Safety of the sitting position compared to the prone or lateral positions for surgery of posterior cranial fossa demonstrated in a retrospective paired-series

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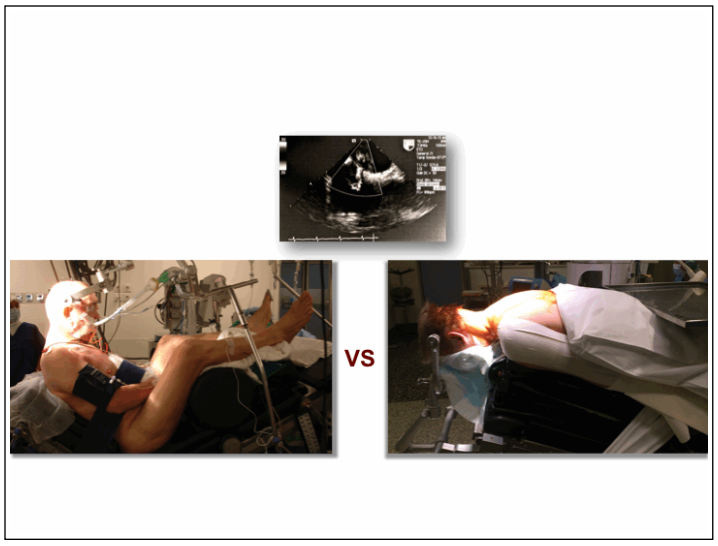
Introduction

The positioning for neurosurgical procedures is of paramount importance and especially so for approaches to the posterior fossa. The sitting position, while advocated frequently by many surgeons, is still difficult to use, especially in a safety first medical culture.

We aim to show, in this non-inferiority study, that use of the sitting position is safe, adding no supplementary risks, when compared to other positions.



Methods

We retrospectively reviewed all the posterior fossa surgeries performed between **January 2003 and December 2013**. All first time surgeries in the sitting position were included and compared to similar patients operated in horizontal positions.

Main analysis was performed on patients operated **for Chiari malformation**. This was considered a model of posterior fossa approach.

In our institution it is a standardized surgery with little variability among surgeons. Only patients having had a **preoperative trans-oesophageal echography as a screening for PFO** were selected. Patients with a **PFO were operated in the ventral position** and were compared to those operated in the sittng position.

Results

Study population

In the study period 1227 surgeries for posterior fossa pathology were performed, of these 843 were operated in the sitting position. 186 patients were operated for Chiari malformation and of these **116 had a TEE preoperatively** and were therfore selected for main analysis.

Patients characheristics

No differences were noted between the two patients groups when these were compared for age, BMI, ASA score and preoperative Karnofsky score.

Length of stay

Hospital length of stay was not significantly different between the two groups (19 days for sitting 25 for prone) nor was ICU length of stay (2 vs. 5 days).

Surgical Data	Prone	Sitting	T-Test
Blood Loss	378 mL	80 mL	p=0.0001
Skin to Skin Time	203 min	184 min	p=0.0002
Anaesthesia Time	306 min	318 min	p=0.49
Air Embolism	0%	21%	p=0.009 (χ2)

Surgical data:

We found significant differences in surgical time (sitting position was 20 minutes shorter than prone) but this was not reflected in total anaesthesia time. Blood loss was significantly higher in the prone position and air embolism was significantly more frequent in the sitting position. However patients who did have episodes of air embolism did not have more frequent complications or longer hospital stay (data not shown).

Complication rates

No significant differences were found in complication rates between the sitting and the prone position.

Three patients had a major immediate postoperative complication in the form of a surgical site haematoma and/or cerebellar oedema with quadriplegia and coma. All were immediately reoperated and progressively recovered up to a Karnofsky of 60 at one year postoperative. Two patients were operated in the sitting position and one in the prone position.

Three significant episodes of pulmonary embolism were found all in patients operated in the sitting position, however this was not statistically significant.

	Prone	Sitting	
	30	86	Fischer's exact
PF Compression	3.33	2.33	p=0.84
CSF leak	3.33	4.65	p=0.61
PE	0.00	3.49	p=0.40
SSI	0.00	3.49	p=0.40
Reintervention	3.33	4.65	p=0.61
Global	6.67	13.95	p=0.24

Conclusion

Prone and sitting positions are comparable in safety.

References:

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