
: ,
 ,
 : 1999 4 2004 5
 22 , 22
 26.5(7 ~ 55) , 가 15 , 가 7 2
 13, 4, 1, 1, 1,
 1, 1 3 ,
 , 80 90
 6(3 ~ 8) 가
 , 30(4 ~ 62)
 : 19 (86%) , 2 5 , 12
 , 1 . 4
 가 ,
 1 21 1.9 .
 2
 :
 , , ,
 : ,

:
 50

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10~30
2 가 ,
가 7
1 180 27.9
(1 , 1)
(Table 1).

가 .
2.
가 22 13 (59%) 가
가 4 , 2
2 , 4 ,
1 , 4 , 1 ,
1 , 1 , 1 가
(Table 1).

19,22)
가 3.
가
7,17,27)

^{4,10}, tetracycline
^{1,14}
^{4,12,13,16} ^{2,6,8,9,18,20,21,24} (nidus)

2002 7 2x2 mm 가 14x13
²⁴ mm 15 mm
22 3
1999 7 2004 5
19
22 , 22
4
22 7 (32%)

1.
1999 7 2004 5 4.

(Fig. 1A). 80~90 (Fig. 2). 5 8 (6) (Fig. 1B),

Table 1. Summary of Cases.

Case	Sex	Age	Site	P/R	Tx	Onset (mo)	Nidus size (mm)
1	M	7	Proximal Femur	P	none	12	6.5
2	M	23	Proximal Femur	P	Aspirin	3	6.4
3	M	24	Proximal Tibia	P	Aspirin	9	14
4	F	18	Proximal Femur	R	Open excision	7	7
5	F	41	Distal Femur	P	None	10	6
6	M	44	Femur Neck	P	None	36	6
7	F	55	Distal Femur	P	Aspirin	8	5.5
8	M	15	Femur Neck	P	Aspirin	7	5.5
9	M	16	Femur Shaft	P	Aspirin	8	6.5
10	F	32	Femur Shaft	P	Aspirin	180	8
11	M	31	Ilium	P	None	2	14
12	M	15	Proximal Femur	P	Aspirin	7	5
13	F	42	Distal Humerus	P	None	144	13
14	M	28	Ischium	P	None	1	12
15	F	48	Sacrum	P	Aspirin	120	11
16	M	26	Femur Shaft	P	Aspirin	1	4.5
17	M	19	Distal Fibula	P	Aspirin	12	5
18	M	21	Femur Shaft	R	RFA	33	4
19	M	19	Proximal Tibia	P	NSAIDs	6	4
20	M	13	Tibia Shaft	P	None	2	5
21	F	32	Tibia Shaft	P	Aspirin	1	2
22	M	14	Proximal Femur	P	NSAIDs	6	10

Abbreviations; P=primary case, R=recurred case, RFA=radio-frequency ablation

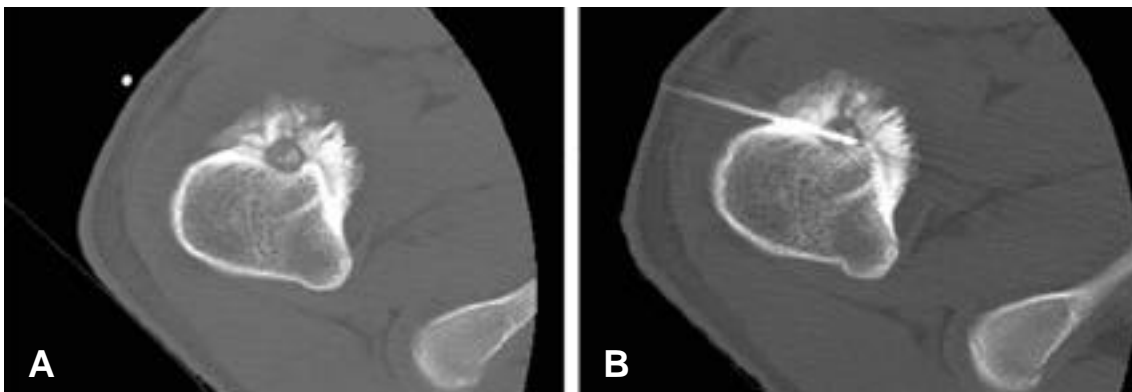


Fig. 1. (A) CT image of the lesion in the proximal femur (B) A radio-frequency electrode inserted within the lesion

5.

. 2004 8

good,
fair,

poor

7

1



Fig. 2. Radio-frequency ablation equipment. Left: the radio-frequency generator, Right: the perfusion pump.

Table 2. Results of Radio-frequency Ablation

Case	Pain Relief (day)	Discharge (day)	Last f/u (Mo)	Result
1	0	1	56	Good
2	2	5	56	Good
3	1	2	62	Good
4*	30	49	57	Good
5	0	1	48	Good
6	0	4	47	Good
7	0	1	38	Good
8	1	1	38	Good
9	1	2	35	Good
10	1	1	35	Mild Pain
11	1	1	5	Recurred
12	1	2	30	Good
13	0	3	30	Good
14	1	1	29	Good
15	1	1	27	Aggravated
16	1	2	16	Recurred
17	1	1	20	Good
18	0	5	11	Good
19	1	1	8	Good
20	0	3	8	Good
21	1	2	6	Good
22	1	1	4	Good

* Case 4 was complicated with burn.

가 가 ,

X-

1 49 , , ,
1 5 1.9 가 1.5 cm

(Table 2).

4 62 30 .
18

1 35 , ,

1 27 . 2 ,

50%

. Rosenthal ²¹⁾

2 가 ,

5 16 , 가

2 , 2

28 4 .

1 22 7 ,

Woer

tlar ²⁸⁾ 47

가

49 .

57 가 ,

(Table 2).

Cioni ⁵⁾ 38 가

30 가

, Vanderschueren ²⁶⁾ 97 2

54 87%

(32%)

7 24 ,

3 .

13% 2 ,

De Berg ⁶⁾ 18 가 3

¹¹⁾

X- 7 .

X- , 1

1 cm (14)

(Nidus)

, 18 .

11 X-

. Woertler ²⁸⁾

가 , Sluga ²⁵⁾

(Curettage) (En bloc resection) 50 ~ 100% 6, 15, 20, 22, 26, 28)

35% 45.5% 1 cm 가 22

4.5% 3% 15, 28)

2 5 16 14

, Sans ²³⁾ 38

2 mm 4.5 mm . 2

, 1 , 3 , 28 4

2 , 1 24%

Woertler 2 16

²⁸⁾ 47

가 4.5 mm

, Cioni ⁵⁾ 가

38 2

, Lindner ¹⁵⁾ Cantwell ³⁾

58 1 가 25 ,

22 1

2 ~ 8 가

가 가 4 62

30 , 22

7 가 25

Woertler ²⁸⁾

47 3 3, 5, 7

, 2

1.0 cm 1.5

cm , 3

19

34

100% 2

Lindner ¹⁵⁾ 58 3

, 2 3, 5, 7

cm , 3 가 1.0 cm 1.5

, 4 41

Vanderschueren ²⁶⁾ 97

11 , 6

6 , 10

(1 ~ 25)

2

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Abstract

CT-guided Percutaneous Thermoablation for the Treatment of Osteoid Osteoma

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Purpose: Current treatment for osteoid osteomas is usually surgical excision of the nidus. Various minimal invasive techniques have been reported to overcome the invasiveness of the surgical excision. We treated 22 patients with osteoid osteoma by percutaneous thermoablation of the nidus under computed-tomography guidance.

Materials and Methods: Twenty two consecutive patients underwent CT-guided percutaneous radio-frequency thermoablation between April 1999 and May 2004. The mean age was 26.5(7~55) years. In three cases, the diagnosis was confirmed pathologically before the procedure while the others clinically and radiologically. Computed tomography (CT)-guided percutaneous RF ablation was performed with general or spinal anesthesia. With an RF electrode, the lesion was heated to 80 or 90 degrees C for 6(3~8) minutes. Clinical success was assessed at a mean of 30(4~62) months after the procedure at out patient clinic or by telephone interview.

Results: The procedure was technically successful in all cases except a complication. Patients were discharged on 1.9 days after the procedure and resumed normal activities immediately. All patients but three (86%) remained pain free during follow-up (range 4~62 months). A second thermoablation treatment relieved the recurrent symptoms in 2 patients and the remained had persistent pain without a second procedure.

Conclusion: Percutaneous thermoablation appears to be safe and effective for osteoid osteomas, and is a minimally invasive procedure alternative to surgical resection.

Key Words: Osteoid osteoma, Percutaneous radio-frequency thermoablation

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