Supplementary Table S2. List of R packages used and statistical analysis plan.

```
library(readr)

library(dplyr)

library(tidyverse)

library(tidymodels)

library(magrittr)

library(knitr)

library(ggplot2)

library(GGally)

library(themis)

library(naniar)

library(UpSetR)

library(car)

library(caret)

library(readr)

library(doParallel)

library(VIM)

library(data.table)

library(MatchIt)

library(visdat)

library(naniar)

library(UpSetR)

library(margins)
```

Nearest neighbour matching

Each woman was matched to 4 men, without replacement, adjusting for pre-selected variables: age, severity of aortic aneurysmal disease (e.g., ASI and symptomatic status), severity of cardiovascular disease (e.g., presence of concomitant ischaemic heart disease (IHD),

previous stroke, peripheral arterial disease (PAD)), cardiovascular risk factors (e.g., smoking history, hypertension, diabetes and chronic renal failure), medications (e.g., antiplatelet and statin), treatment modality (exact matching) and treatment centre. Following matching, quality was confirmed through examination of covariate balance (e.g., standardised mean difference (SMD) with a value of <0.1 considered a reasonable covariate match, love plots and maximum eCDF (empirical cumulative distribution function) score. The quality of matching was also compared for different ratios of women:men to ensure matching of sufficient quality was conducted while retaining the most data. As we wished to retain all women in the matched cohort, a matching calliper (e.g., 2 SD) was not applied.

No-adjustment made for multiple significance testing, however, grouping of "familiar" variables (e.g., visceral vessel diameters, calcification volume) was used to guide the level of confidence, with greater weight given to consistent findings across a "familiar" variable grouping.