

## Supplementary Online Content

Bardia A, Sood A, Mahmood F, et al. Combined epidural-general anesthesia vs general anesthesia alone for elective abdominal aortic aneurysm repair. *JAMA Surg*. Published online September 7, 2016. doi:10.1001/jamasurg.2016.2733.

**eTable 1.** Univariable Outcomes Among 1,540 Patients Undergoing Open Elective Abdominal Aortic Aneurysm Surgery With General Anesthesia Alone vs General-Epidural Anesthesia; VSGNE 2003-2011

**eTable 2.** Multivariable Logistic-Regression and Cox Proportional-Hazards Analyses Evaluating the Association of General-Epidural Anesthesia (vs General Anesthesia Alone [Ref.]) With Postoperative Outcomes and Patient Survival, Respectively, in 1,540 Patients Undergoing Open Elective Abdominal Aortic Aneurysm Surgery

**eTable 3.** Epidural Practices at the Major Participant VSGNE Centers

**eFigure.** Survival After Abdominal Aortic Aneurysm (AAA) Surgery Stratified According to Postoperative Morbidity

This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1.** Univariable Outcomes Among 1,540 Patients Undergoing Open Elective Abdominal Aortic Aneurysm Surgery With General Anesthesia Alone vs General-Epidural Anesthesia; VSGNE 2003-2011

<b>OUTCOME</b>	<b>Total (n=1540)</b>	<b>General (n=560)</b>	<b>General + Epidural (n=980)</b>	<b>Odds Ratio<sup>a</sup> (95% CI)</b>	<b><i>p</i></b>
<b>Overall Mortality at 5 years; %<sup>^</sup></b>	29.0	35.0	26.0	0.65 (0.52- 0.82)	<b>&lt;0.01</b>
<b>30-day Mortality; %</b>	34 (2.2)	15 (2.7)	19 (1.9)	0.72 (0.36- 1.43)	0.37
<b>Complications</b>					
Bowel Ischemia; n (%)	48 (3.1)	25 (4.5)	23 (2.3)	0.51 (0.29- 0.91)	<b>0.03</b>
Medical management	30 (1.9)	11 (2.0)	19 (1.9)	0.98 (0.72- 1.34)	0.99
Surgical management	18 (1.2)	14 (2.5)	4 (0.4)	0.16 (0.05- 0.49)	<b>&lt;0.01</b>
Pulmonary complications*; n (%)	194 (12.6)	82 (14.7)	112 (11.4)	0.75 (0.55- 1.02)	0.06
Post-operative MI; n (%)	98 (6.4)	35 (6.3)	63 (6.4)	1.03 (0.67- 1.58)	0.91
Post-operative Dialysis; n (%)	38 (2.5)	21 (3.8)	17 (1.7)	0.45 (0.24- 0.87)	<b>0.01</b>
Wound complications; n (%)	60 (3.9)	25 (4.5)	35 (3.6)	0.79 (0.47- 1.34)	0.41
<b>Return to Operating Room; n (%)</b>	104 (6.8)	49 (8.8)	55 (5.6)	0.62 (0.42- 0.92)	<b>0.01</b>

<sup>a</sup>Reference=General anesthesia alone; <sup>^</sup>For survival analysis results are reported in Hazards Ratio; \*Pulmonary complications included pneumonia or prolonged ventilator dependence postoperatively; MI=Myocardial Infarction

**eTable 2.** Multivariable Logistic-Regression and Cox Proportional-Hazards Analyses Evaluating the Association of General-Epidural Anesthesia (vs General Anesthesia Alone [Ref.]) With Postoperative Outcomes and Patient Survival, Respectively, in 1,540 Patients Undergoing Open Elective Abdominal Aortic Aneurysm Surgery

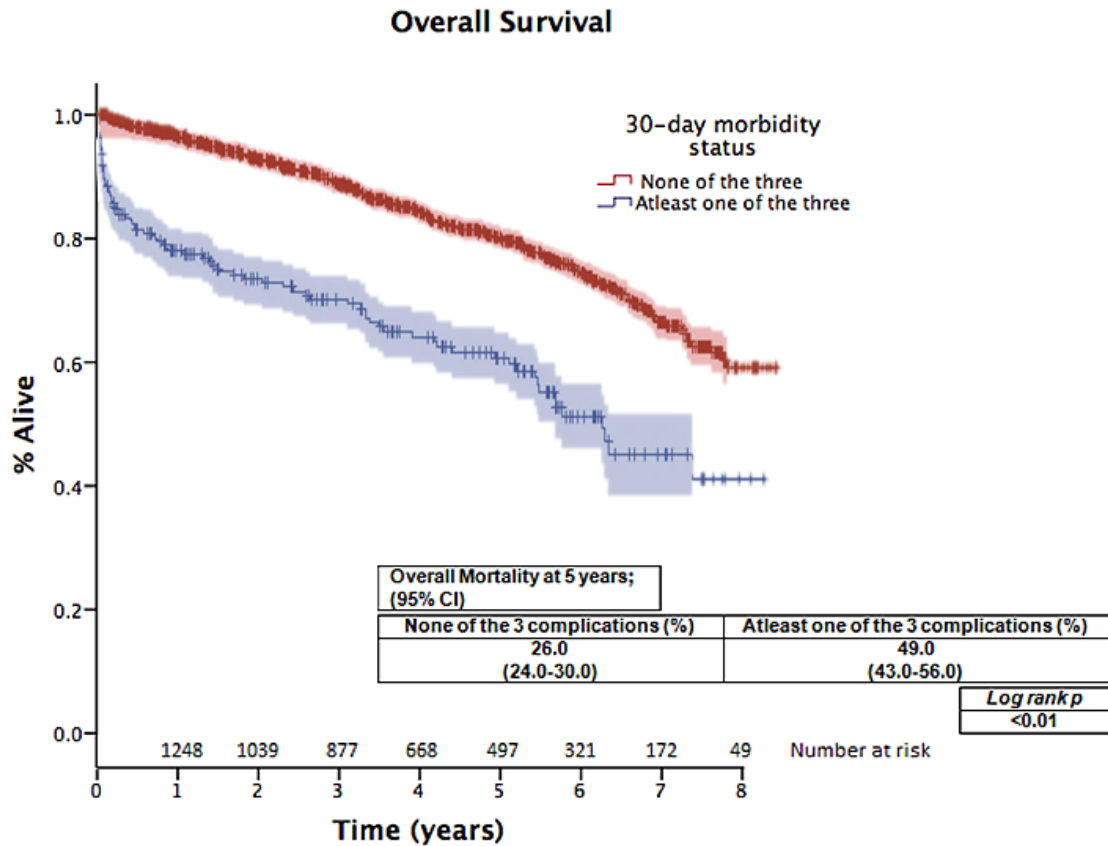
OUTCOME	General + Epidural*	
	OR (95% CI)	<i>p</i>
<b>Overall Mortality<sup>^</sup></b>	0.73 (0.66-0.81)	<0.01
<b>30-day Mortality</b>	1.59 (1.27-2.00)	<0.01
<b>Complications</b>		
Bowel Ischemia	0.50 (0.39-0.66)	<0.01
Medical management	0.93 (0.66-1.32)	0.69
Surgical management	0.18 (0.11-0.30)	<0.01
Pulmonary complications	0.80 (0.69-0.91)	<0.01
Post-operative MI	1.01 (0.84-1.23)	0.90
Post-operative Dialysis	0.45 (0.33-0.60)	<0.01
Wound complications	1.59 (1.09-2.31)	0.02
<b>Return to Operating Room</b>	0.62 (0.52-0.74)	<0.01

\*Reference=General anesthesia alone; MI=Myocardial Infarction; OR=Odds Ratio; CI=Confidence Interval; <sup>^</sup>For survival analysis results are reported in Hazards Ratio

\*\*NOTE: Models are adjusted for a propensity score based off predictors with p-values < 0.15 on univariate analysis. The final propensity score includes the variables gender, BMI, diabetes, CAD, coronary revascularization, drugs (Plavix/aspirin, beta blockers), ASA class, operative and cross clamp times; VSGNE 2003-2011

<b>eTable 3. Epidural Practices at the Major Participant VSGNE Centers</b>			
<b>Center</b>	<b>Intraoperative solution</b>	<b>Postoperative solution</b>	<b>Epidural Duration</b>
1	Bupivacaine with or without fentanyl / hydromorphone	Fentanyl with bupivacaine	Usually 2 days postoperatively
2	Opioids (either fentanyl/ hydromorphone) and bupivacaine	Opioids (either fentanyl/ hydromorphone) and bupivacaine	Till patient starts taking oral medications
3	Bupivacaine with fentanyl	Bupivacaine with fentanyl	Usually 5-7 days postoperatively
4	Opioids and local anesthetics if patient is < 60 years. Local Anesthetics only if patient is >60 years old.	Continuous infusion of Bupivacaine only	Usually 3-4 days postoperatively
5	Opioids (either fentanyl/ hydromorphone) and bupivacaine with the local anesthetic removed if there is hypotension	Both local anesthetics and opioids.	Usually till patient starts taking oral medications
6	Bupivacaine with hydromorphone	PCEA with Bupivacaine and hydromorphone	Usually 2-4 days postoperatively
7	Variable practice based on clinician. Either bupivacaine /lidocaine boluses intraoperatively with infusion at the end of the case or bupivacaine with fentanyl/hydromorphone infusion throughout the case.	Continuous infusion of Bupivacaine only or Bupivacaine with Fentanyl/ Hydromorphone OR PCEA with infusion: Bupivacaine with Fentanyl/ Hydromorphone	Usually 2 days postoperatively
8	Bupivacaine with hydromorphone	Bupivacaine with hydromorphone	Usually 2 days postoperatively
9	Bupivacaine with fentanyl	Bupivacaine with fentanyl	Usually 2 days postoperatively
10	Mostly opioid bolus (hydromorphone) without local anesthetic	Hydromorphone and Bupivacaine	Variable practice: provider dependent

**eFigure.** Survival After Abdominal Aortic Aneurysm (AAA) Surgery Stratified According to Postoperative Morbidity



Kaplan-Meier estimates with 95% Hall-Wellner bands; Patients who had postoperative pneumonia, bowel infarction or need for dialysis had a higher all cause mortality 49% (95% confidence interval [95%CI]=43-56%) vs patients with none of the 3 complications 26% (95%CI=24-30%) at 5 years (log-rank  $p < 0.01$ )