

Total *en bloc* Spondylectomy for Solitary Metastatic Spinal Tumor

Ki-Tack Kim, M.D., Chung-Soo Han, M.D.,
Kyung-Soo Suk, M.D., Young-Ho Lee, M.D., Sang-Hun Lee, M.D.*

Department of Orthopaedic Surgery, School of Medicine, Kyung Hee University, Seoul, Korea,
Hallym University, Chuncheon, Korea*

– Abstract –

Study Design: To analyze the clinical and radiological outcomes retrospectively.

Purpose: To evaluate the efficacy of a total *en bloc* spondylectomy in solitary metastatic spinal tumors.

Summary of Literature Review: In a conventional operation of a spinal metastatic tumor it is difficult to perform a wide excision, and several reports have suggested a total *en bloc* spondylectomy for wide or marginal resections.

Materials and Methods: Ten patients, with solitary spinal metastasis, were underwent a total *en bloc* spondylectomy, with a mean follow-up of 15 months. The locations of the tumors were the thoracic spine and lumbar spine in 4 and 6 cases, respectively. The clinical and radiological outcomes were assessed using the McAfee pain scale, Frankel neurologic grading, radiological extent of the lesion and local recurrence. Metastatic spinal tumors were classified by the system of Tomita. A pathological study of the resected vertebra was performed to evaluate the surgical margin.

Results: The preoperative back pain was grades IV, III, II and 0 in 4, 3, 2 and 1 case, respectively. The postoperative back pain was grades III, I and 0 in 3, 1 and 6 cases by the McAfee pain scale, respectively. The neurologic deficit was improved completely in all cases. There were 3 and 7 cases of types 4 and 5 by the Tomita's classification, respectively. The pathological results were wide margin and marginal margin in 4 and 6 cases, respectively. There were no local recurrences at the time of the last follow-up.

Conclusion: All patients maintained good clinical and radiological results. A total *en bloc* spondylectomy was a useful treatment option for solitary metastatic tumors.

Key Words: Solitary metastasis, Total *en bloc* spondylectomy

Address reprint requests to

Ki-Tack Kim, M.D.

Department of Orthopaedic Surgery, School of Medicine, Kyung Hee University

1 Hoegi-dong, Dongdamun-gu, Seoul, 130-702, Korea

Tel: 82-2-958-8371, Fax: 82-2-964-3865, E-mail: ktkim@khmc.or.kr

15.4 (3~45) .

50%

가

가 50%

^{7,8)}

. 1980

6

4 ,

6

¹⁻³⁾

2.

가

McAfee 4 point scale(Table 1)⁹⁾

Frankel

가

(Table 2)¹⁰⁾

가

⁴⁻⁶⁾

가

(skip

lesion)

3

1.

1995 1 2002 12

가

가

가 10

가

Tomita

(Table 3)⁶⁾

2 , 2 , 2 , 1 , 1 ,
1 , 1

1

5 , 5

57.2 (35~72) ,

Table 1. 4 point scale by McAfee⁹⁾

Grade	symptom
0	no pain
1	minimal or occasional pain not requiring medication
2	minimal pain requiring non-narcotic analgesics
3	moderate pain controlled with narcotic analgesics
4	severe constant pain requiring regular narcotic analgesics

Table 2. Neurologic status change: Classification by Frankel¹⁰⁾

Grade	Symptom
A	Complete lesion (paraplegia)
B	Only sensory function
C	Motor function present, but of no practical use (non-ambulatory)
D	Motor function present, sufficient to allow walking (ambulatory)
E	No neurologic signs or symptoms

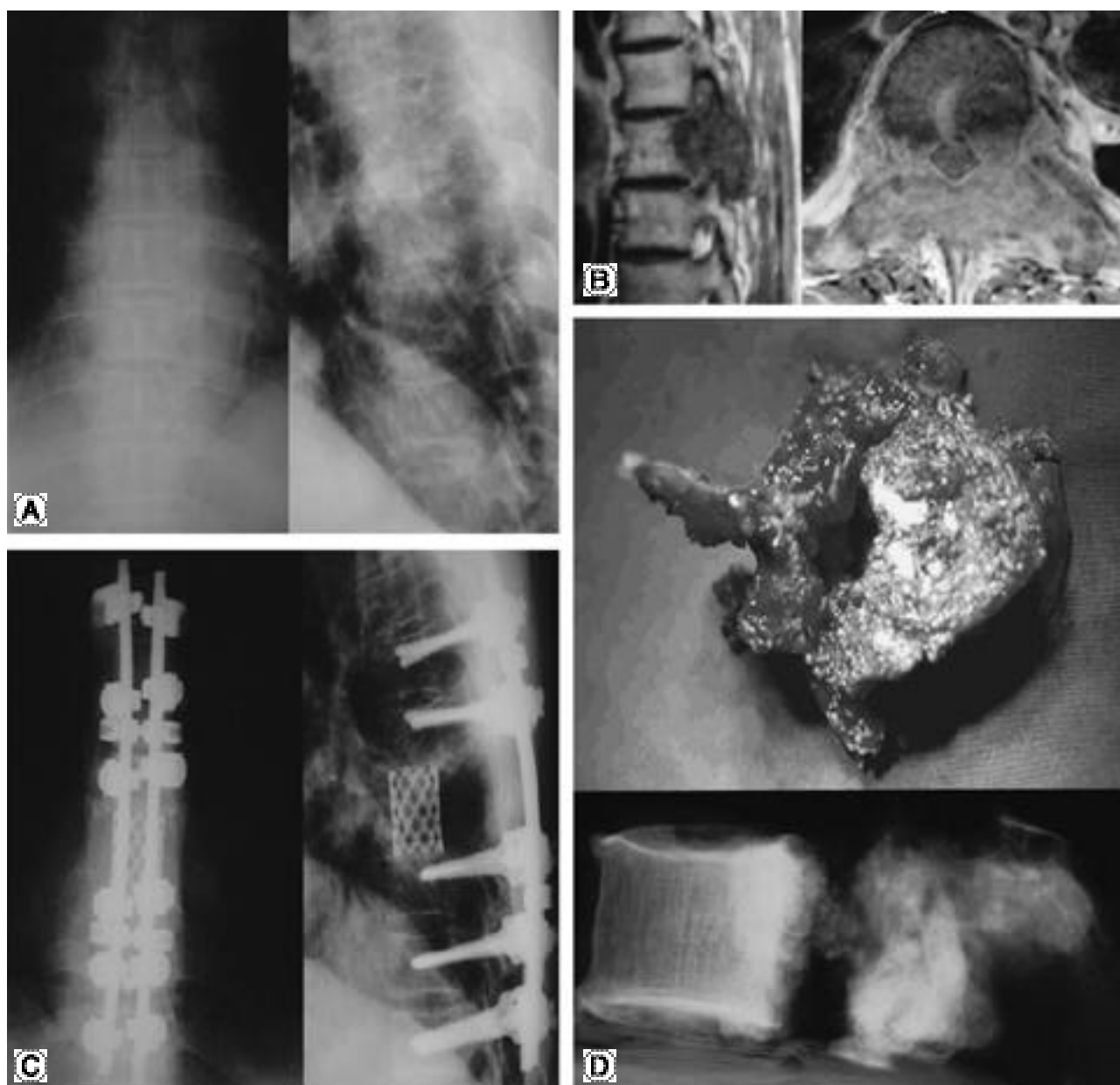


Fig. 1. 65-year-old man who had a bladder cancer (A) Preoperative radiographs shows destruction of both pedicle of T7. (B) Axial and sagittal MR image demonstrate solitary T7 metastasis and Tomita type 5. (C) Radiographs of 1 year 3 months after operation shows no evidence of local recurrence. (D) Photograph and radiograph of the excised T7 vertebra.

Table 3. Tomita 's surgical classification of spinal tumors⁶⁾

Intracompartmental lesion	type 1	anterior, posterior lesion in situ	1 or 2 or 3
	type 2	extension to pedicle	1+2, 3+2
	type 3	antero-posterior development	1+2+3
Extracompartmental lesion	type 4	epidural extension	any site +4
	type 5	paravertebral development	any site +5
	type 6	involvement to adjacent vertebra	
Multiple, skip lesion	type 7		

1) vertebral body, 2) pedicle, 3) lamina, spinous process, 4) epidural space, 5) paraspinal area.



Fig. 2. 55-year-old man who had a cholangiocarcinoma. (A) Preoperative radiography shows destruction of right pedicle at L5. T1WI sagittal (B) and axial (C) MR image demonstrates solitary mass of L5 and Tomita type 5. (D) Radiograph of 2 year 9 months after operation shows no evidence of local recurrence. (E) Radiograph and photograph of the excised L5 vertebra.

7

가

3.

(Fig. 1)

(Fig. 2)

2 4 4 ,3 3 ,2 2 ,0 1 .
 4 4 0 2 ,1 1 ,3
 3~4 cm 가 1 3 3
 0 . 0 1
 3 2 1 3

4 가 3 Frankel
 2 D E 1
 B B 가 .
 E E 가 .
 1 3

. spatula Tomita
 , 4 3 , 5 7 . ,
 , (azygos vein) 1

(annulus) 9.2 (5.3~14) 2000
 5 6.6
 (5.3~7.9) .

가 2150cc(1100~5450cc) .
 mesh cage 가 mesh cage
 가 mesh 4 , 6 .
 mesh cage 5.6 .
 4

5 .
 4 , 6
 3 45
 15 32 3
 7.7 7

가 mesh cage

가

9 McAfee

6,11,12)
2,3,5,13)
Roy-Camille¹⁾
Tomita⁶⁾
Stener²⁾ Roy-camille¹⁾
7
Boriani¹⁴⁾, Abe⁴⁾, Van Dijk¹⁵⁾
Tomita⁶⁾
가
Tomita^{6,17)}
Boriani¹⁴⁾
29
Abe⁴⁾ 6
Tomita
3
Kostuik¹⁸⁾
De Wald⁷⁾ Solini⁸⁾
Eric²¹⁾ 5
가
Tomita가
Tomita가
Tomita
70%,
9
Frenkel B
가
McAfee 0

가

가 가

가

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