



14, 2, 2001 4

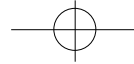
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<		>	
가		가	
: 2000 1		2000 6	
		1)	
가		2)	
가		3)	
		T-score가 -2.5	
		4)	
		5)	
1.06		5.11	
		6	
		6.17	
		1	
		1.05	
가		가	

:

374-75

Tel : (051) 580-1422



가

가

Iopromide(Ultravist  
가

(Fig.

2). Barium sulfate  
Osteobond (Zimmer) monomer methyl-  
methacrylate 1:2  
가 (toothpaste) X-

1)

2000 1

6

40

가

(uni-pedicle)

,

60

9

31

69.2

2-5M

,

4

,

15

가21

17

,

20

3

1)

2)

가

가

3)

T-score가 -2.5

4)

3)

3

5)

3

가

2)

1

X-

X-

4)

가

40

2

0.25% Bupivacaine

5mm 가

가 . X-

11G-

(11Gauge ×

5) 가

120mm needle including stylet)

(bull's-eye appearance)

(Fig. 1).

1/3

(Table 1).

0

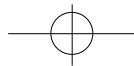
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10

,

1

6



**Fig 1.** After a small skin incision is made, the needle is advanced into the pedicle. Notice the shaft of the needle maintaining a bulls-eye appearance in relation to the pedicular edges in the anteroposterior plane.



**Fig 2.** Injection of contrast material in the lateral plane shows filling of the bony trabeculae. This appearance is important to recognize, since rapid filling of venous system without intervening a needle position directly within the basivertebral plexus.

**Table 1.** Pain scale

	0		
가	1	가	:
	2		:
	3		:
	4		:
	5		:
	6		
	7		: 6
	8		
	9		: 10
	10	가	:

2

0

1.06

5.11

6

0

8

4

6.17

.

1

1.05

(Table 2).

**Table 2.** Results after vertebroplasty

No.	Gender	Age	Score		
			Preop.	Postop. 1day	Postop. 6mon.
1	M	80	7	1	2
2	F	61	6	0	1
3	F	69	7	2	2
4	F	68	5	0	1
5	F	65	6	1	1
6	M	74	6	1	1
7	F	74	5	2	1
8	F	72	6	1	1
9	F	62	5	1	1
10	F	66	7	1	2
11	F	73	6	1	1
12	M	62	6	1	1
13	F	77	7	0	2
14	M	71	7	0	1
15	F	68	6	2	1
16	F	72	6	1	1
17	F	67	4	1	1
18	F	63	6	1	1
19	M	61	8	2	2
20	F	66	8	2	1
21	F	88	6	3	2
22	M	83	5	1	2
23	F	60	7	0	1
24	F	64	5	1	1
25	F	76	7	1	1
26	F	61	5	1	0
27	F	69	7	1	0
28	F	81	7	2	0
29	F	66	7	1	1
30	F	71	7	0	1
31	F	70	6	1	2
32	F	74	7	1	1
33	F	67	6	1	1
34	F	61	8	2	0
35	M	68	7	0	1
36	F	69	7	1	1
37	M	67	7	1	0
38	M	75	6	2	1
39	F	66	6	1	2
40	F	60	7	1	1
69.2			6.17	1.06	1.05

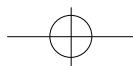


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2,4,16)  
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5,9,10,13)  
1987 Galibert  
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6,9,20) Mathis 15)  
, Jensen 10)  
PMMA X-  
90% 1 PMMA  
가  
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Evans  
7)  
PMMA  
가  
. Weil 20)  
methymethacrylate  
. Mathis 15) PMMA  
가



## REFERENCES

- 1) **Adam PH** : Osteoporosis. *Clin Rheum Dis*, 7:557-593, 1981.
- 2) **Catherine C, Marie PBS, Jean OR, Eric T, Christian J Francis B, Jacques S and Patrice T** : Acute osteoporotic vertebral collapse: open study on percutaneous injection of acrylic surgical cement in 20 patients. *AJR*, 173:1685-1690 1999.
- 3) **Chae IJ, Suh SW, Hahn SB and Lee SJ** : Compression fracture or stable bursting fracture of thoracolumbar spine treated by percutaneous vertebroplasty with allogeneous bone graft. *J of Korean Society of Spine Surg*, Vol.7:331-335 2000.
- 4) **Convery FR, Gunn DR and Hughes JD** : The relative safety of polymethylmethacrylate. *J Bone Joint Surg*, 57A:57-64 1975.
- 5) **Debusche-Depriester C, Deramond H, Fardellone P, Heleg A, Sebert JL, and Galibert P** : Percutaneous vertebroplasty with acrylic cement in the treatment of osteoporotic vertebral crush fracture syndrome. *Neuroradiology*, Vol.33:49-52, 1991.
- 6) **Deramond H, Depriester C, Galibert P, and Gars DL** : Percutaneous vertebroplasty with polymethylmethacrylate: technique, indication, and results. *Radiologic clinics of north america*, Vol.36:533-546, 1998
- 7) **Evans AJ, Weinoffer SL, Mathis JM, Kennett KB, Crandall JR, and Dion JE** : Effectiveness of vertebral body stabilization with percutaneous injection of methylmethacrylate. *American Society of Neuroradiology*, Apr 27: Chicago, IL, 1995.
- 8) **Galibert P, Deramond H, Rosat P and Le Gars D** : Note preliminaire sur le traitement des angiomes vertebraux per vertebroplastie acrylique percutanee. *Neurochirurgie*, 33:166-168, 1987.
- 9) **Gangi A, Kastler BA and Dietemann JL** : Percutaneous vertebroplasty guided by a combination of CT and fluoroscopy. *Am J Neuroradiol*, 15:352-353, 1994.
- 10) **Jensen ME, Evans AJ, Mathis JM, Kallmes DF, Cloft HJ and Dion JE** : Percutaneous polymethylmethacrylate vertebroplasty in the treatment of osteoporotic vertebral body compression fracture : technical aspects. *Am J Neuroradiol*, 18:1897-1094, 1997.
- 11) **Kans JA and McCloskey FV** : Epidemiology of vertebral osteoporosis. *Bone*, Vol.13:1-10, 1992
- 12) **Lee YL and Yip KMH** : The osteoporotic spine. *Clin Orthop*, 323:91-97, 1996. metastasis : Indications for and results of percutaneous injection of acrylic surgical cement. *Radiology*, Vol.199:241-247, 1996.
- 13) **Mathin JB, Jean B, Sugin, Piotin M, Murphy K, Rufenachat B, Muster M and Rufenachat B** : Vertebroplasty : Clinical experience and follow-up results. *Bone*, Vol.25:11-15, 1999.
- 14) **Mathis PGB and Joseph KL** : Augmentation of osteoporotic vertebral bodies. *Spine*, Vol.22:S38-42, 1997.
- 15) **Mathis JM, Ptri M and Naff N** : Percutaneous vertebroplasty treatment of steroid-induced osteoporotic compression fracture. *Arthritis & Rheumatism*, 41:171-175, 1988.
- 16) **Padovani B, Hasriel O, Brunner P and Peretti-Viton P** : **Pulmonary embolism caused by acrylic cement** : a rare complication of percutaneous vertebroplasty. *AJNR* 20:375-377 1999.
- 17) **Rapado A** : General management of vertebral fractures. *Bone*, Vol.18:191-196, 1996.
- 18) **Silverman SL** : The clinical consequences of vertebral compression fractures. *Bone*, Vol.13:S27-31 1992.
- 19) **Young MH and Wales C** : Long-term consequence of stable fractures of the thoracic and lumbar vertebral bodies. *J Bone Joint Surg*, 35B:295-300, 1973.
- 20) **Weil A, Chiras J, Simon JM, Rose M, Sola-**



**Martinez T and Enkaue E** : Spinal metastasis:  
Indication for and results of percutaneous injection

of acrylic surgical cement. *Radiology*, Vol.199:241-247, 1996.

#### Abstract

### The effect of percutaneous vertebroplasty with bone cement in the treatment of osteoporotic thoracolumbar compression fracture

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**Purpose** : To analyzed the degree of pain relief of 40 patients with osteoporotic thoracolumbar compression fracture treated by percutaneous vertebroplasty with bone cement.

**Materials and Methods** : We studied 40 cases of the osteoporotic thoracolumbar compression fracture from January 2000 to June 2000. It was evaluated with simple X-ray, bone scan, bone mineral density and CT for the patients 1)who had the compressed wedge fracture of vertebral body on simple X-ray, 2)who had increased bony uptakes of fracture site on bone scan, 3)who were under -2.5 in T-score on bone mineral density, 4)who were not relieved the pain to analgesic drug medication for more than 3 month with no radiating pain, 5)who had no fracture of posterior wall of vertebral body on CT in the case of acute fracture. We performed percutaneous vertebroplasty with bone cement and observed the degree of pain relief using pain scale pre-/ post-operation.

**Results** : The average pain point decreased from 6.17 points to 1.06 points at postoperative 1 day, total decreased points were 5.11 points. The average pain point was 1.05 at postoperative 6 months in the patients followed up for more than 6 months.

**Conclusion** : Percutaneous vertebroplasty with bone cement is valuable method in the treatment of osteoporotic thoracolumbar compression fracture, providing pain relief, prevention of complication originated from long term traction and bed rest, unwearing brace and early ambulation

**Key Words** : Osteoporotic thoracolumbar compression fracture, Vertebroplasty, Bone cement

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