Age Cut-Off For The Loss Of Survival Benefit From Use Of Radial Artery As A Second Conduit For CABG

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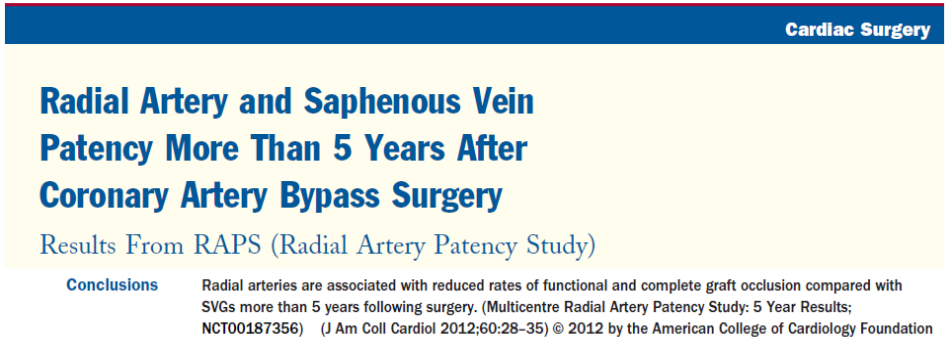
No disclosures

Background

- **RA: attractive + remarkably simple alternative to RIMA for multiple arterial grafting**

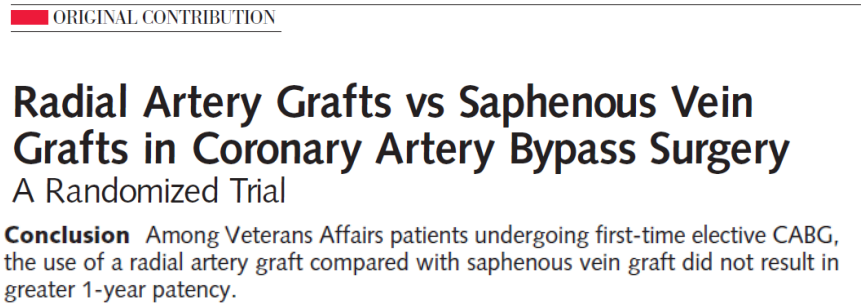


Cardiac Surgery

Radial Artery and Saphenous Vein Patency More Than 5 Years After Coronary Artery Bypass Surgery

Results From RAPS (Radial Artery Patency Study)

Conclusions Radial arteries are associated with reduced rates of functional and complete graft occlusion compared with SVGs more than 5 years following surgery. (Multicentre Radial Artery Patency Study: 5 Year Results; NCT00187356) (J Am Coll Cardiol 2012;60:28–35) © 2012 by the American College of Cardiology Foundation



ORIGINAL CONTRIBUTION

Radial Artery Grafts vs Saphenous Vein Grafts in Coronary Artery Bypass Surgery

A Randomized Trial

Conclusion Among Veterans Affairs patients undergoing first-time elective CABG, the use of a radial artery graft compared with saphenous vein graft did not result in greater 1-year patency.

- **RCTs: discordant results on the angiographic superiority of RA over SVG**

Background

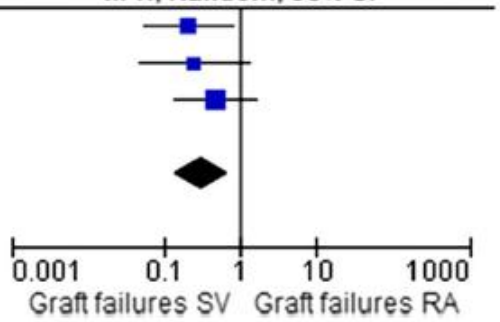
- **Meta-analyses of patency: RA > SVG**

Cao et al — Acquired Cardiovascular Disease

Angiographic outcomes of radial artery versus saphenous vein in coronary artery bypass graft surgery: A meta-analysis of randomized controlled trials

Study or Subgroup	RA Events	RA Total	SV Events	SV Total	Weight	Odds Ratio M-H, Random, 95% CI
Collins	3	59	9	44	34.2%	0.21 [0.05, 0.82]
Gaudino	2	40	7	40	24.0%	0.25 [0.05, 1.28]
Hayward	4	51	9	59	41.8%	0.47 [0.14, 1.64]
Total (95% CI)		**150**		**143**	**100.0%**	**0.31 [0.14, 0.68]**
Total events	9		25			

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.83$, df = 2 (P = 0.66); $I^2 = 0\%$
Test for overall effect: Z = 2.89 (P = 0.004)



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Background

2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery: Executive Summary

CLASS IIb

1. Complete arterial revascularization may be reasonable in patients less than or equal to 60 years of age with few or no comorbidities. *(Level of Evidence: C)*

- **Little guidance on arterial graft choice**
- **Impact on survival?**
- **Extended across all pts age groups?**

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Aims

- To investigate the impact on survival from RA use as a second conduit for CABG with or without additional SVGs

- To investigate the relationship between RA use and late survival with increasing pts' age

Methods

- Analysis of data collected in real-time between May 1996 to May 2012 at Papworth Hospital
- All-cause mortality data from UK Office for National Statistics
- Inclusion criteria:
  - Isolated, first-time CABG
  - MVD requiring ≥ 2 grafts
  - Pedicled LIMA – LAD
  - RA ± additional SVG vs SVGs only to complete SR
- Primary end-point: all-cause death

Statistics

- Propensity matching
- caliper: 2 SD logit PS
- balance: std mean diff (>0.10 unbalanced)
- Additional adj if not yet balanced after matching
- Multi-phase model (log-linear and Weibull) for mortality hazard function in the matched sample across patient age groups
- R (R Development Core Team, 2007)
- “nonrandom” package (Susanne Stampf, 2012).

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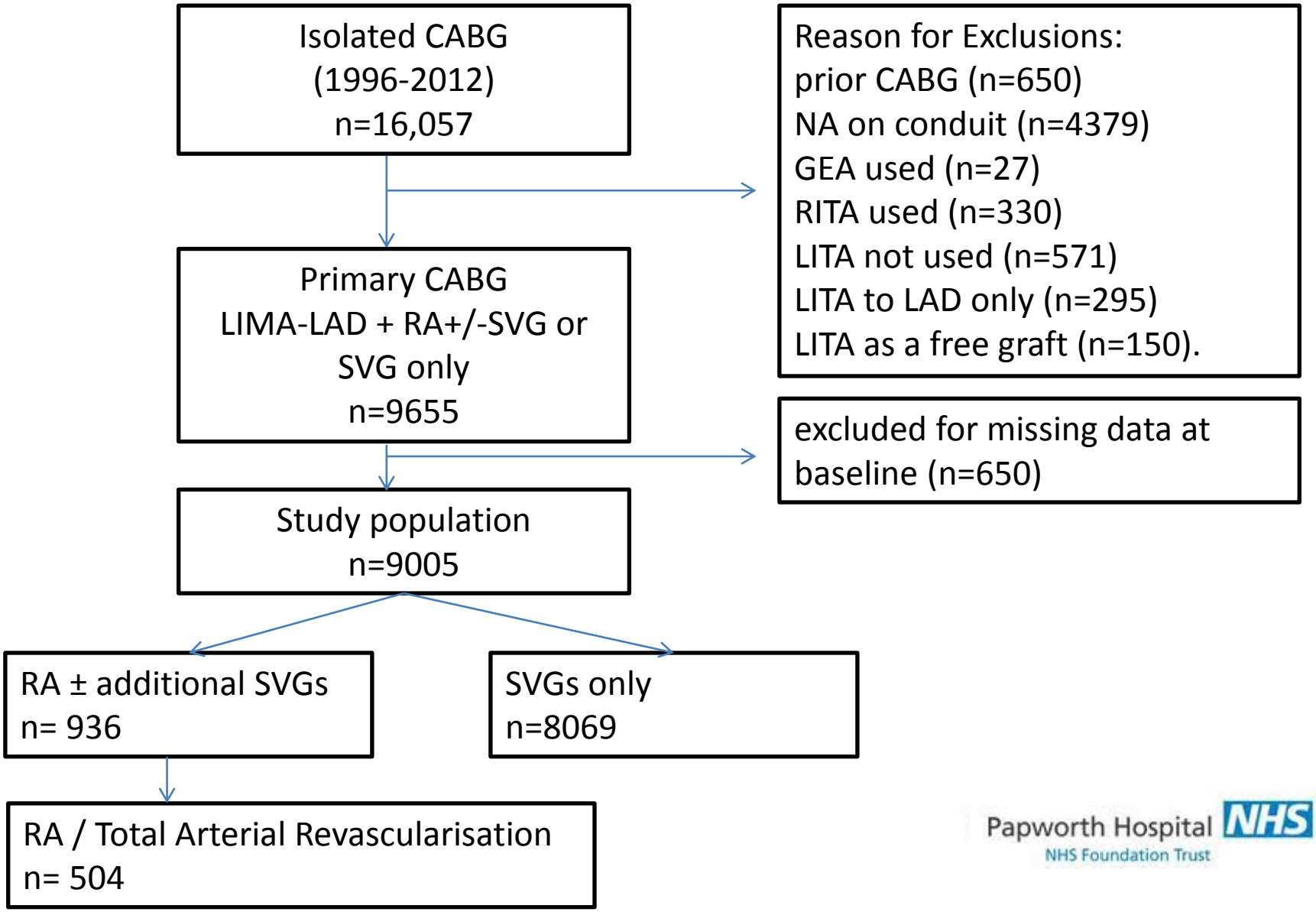
Study population



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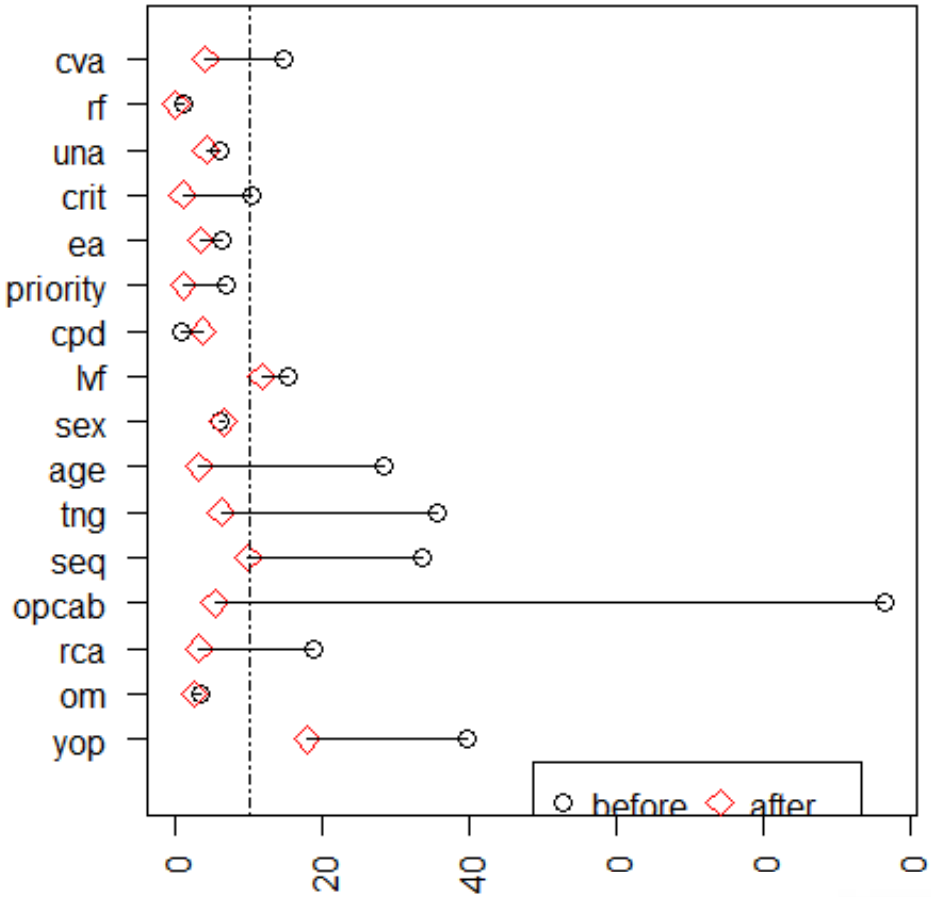
RA±SVG vs SVG only Matching and Balance

Matching parameter:

Caliper size: 0.233
Ratio: 1.000

Matching data:

Number of treated obs.:	936
Number of matched treated obs.:	809
Number of untreated obs.:	8069
Number of matched untreated obs.:	809
Number of total matched obs.:	1618
Number of not matched obs.:	7387
Number of matching sets:	809
Number of incomplete matching sets:	0



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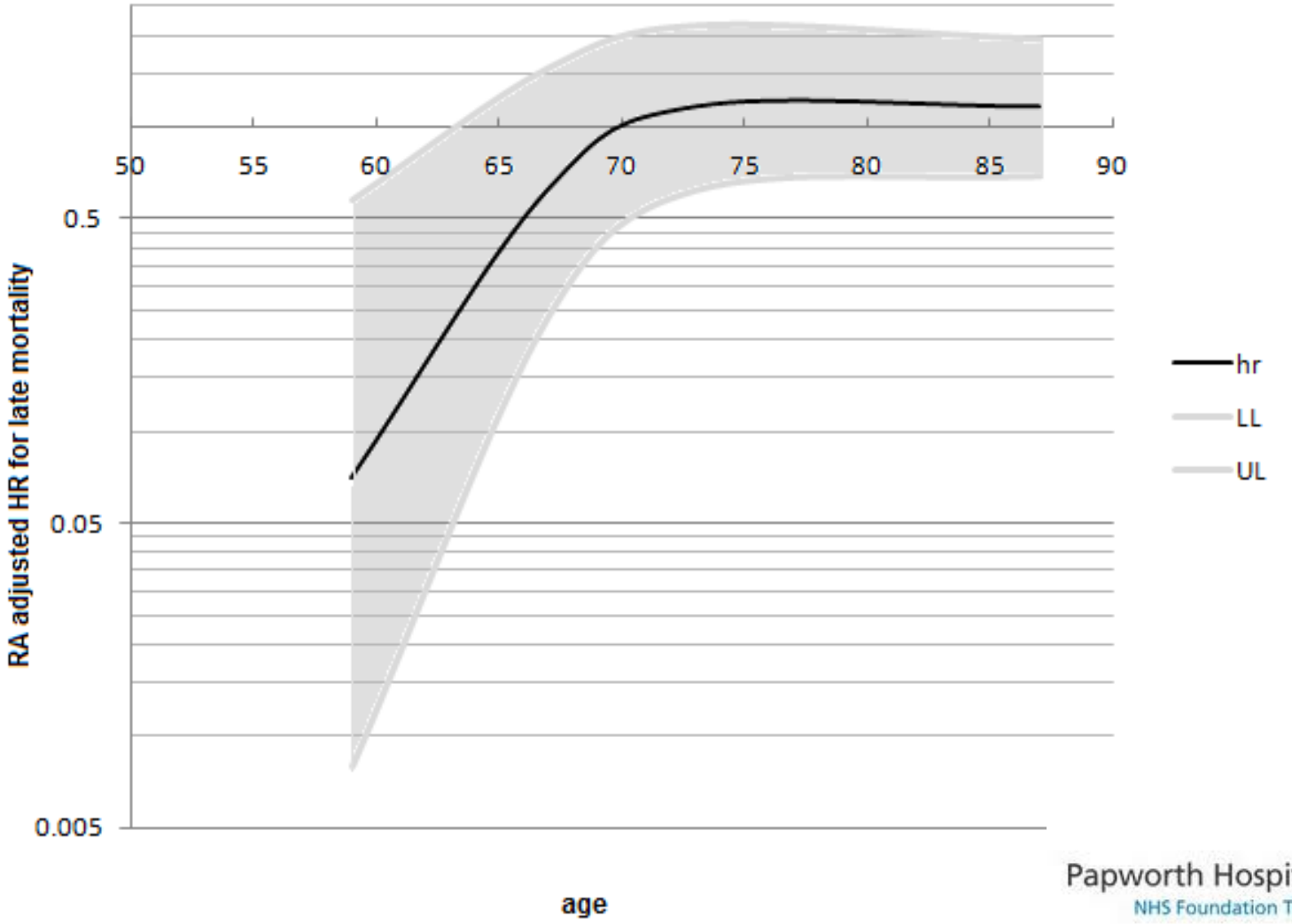
RA±SVG vs SVG only
Age-related Survival benefit



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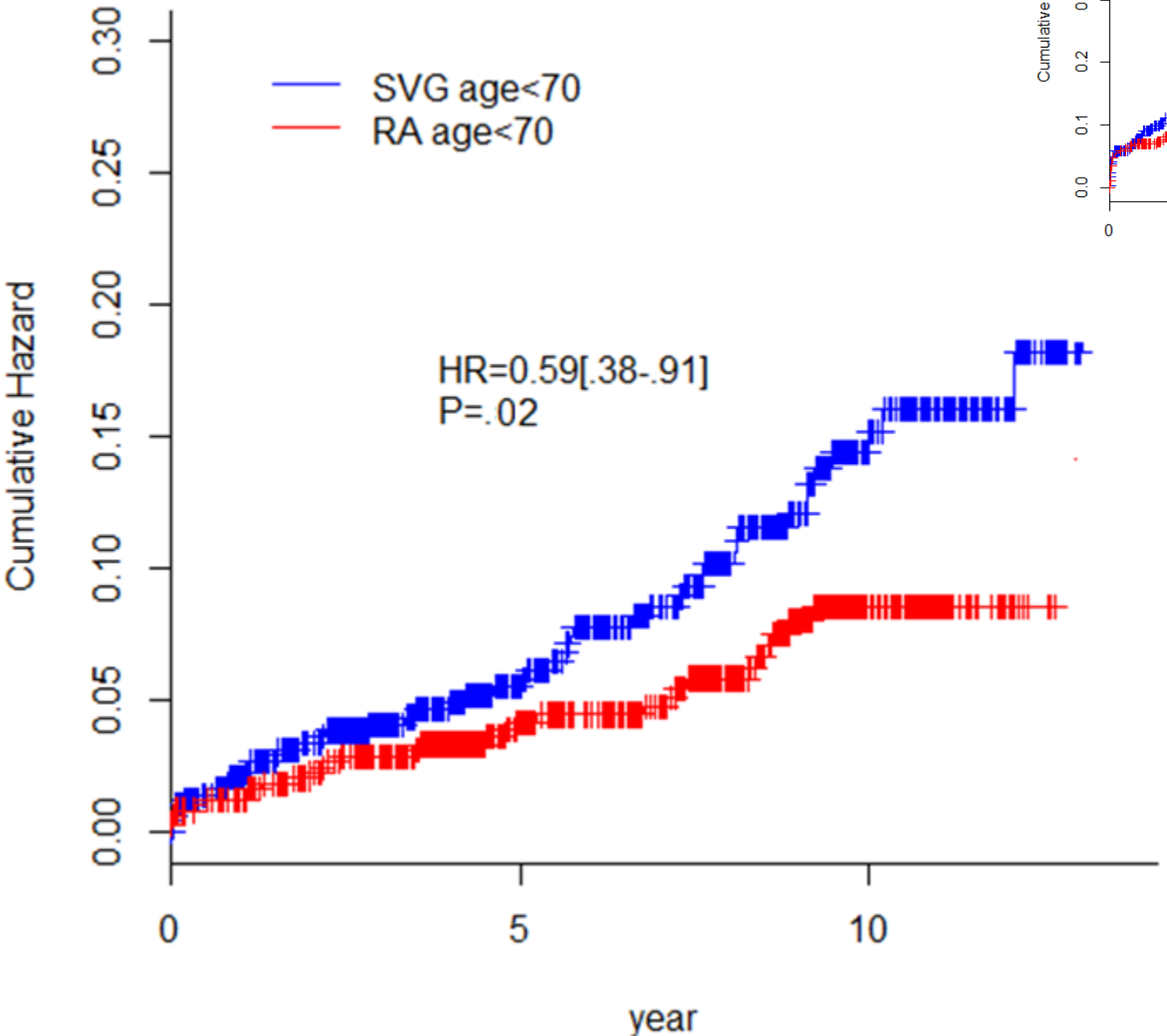

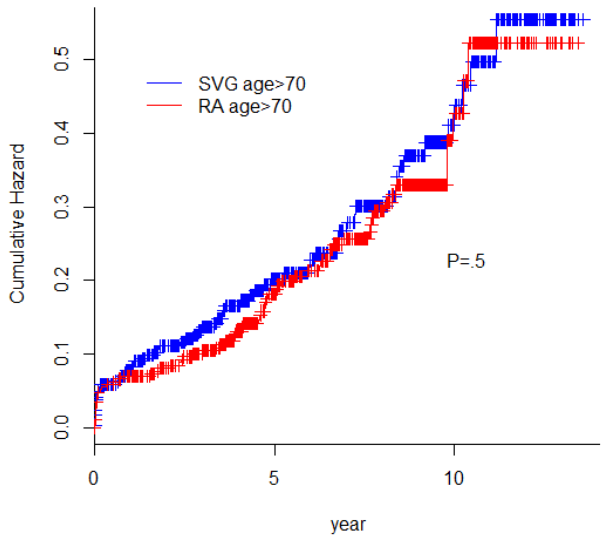

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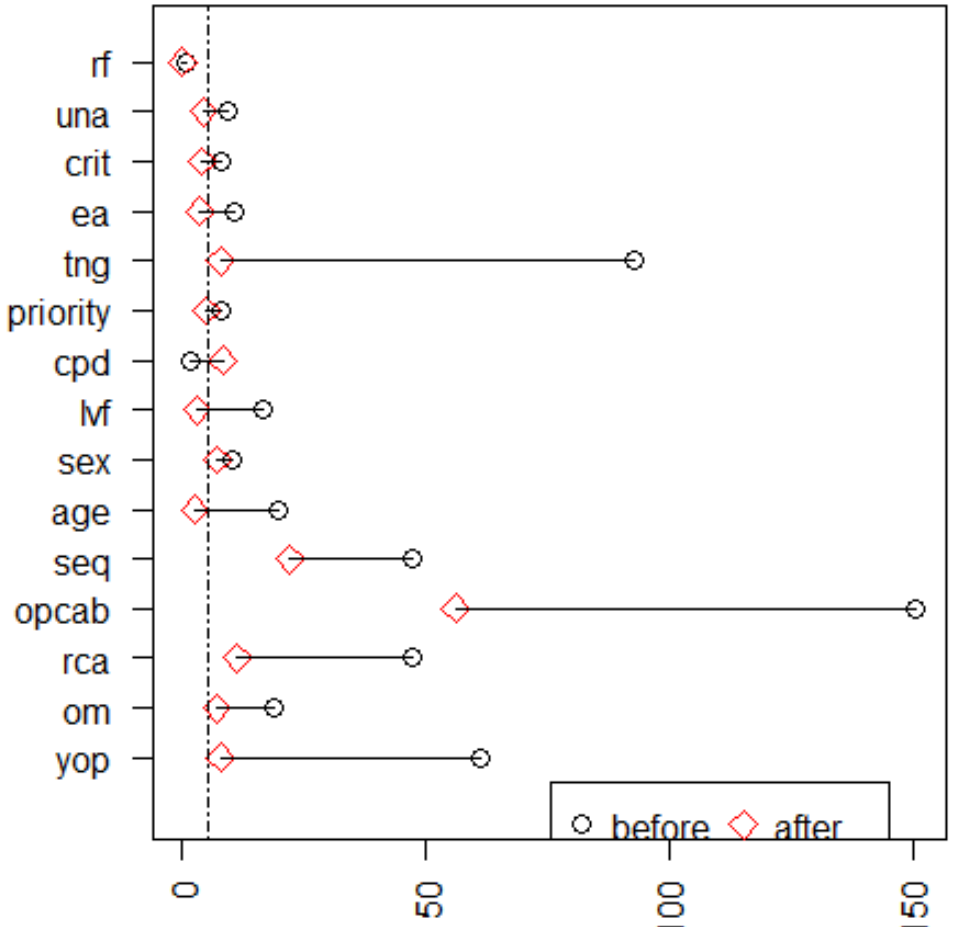
RA/TAR vs SVG
Matching and Balance

Matching parameter:

Caliper size: 0.577
Ratio: 1.000

Matching data:

Number of treated obs.:	504
Number of matched treated obs.:	486
Number of untreated obs.:	8069
Number of matched untreated obs.:	486
Number of total matched obs.:	972
Number of not matched obs.:	7601
Number of matching sets:	486
Number of incomplete matching sets:	0



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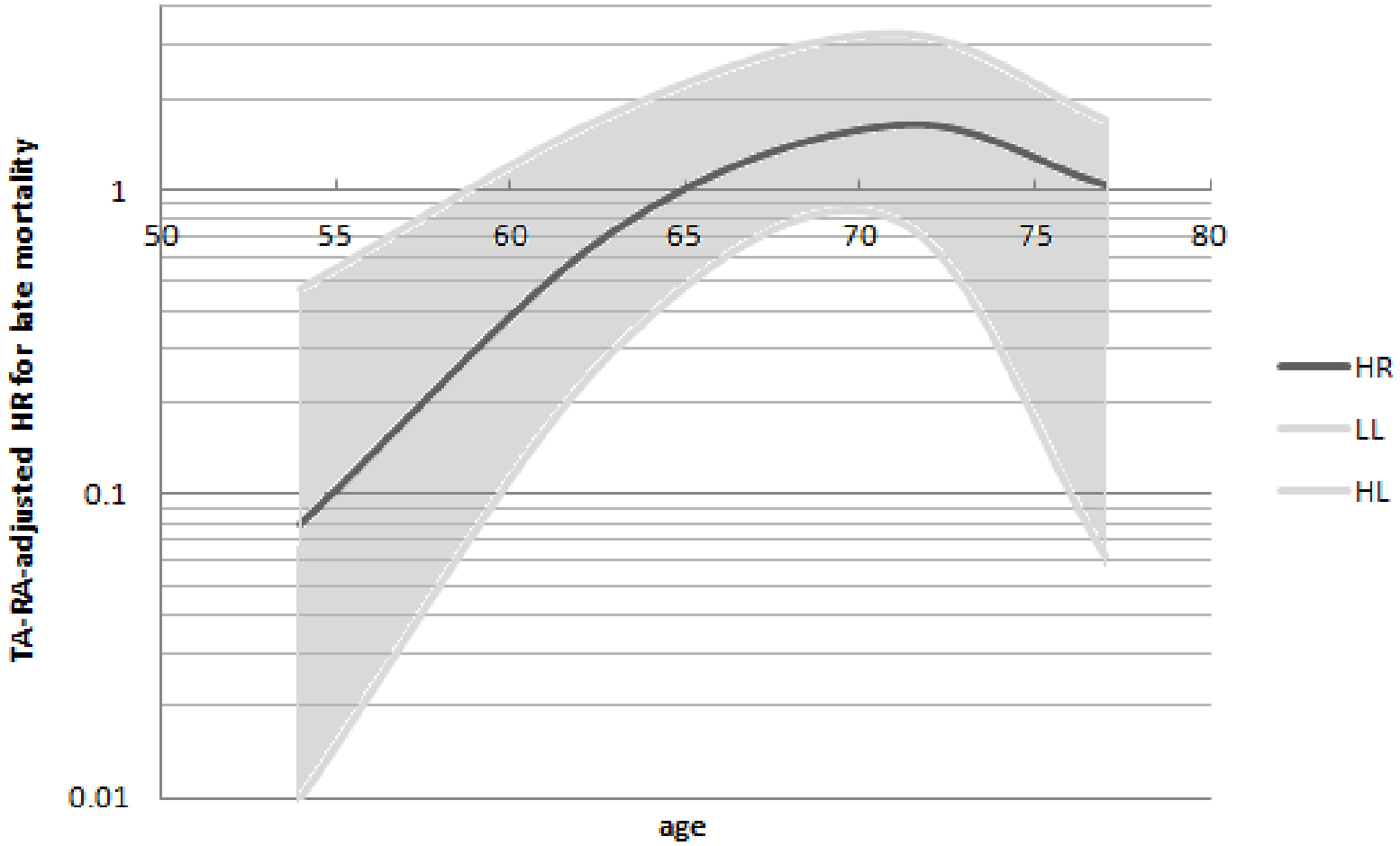
RA/TAR vs SVG
Age-related Survival benefit



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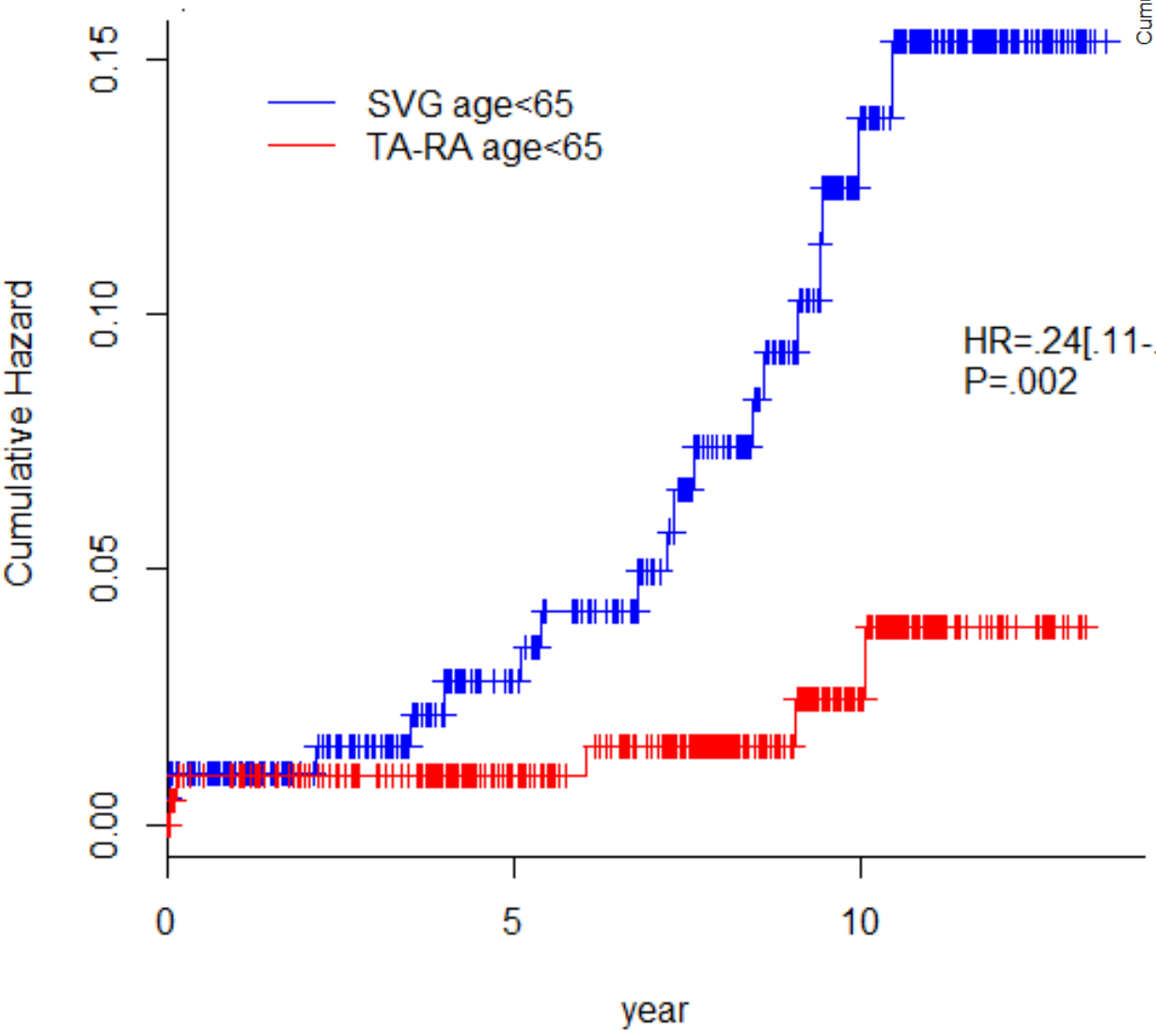

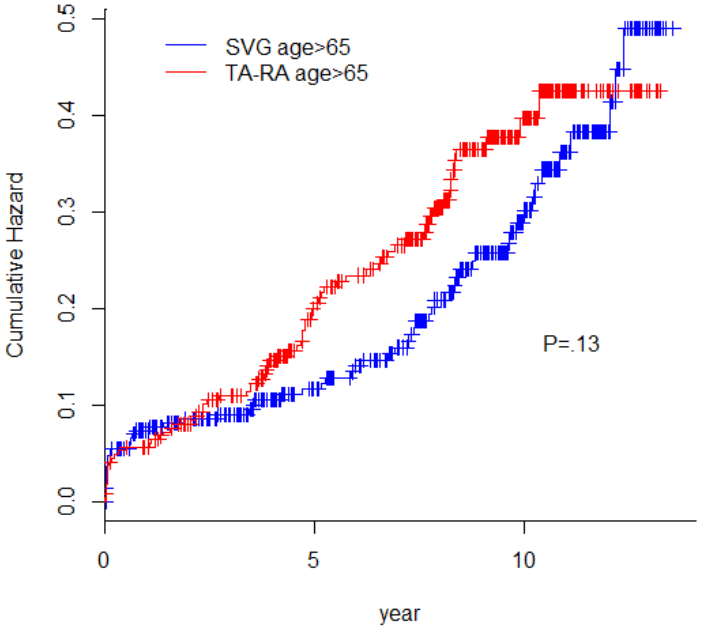

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Limitations

- **Retrospective analysis, confounded by biases**
- **No data on:**
  - **Severity of stenosis**
  - **Need for repeat revascularization**

Conclusions

- **RA use is associated with improved late survival**
  - **41% RR in pts < 70 y.o.**
  - **76% RR in pts < 65 y.o (as TAR).**

- **Survival benefit of RA:**
  - **gradually declines with increasing age at time of Sx**
  - **is lost in pts > 70 y.o.**

Conclusions

- **RA use is recommended in pts < 70 y.o.**
- **In pts < 65y.o., total arterial grafting using RA grafts may offer further survival benefit**
- **Well-powered RCTs are needed to elucidate the overall impact of RA use and TAR for CABG**

Acknowledgements

Papworth Cardiac Surgeons 1996-2012

- S Billing
- P Catarino
- C Choong
- M Codispoti
- K Dhital
- J Dunning
- T English
- A Goodwin
- P Jansz
- D Jenkins
- S Large
- N Moorjani
- K Nair
- S Nashef
- C Ng
- A Ritchie
- B Rosengard
- C Sudarshan
- S Tsui
- J Wallwork
- F Wells