

**Suppl. Table 1.** Patient demographic summary and experimental conditions

VARIABLE		Non-traumatic spinal cord injury (n = 18)	Traumatic spinal cord injury (n = 17)
Sex, M:F	n (%)	8:10 (44.4:55.6)	12:5 (70.6:29.4)
Age, years	mean (range)	52.8 (19.2–77.6)	57.7 (17.8–78.2)
Anesthesia, Prop:Sevo	n (%)	13:5 (72.2:27.8)	11:6 (64.7:35.3)
Protocol – Sevo MAC	n (%)	4 (22.2)	4 (23.5)
Protocol – CO <sub>2</sub>	n (%)	8 (44.4)	11 (64.7)
Protocol – temperature	n (%)	8 (44.4)	5 (29.4)
Protocol – MAP	n (%)	10 (55.5)	8 (47.1)
Protocol – NVC	n (%)	2 (11.1)	0 (0.0)

*F, female; M, male; MAC, minimum alveolar concentration; MAP, mean arterial pressure; Prop, propofol; Sevo, sevoflurane*

**Suppl. Table 2.** Detailed demographic characteristics of the 18 non-traumatic spinal cord injury patients.

Patient	Pathology	Age (years)	Sex	Site	Dura	Anaesth	$P_aCO_2$	Temp	Sevo (MAC)	MAP	NVC
1	Canal stenosis	70	M	Ce	Closed	Sevo	LNH	No	0.7,1.0,1.5	No	No
2	Canal stenosis	77	M	Ce	Closed	Prop	LNH	No	N/A	No	No
3	Canal stenosis	48	F	Ce	Closed	Sevo	LNH	No	0.7,1.0,1.5	No	No
4	Schwannoma	34	F	Th	Open	Prop	LNH	No	N/A	No	No
5	Chiari I	19	M	Ce	Open	Sevo	No	Yes	0.7,1.0,1.5	Yes	No
6	Meningioma	59	F	Th	Open	Prop	No	No	N/A	Yes	No
7	Subependymoma	44	F	Th	Open	Prop	No	Yes	N/A	Yes	No
8	Epidermoid cyst	45	M	Co	Open	Prop	No	Yes	N/A	Yes	No
9	Meningioma	60	F	Ce	Open	Prop	No	Yes	N/A	Yes	No
10	Canal stenosis	59	M	Ce	Closed	Sevo	No	Yes	0.7,1.0,1.5	Yes	No
11	Ependymoma	46	F	Ce	Open	Prop	LNH	No	N/A	Yes	No
12	Meningioma	44	F	Th	Open	Prop	LNH	No	N/A	No	No
13	Arachnoid cyst	59	F	Th	Open	Sevo	No	No	1.0	Yes	No
14	Meningioma	56	F	Th	Open	Prop	LNH	Yes	N/A	No	No
15	Melanocytoma	75	M	Th	Open	Prop	No	Yes	N/A	Yes	No
16	Meningioma	74	F	Th	Open	Prop	LNH	Yes	N/A	Yes	No
17	Canal stenosis	55	F	Th	Open	Prop	No	No	N/A	No	Yes
18	Schwannoma	58	F	Th	Open	Prop	No	No	N/A	No	Yes

*Anaesth, anaesthetic agent; Ce, cervical; Co, conus; LNH, low normal high; MAC, minimum alveolar concentration; MAP, mean arterial pressure; N/A, not applicable; NVC, neurovascular coupling;  $P_aCO_2$ , partial pressure of arterial carbon dioxide; Prop, propofol; Sevo, sevoflurane; Temp, irrigation temperature; Th, thoracic*

**Suppl. Table 3.** Detailed demographic characteristics of the 17 traumatic spinal cord injury patients.

Patient	Baseline NLI AIS	Age (years)	Sex	Perfusion	Dura	Anaesth	P <sub>a</sub> CO <sub>2</sub>	Temp	Sevo (MAC)	MAP	NVC
19	Ce5 A	44	M	NE	Open	Sevo	LNH	No	0.7,1.0,1.5	No	No
20	Th12 C	38	M	NE	Closed	Sevo	No	No	0.7,1.0,1.5	No	No
21	Th4 B	59	F	PP	Closed	Sevo	No	No	0.7,1.0,1.5	No	No
22	Ce6 A	46	M	HP	Open	Prop	LNH	No	N/A	No	No
23	Ce4 C	60	F	PP	Open	Prop	LNH	No	N/A	No	No
24	Ce4 A	38	M	NE	Open	Sevo	LNH	No	0.7,1.0,1.5	No	No
25	Ce6 A	75	F	PP	Closed	Prop	LNH	No	N/A	No	No
26	Ce3 B	70	F	PP	Open	Prop	LNH	No	N/A	No	No
27	Ce4 C	17	M	PP	Open	Prop	LNH	No	N/A	No	No
28	Th4 A	56	M	NE	Closed	Prop	No	Yes	N/A	Yes	No
29	Ce4 C	72	M	HP	Closed	Prop	LNH	Yes	N/A	Yes	No
30	Ce3 A	49	M	PP	Open	Prop	LNH	No	N/A	Yes	No
31	Ce6 A	71	M	HP	Open	Prop	LNH	No	N/A	Yes	No
32	Ce4 C	78	F	PP	Open	Prop	LNH	No	N/A	Yes	No
33	Ce5 C	62	M	HP	Closed	Prop	No	Yes	N/A	Yes	No
34	Ce4 A	63	M	HP	Closed	Sevo	No	Yes	1.0	Yes	No
35	Ce4 B	75	M	HP	Open	Sevo	No	Yes	1.0	Yes	No

*AIS, ASIA impairment scale; Anaesth, anaesthesia; Ce, cervical; HP, hyper perfusion; LNH, low normal high; MAC, minimum alveolar concentration; MAP, mean arterial pressure; N/A, not applicable; NE, necrosis; NLI, neurological level of injury; NVC, neurovascular coupling; P<sub>a</sub>CO<sub>2</sub>, partial pressure of arterial carbon dioxide; PP, patchy perfusion; Prop, propofol; Sevo, sevoflurane; Th, thoracic*

**Suppl. Table 4.** Effect of change in PaCO<sub>2</sub> on SCBF in patients on propofol and in patients on sevoflurane.

Anaesthetic	PaCO <sub>2</sub>	% $\Delta$ TBF		% $\Delta$ VBF		% $\Delta$ VD				
		Mean $\pm$ sd (n)	<i>P</i> value	Mean $\pm$ sd (n)	<i>P</i> value	Mean $\pm$ sd (n)	<i>P</i> value			
Propofol	Low	88.4 $\pm$ 22.6 (19)	L vs. N	<i>ns</i>	84.7 $\pm$ 17.5 (28)	L vs. N	<0.01	95.4 $\pm$ 7.7 (29)	L vs. N	<0.005
	Normal	99.6 $\pm$ 24.8 (20)	L vs. H	<i>ns</i>	98.4 $\pm$ 17.2 (29)	L vs. H	0.001	96.8 $\pm$ 7.1 (30)	L vs. H	<0.05
	High	100 (20)	N vs. H	<0.05	100 (29)	N vs. H	<i>ns</i>	100 (30)	N vs. H	<0.01
Sevoflurane	Low	75.7 $\pm$ 25.9 (18)	L vs. N	<0.005	91.0 $\pm$ 23.1 (24)	L vs. N	<i>ns</i>	96.4 $\pm$ 5.2 (24)	L vs. N	<i>ns</i>
	Normal	91.0 $\pm$ 24.0 (6)	L vs. H	<0.001	91.8 $\pm$ 17.6 (8)	L vs. H	<0.05	96.5 $\pm$ 3.7 (8)	L vs. H	<0.005
	High	100 (18)	N vs. H	<i>ns</i>	100 (24)	N vs. H	<i>ns</i>	100 (24)	N vs. H	<0.05

$\Delta$ TBF, change in tissue blood flow;  $\Delta$ VBF, change in vessel blood flow;  $\Delta$ VD, change in vessel diameter; H, high; L, low; N, normal; sd, standard deviation

**Suppl. Table 5.** Autoregulation in patients without and with traumatic spinal cord injury.

Patient	Anaesthetic	Site	$\Delta$ MAP (mmHg)	$\Delta$ BF (%)	Autoregulation
<i>Non-traumatic spinal cord injury</i>					
5	Prop	Cord	25.9	-3.0	Intact
5	Prop	Vessel	25.9	2.0	Intact
6	Prop	Cord	18.8	-10.3	Intact
6	Prop	Vessel	18.8	3.3	Intact
7	Prop	Cord	22.0	-7.8	Intact
7	Prop	Vessel	22.0	4.7	Intact
7	Prop	Vessel	22.0	-4.6	Intact
8	Prop	Cord	45.0	0.1	Intact
8	Prop	Vessel	45.0	7.2	Intact
8	Prop	Vessel	45.0	-13.5	Intact
9	Prop	Cord	21.1	11.4	Intact
9	Prop	Vessel	21.1	-3.8	Intact
10	Prop	Cord	26.3	-6.4	Intact
10	Prop	Vessel	26.3	-5.0	Intact
11	Prop	Cord	19.5	-28.8	Intact
11	Prop	Vessel	19.5	-5.2	Intact
13	Sevo 0.7	Cord	31.7	108.1	Impaired
13	Sevo 0.7	Vessel	31.7	12.0	Impaired
13	Sevo 1.0	Cord	10.8	-11.6	Intact
13	Sevo 1.0	Vessel	10.8	-21.8	Intact
13	Sevo 1.5	Cord	16.0	-16.7	Intact
13	Sevo 1.5	Vessel	16.0	-16.8	Intact
16	Prop	Cord	20.8	2.1	Intact
16	Prop	Vessel	20.8	-2.9	Intact
<i>Traumatic spinal cord injury</i>					
28	Prop	Cord - PE	40.6	-17.9	Intact
28	Prop	Vessel - NE	40.6	34.0	Impaired
28	Prop	Vessel - PE	40.6	3.8	Intact
30	Prop	Cord - PP	22.6	19.6	Impaired
30	Prop	Artery - PP	22.6	27.2	Impaired
31	Prop	Cord - HP	36.7	105.5	Impaired
31	Prop	Artery - HP	36.7	31.8	Impaired
31	Prop	Vein - HP	36.7	16.2	Impaired
32	Prop	Cord - PP	12.0	-9.8	Intact
32	Prop	Vessel - PP	12.0	-5.7	Intact
32	Prop	Vessel - PP	12.0	-19.1	Intact
33	Prop	Cord - HP	19.1	5.4	Intact
33	Prop	Vessel - HP	19.1	1.6	Intact
34	Sevo 1.0	Cord - HP	16.1	-2.8	Intact
34	Sevo 1.0	Vessel - HP	16.1	-4.0	Intact

$\Delta$ BF, change in blood flow;  $\Delta$ MAP, change in mean arterial pressure; HP, hyper perfusion; NE, necrosis; PE, penumbra; PP, patchy perfusion, Prop, propofol; Sevo, sevoflurane