

# Interruption of the bilateral segmental arteries at several levels : Influence on vertebral blood flow

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# 2002 Fiscal Year Final Research Report Summary

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## Interruption of the bilateral segmental arteries at several levels : Influence on vertebral blood flow

Research Project

### Project/Area Number

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13671498

### Research Category

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Grant-in-Aid for Scientific Research (C)

### Allocation Type

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Single-year Grants

### Section

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一般

### Research Field

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Orthopaedic surgery

### Research Institution

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KANAZAWA UNIVERSITY

### Principal Investigator

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### Co-Investigator(Kenkyū-buntansha)

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### Project Period (FY)

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2001 – 2002

### Keywords

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total en bloc spondylectomy / the segmental artery / vertebral blood flow

### Research Abstract

Intraoperative hemorrhage can be sometimes massive in patients with hypervascular spinal tumors, especially in radical resection such as total en bloc spondylectomy. The recent development of new embolization techniques ensures more aggressive, more extensive, and safer preoperative embolization for spinal tumors. The blood flow of the T12 vertebra of twelve female dogs was measured after ligation of the bilateral segmental arteries at one to three levels, including the T12. Spinal cord evoked potentials were recorded in this procedure. Spinal angiography using a silicon compound was performed on other ten dogs after clipping and section of the bilateral segmental arteries. The blood flow of the T12 vertebra decreased to  $70.13 \pm 6.37\%$  of the control value after ligation of the bilateral segmental arteries of T12, to  $46.48 \pm 8.97\%$  after ligation of the bilateral segmental arteries of T12 and either T11 or T13, to  $24. \pm 8.31\%$  after ligation of T11, 12 and 13, respectively. The angiogram after ligation and section of T12 and the two levels including T12 showed thick and clear contrast medium in the cut distal ends of the T12 segmental arteries. After interruption at three levels (T11, 12, and 13 level), however, the cut distal ends of the T12 segmental arteries were seen thin and faint on the angiogram. No significant changes occurred in SCEPs after ligation of the segmental arteries at three levels in all six dogs. Interruption of the bilateral segmental arteries at three levels, one target vertebra and the two adjacent vertebrae, reduced the blood flow of the target vertebra to one fourth of the control value in the lower thoracic spine in dogs. This result suggests that preoperative embolization at three levels, the levels of the tumor vertebra and the adjacent vertebrae above and below it, may reduce intraoperative hemorrhage effectively during total en bloc spondylectomy for hypervascular spinal tumors

## Research Products (12 results)

All Other

All Publications (12 results)

- [Publications] Tomita K, Kawahara N (他4名, 6, 2番目): "Interruption of the bilateral segmental arteries at several levels : Influence on vertebral blood flow"Spine. (掲載予定). (2004) ▼
- [Publications] Tomita K, Kawahara N (他4名, 1, 2番目): "Total en bloc spondylectomy ; a new surgical technique for primary malignant vertebral tumors."Spine. 22. 324-333 (1997) ▼
- [Publications] Tomita K, Kawahara N: "The threadwire saw : a new device for cutting bone."JBJS. 78-A. 1915-1917 (1996) ▼
- [Publications] Tomita K, Toribatabe Y, Kawahara N: "Total en bloc spondylectomy and circumspinal decompression for solitary spinal metastasis"Paraplegia. 32. 36-46 (1994) ▼
- [Publications] Tomita K, Kawahara N (他2名, 1, 2番目): "Total en bloc spondylectomy for primary malignant vertebral tumors."Int Cancer Congress. 2409-2413 (1994) ▼
- [Publications] Tomita K, Kawahara N (他3名, 1, 2番目): "Surgical strategy for apinal metastases."Spine. 27. 1124-1126 (2002) ▼
- [Publications] Tomita K, Kawahara N (他4名, 6, 2番目): "Interruption, of the bilateral segmental arteries at several levels Influence on vertebral blood flow"Spine. (Accepted). (2004) ▼
- [Publications] Tomita K, Kawahara N (他4名, 1, 2番目): "Total en bloc spondylectomy ; a new surgical technique for primary malignant vertebral tumors"Spine. 22. 324-333 (1997) ▼
- [Publications] Tomita K, Kawahara N: "The threadwire saw a new device for cutting bone"JBJS. 78-A. 1915-1917 (1996) ▼
- [Publications] Tomita K: "Toribatake Kawahara N Total en bloc spondylectomy and circumspinal decompression for solitary spinal metastasis"Paraplegia. 32. 36-46 (1994) ▼
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