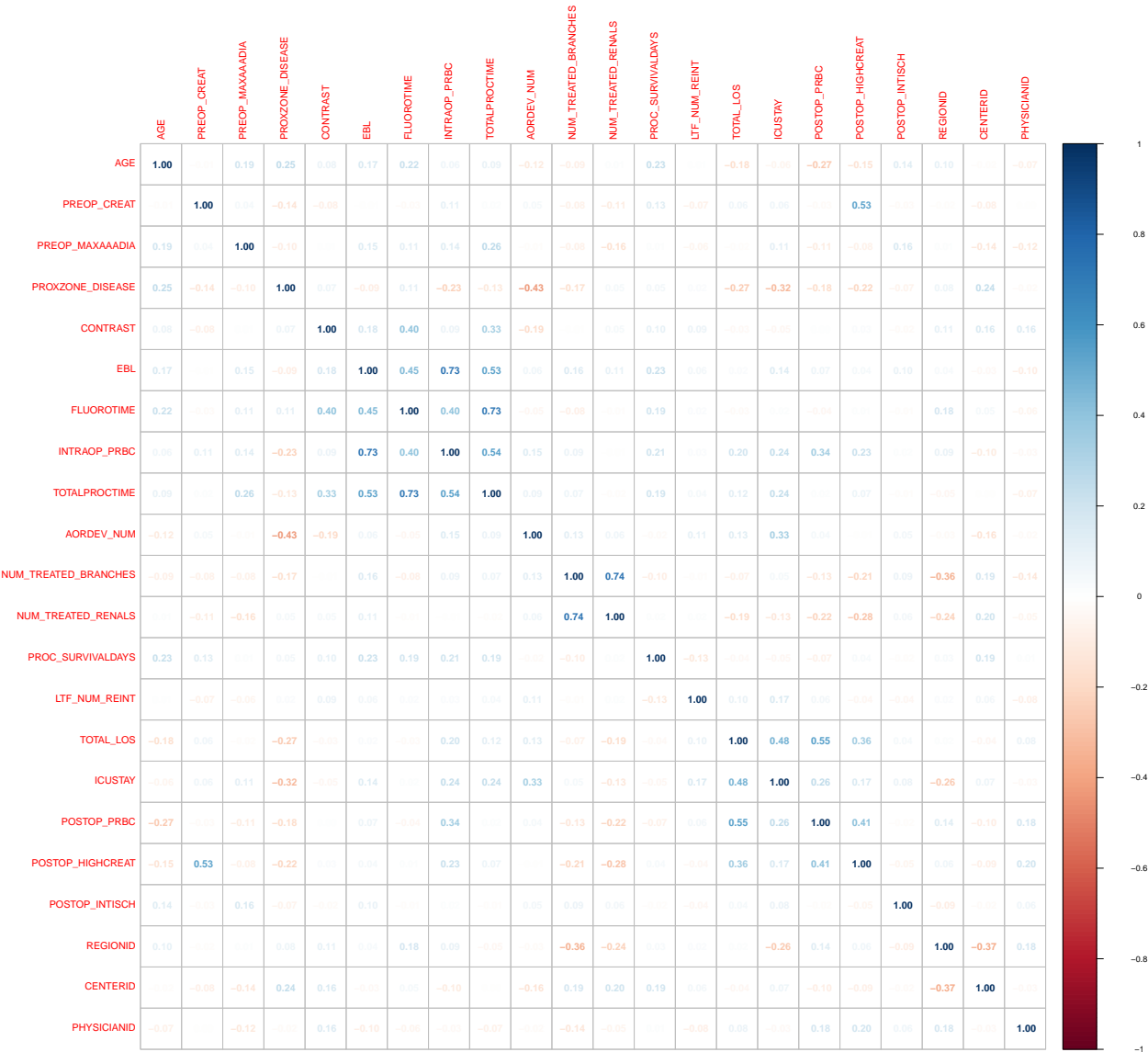


Adjustment Analysis for the VQI FBVAR Dataset

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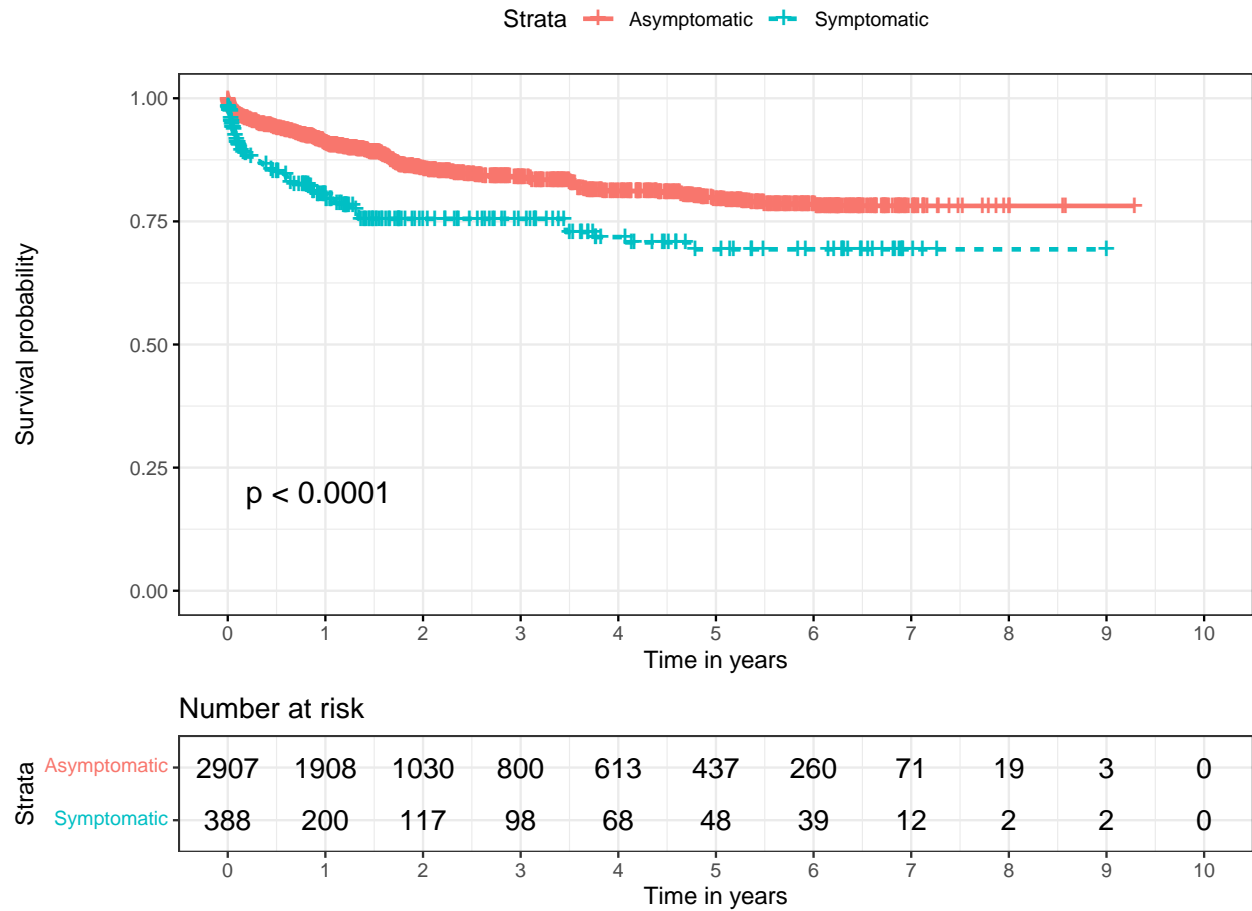
Correlation matrix



Survival analysis

Unadjusted survival curves. Time scale changed from calendar days to calendar years. Used log rank test to produce p-value. Median survival never reached.

Any changes needed? (e.g, time scale, colors, change to at risk table, add number of censored and/or uncensored events, etc.)



Univariate (unadjusted) and Multivariate (adjusted) Cox Proportional Hazards Models.

Adjusted for the following variables: AGE CAT, GENDER, PREOP_SMOKING, PRIOR_AORSURG, PRIOR_CHF, PATHOLOGY, extent, POSTOP_LOS, POSTOP_COMPLICATIONS, POSTOP_DIALYSIS, POSTOP_LEGEMBO, POSTOP_CEREBROX, POSTOP_RESPIRATORY, POSTOP_SPINAL_ISCHEMIA, RETX_R_RTOR, and BRANCH_POST.

Hazard ratio went from 1.88 to 1.58 after adjustment (0.3 difference).

	Hazard Ratio Estimate	Lower 95% CI	Upper 95% CI	P-value
Symptomatic (Unadjusted)	1.88	1.48	2.40	<0.001
Symptomatic (Adjusted)	1.58	1.09	2.27	0.01

Code Appendix

```
knitr::opts_chunk$set(echo = FALSE,message = FALSE,warning = FALSE)
knitr::opts_chunk$set(fig.width=20, fig.height=20)

library(tidyverse)
library(table1)
library(survival)
library(Hmisc)
library(ggplot2)
library(ggpubr)
library(corrplot)
library(caret)
library(survminer)
library(knitr)
library(kableExtra)

## ----- 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 =
# path_jenn =

## ----- working directories for Thu -----
wd_thu = '/Users/thuvu/Desktop/Comparative-analysis-of-treatments-of-CAA'
path_thu = c("FBVAR.csv")

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

# setwd(wd_jenn)
# FBVAR = read.csv(path_jenn)

setwd(wd_thu)
FBVAR = read.csv(path_thu)

## Correlation matrix
matrix <- FBVAR %>%
  select_if(is.numeric) %>% subset(., select = -1)%>%
  cor(.,use = "complete")

corrplot(matrix, method="number")

## Survival analysis
# event = 1 for uncensored (Dead), event = 0 for censored (Alive)
FBVAR$event <- ifelse(FBVAR$DEAD=="TRUE", 1, 0)

tte <- FBVAR %>% with(Surv(PROC_SURVIVALDAYS/365, event))
```

```

# compute survival curves
fit <- survfit(tte ~ PRESENTATION, data=FBVAR)

# plotting Kaplan-Meier Curves
ggsurvplot(fit,
            pval = TRUE,
            risk.table = TRUE,
            linetype = "strata",
            surv.median.line = "hv",
            ggtheme = theme_bw(),
            xlab = "Time in years",
            legend.labs = c("Asymptomatic", "Symptomatic"),
            break.time.by=1)

# Unadjusted survival model
mod.cox1 <- coxph(tte ~ PRESENTATION, data=FBVAR)

tab1 <- data.frame(
  Estimate = round(summary(mod.cox1)$conf.int[1],2),
  "Lower 95% CI" = round(summary(mod.cox1)$conf.int[3],2),
  "Upper 95% CI" = round(summary(mod.cox1)$conf.int[4],2),
  "P-value" = "<0.001"
)
rownames(tab1) <- c("Symptomatic (Unadjusted)")

# Adjusted survival model
mod.cox2 <- coxph(tte ~ PRESENTATION + cluster(CENTERID) + AGECAT + GENDER + PREOP_SMOKING
                  + PRIOR_AORSURG + PRIOR_CHF + PATHOLOGY + extent + POSTOP_LOS
                  + POSTOP_COMPLICATIONS + POSTOP_DIALYSIS + POSTOP_LEGEMBO + POSTOP_CEREBROSX
                  + POSTOP_RESPIRATORY + POSTOP_SPINAL_ISCHEMIA + RETX_R_RTOR + BRANCH_POST,
                  data=FBVAR)

tab2 <- data.frame(
  Estimate = round(summary(mod.cox2)$conf.int[1],2),
  "Lower 95% CI" = round(summary(mod.cox2)$conf.int[1,3],2),
  "Upper 95% CI" = round(summary(mod.cox2)$conf.int[1,4],2),
  "P-value" = "0.01"
)
rownames(tab2) <- c("Symptomatic (Adjusted)")

t <- rbind(tab1, tab2)
colnames(t) <- c("Hazard Ratio Estimate", "Lower 95% CI", "Upper 95% CI",
                "P-value")

kable(t)

```