names(FBVAR), names(var.labels))])
#
# units(FBVAR$AGE) = "years"

## ------------- population of interest ----------
table1(~  PRESENTATION, data = FBVAR)
```

```
## ------------- table: Patient demographic and co-morbidities----------

table1(~   AGE+AGECAT+GENDER+ETHNICITY+ RACE+ TRANSFER+ PRIMARYINSURER+ LIVINGSTATUS+ PREOP_FUNCSTATUS+
       | PRESENTATION, data = FBVAR,overall=F, extra.col=list(`P-value`=pvalue))
# PATHOLOGY_DISSECT_ONSET_DAYS?

table1(~ PATHOLOGY_DISSECT_ONSET_DAYS | PRESENTATION, data = FBVAR,overall=F)


## ------------- table:  Operative Variables----------
table1(~ PRIOR_AORSURG+ PATHOLOGY+ PREOP_MAXAAADIA+ URGENCY+ PATHOLOGY_ANEURYSM_TYPE+ PATHOLOGY_DISSECT
       | PRESENTATION, data = FBVAR,overall=F, extra.col=list(`P-value`=pvalue))

## ------------- table: primary outcomes----------
table1(~ DEAD+PROC_SURVIVALDAYS+LTF_NUM_REINT | PRESENTATION, data = FBVAR,overall=F, extra.col=list(`P
## ------------- table: secondary outcomes----------
table1(~ TOTAL_LOS+ POSTOP_LOS+ AORDEV_TECHSUCC+ CONVTOOPEN+ LEAKATCOMP_NONE+ ICUSTAY+ POSTOP_PRBC+ POS
       | PRESENTATION, data = FBVAR,overall=F, extra.col=list(`P-value`=pvalue))

## ------------- Survival curves----------

## ------------- clustering variables----------

#FBVAR %>% select(REGIONID) %>% table()
#FBVAR %>% select(CENTERID) %>% table()
#FBVAR %>% select(PHYSICIANID) %>% table()

## ------------- plots of volume----------
center_vol = as.data.frame(FBVAR %>% select(CENTERID) %>% table())
phys_vol = as.data.frame(FBVAR %>% select(PHYSICIANID) %>% table())

p1 = ggplot(data = center_vol, aes(x=CENTERID, y=Freq)) +
  geom_point() +
  labs(title = 'Volume of centers',x='Center ID',y='Volume')

p2 = ggplot(data = center_vol, aes(x='', y=Freq)) +
  geom_boxplot() +
  labs(title = 'Boxplot of center volumes',x='',y='Volume')

print(ggarrange(p1, p2, widths = c(20,10),ncol = 2, nrow = 1, align = "h"))

p3 = ggplot(data = phys_vol, aes(x=PHYSICIANID, y=Freq)) +
  geom_point() +
  labs(title = 'Volume of physicians',x='Physician ID',y='Volume')

p4 = ggplot(data = phys_vol, aes(x='', y=Freq)) +
  geom_boxplot() +
  labs(title = 'Boxplot of physicians volumes',x='',y='Volume')

print(ggarrange(p3, p4, widths = c(20,10),ncol = 2, nrow = 1, align = "h"))
```