

# Evaluation of postoperative spinal epidural hematoma after spinal posterior surgery : used multicenter database

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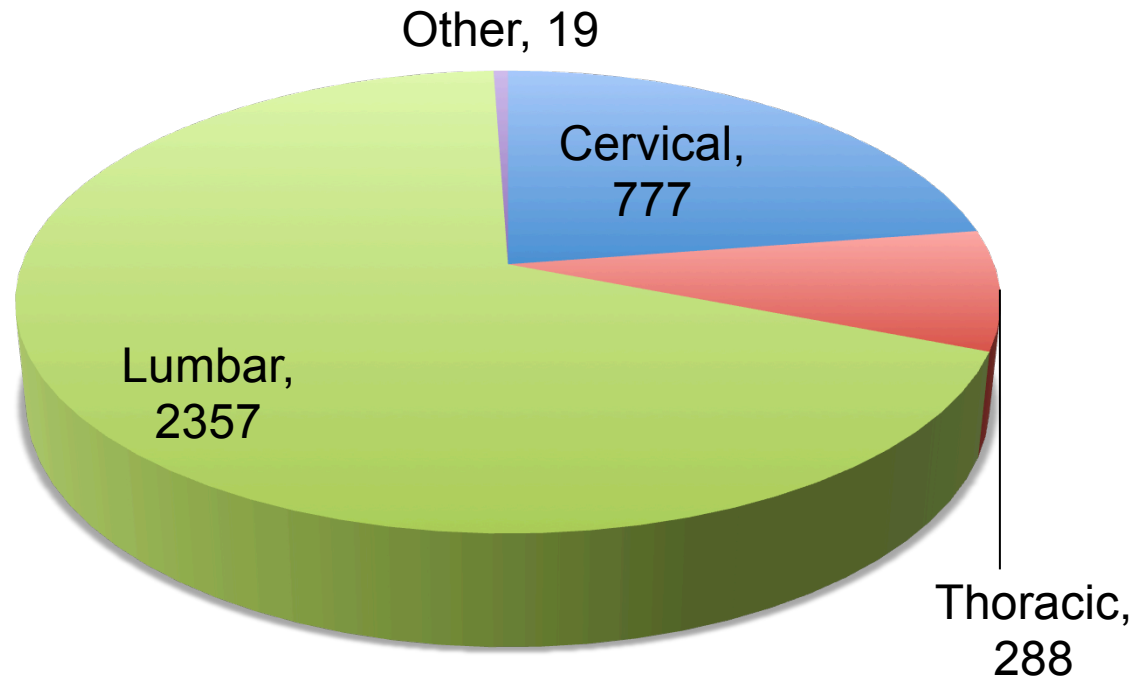
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# Introduction

- Postoperative spinal epidural hematoma is an important, severe complication.
- Once neurological deterioration arises due to hematoma, emergency evacuation is required, and if not performed rapidly enough, neurological symptoms such as paralysis may persist.
- The aim of this study was to identify possible risk factors by reviewing cases from a multicenter study of postoperative hematoma and analyzing postoperative outcomes for these patients.

# Patients and method

This database included 3,441 patients who underwent spine posterior surgery between 2010 and 2011.



# Results

Fifteen patients (0.44%) required hematoma evacuation.

Cervical	2/ 777 Pts 0.26%
Thoracic	5/ 288 Pts 1.7%
Lumbar	8/ 2357 Pts 0.34%
Other	0/ 19 Pts 0%

# Result (Cervical and Thoracic)

## Cervical

Disease	Procedure	Comorbidity	Anticoagulant agent	Between evacuation
CSM	Laminoplasty	Angina	Ticlopidine	Two days
CSM	Laminoplasty			One day

## Thoracic

OYL	Laminectomy	Hepatitis		Same day
OYL	Laminectomy	Diabetes	Bayaspirin	Same day
OYL	Laminectomy	RA		Same day
TDH	Laminectomy	atrial fibrillation	Warfarin	Same day
PS	Laminectomy			Two days

CSM: cervical spondylotic myelopathy

TDH: thoracic disc herniation

OYL: ossification of the yellow ligament

PS: pyogenic spondylitis

# Result (Lumbar)

## Lumbar

Disease	Procedure	Comorbidity	Anticoagulant agent	Between evacuation
LDH	Discectomy	Angina	Ticlopidine	Same day
LDH	Discectomy			Same day
LCS	MEPD	Cerebral infarction	Bayaspirin	Two days
LCS	MEPD	Hemodialysis		Same day
LCS	MEPD	Diabetes		Fourteen days
LCS	MEPD	Hyperlipidaemia		Same day
LCS	Laminectomy	Hypertension		Same day
LCS	Laminectomy			Same day

LDH: Lumbar disc herniation      LCS: lumbar spinal canal stenosis

MEPD: Micro endoscopic posterior decompression

These MEPDs were multilevel decompression.

# Result (Odds Rate)

	Odds Rate	95% CIs
Cervical	0.53	0.11-2.3
Thoracic	5.6	1.8-16
Lumbar	0.52	0.18-1.5

Thoracic surgery was associated with a significantly higher risk of postoperative hematoma than other procedures.

# Discussion Risk factor

- Risk factor
  1. Multilevel surgery (*Kou. Spine. 2007*)
  2. Micro endoscopic surgery (*Kotilainen. Surg Neurol. 1994*)
  3. Thoracic Suregery (*Aono. J Neurosurg Spine. 2011*)
  4. Anticoagulant agent (*Spanier. J Spinal Disord. 2000*)
  
- Current Study
  1. Multilevel MEPD
  2. Odds Rate of thoracic surgery was 5.6
  3. Anticoagulant agent



# Discussion MEPD

- Foley and Smith described MEPD as a new percutaneous technique, and in 2002, the first established results were reported (Perez-Cruet et al., 2002).
- The incidence of hematoma was 4.5% (Matsumoto et al., 2010). This was higher than that with the conventional method, and subsequently attributed to the smaller dead space (Ikuta et al., 2006).
- Multilevel surgery was also identified as a risk factor for hematoma development (Kou et al., 2002).
- Attention must therefore be paid to the position of the drainage tube and blood pressure.

# Discussion Thoracic

- The canal space is narrower in the thoracic spine than in the cervical or lumbar spine (Groen and Ponsen, 1990).
- Furthermore, Marcus reported mean blood flow to the cervical and lumbosacral cord segments to be 40% higher than that to the thoracic cord in dogs (Marcus et al., 1977).
- Dommissie identified the area from T4 to approximately T9 as having the least abundant blood supply, and designated this area as the “critical vascular zone” of the spinal cord, where interference with circulation was most likely to result in paraplegia (Dommissie, 1974).
- Such findings support the idea that hematoma compressing the thoracic spinal cord, which has less blood supply, can easily lead to spinal cord dysfunction.

# Limitation

- This study had several limitations, largely due to the retrospective, multicenter study design.
- One benefit of multicenter studies is the large sample size, but a weakness is that evaluations of clinical outcomes were not standardized.

# Disclosure

No funds were received in support of this work. No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this presentation.