

1

2 2

: (acute)

가

: (Townsend, panoramic)

25

6

31

1

(retrodiskal tissue)

(joint capsule)

77% (24/31)

가

가 24

63% (15/24),

25% (6/24),

4% (1/24),

4% (1/24),

4% (1/24)

74% (23/31)

가

가 23

65% (15/23),

9% (2/23),

18% (4/23),

4% (1/23),

4% (1/23)

가

71% (17/24)

19% (6/31)

1

T2

가 16% (5/31)

2

가

3

가

71% (22/31)

22

4

가

30%

(4-7).

(synovitis),

(capsulitis)

(1).

panoramic, Towns

CT

가

가

CT

가

(23).

1995

1997

(Townsend, panoramic)

25

가

6

31

1

12

84

35

13 :

2

12

1

1.5 tesla  
 Magnetom 63 SP MR (Siemens, Erlangen, Germany)  
 (closed mouth)  
 (TR/TE; 1800/15msec),  
 (open mouth) T2 (TR/TE; 4200/90msec)  
 3mm, matrix 216 x 256,  
 FOV 150-180mm bilateral TMJ surface  
 coil  
 Lindahl  
 (subcondyle), (neck), (head)  
 (8) (Fig. 1).  
 (glenoid fossa)

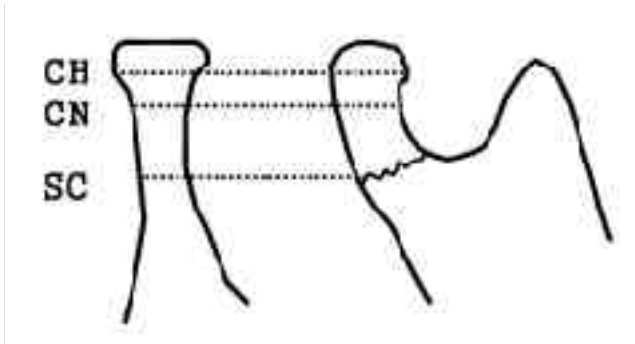


Fig. 1. Lindahl classification of condylar fracture.  
 The fractures of the mandibular condyle were classified head, neck and subcondylar with respect to fracture level.  
 CH : condylar head, CN : condylar neck, SC : subcondylar

가  
 가 T2  
 가 surface coil  
 가  
 (retrodiskal tissue)  
 (joint capsule)  
 3  
 가  
 (sub-  
 condyle) 14 , (neck) 8 , (head) 9  
 31  
 가 T2  
 .(Fig. 2C).  
 77% (24/31) 가  
 24 63% (15/24), 25% (6/24),  
 4% (1/24), 4% (1/24), 4% (1/24) (Fig. 2).  
 2 가  
 7 74% (23/31) 가 23  
 65% (15/23), 9% (2/23), 18% (4/23),  
 4% (1/23), 4% (1/23) (Fig. 2).  
 가 71% (17/24) ,  
 가  
 가 2 ,  
 가 2 , 가

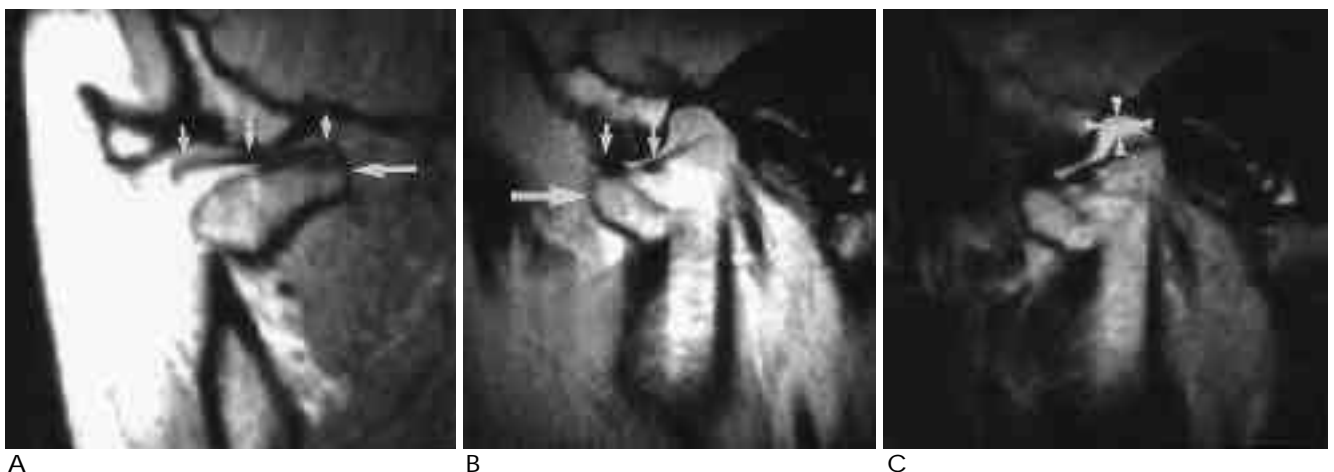


Fig. 2. Anteromedial displacement of bone fragment and disk in 25-year-old male with bilateral condylar neck fracture.  
 A, B. Coronal and sagittal proton density-weighted images in closed mouth position show a anteromedial displacement of condylar head (large arrow) and disk (small arrows).  
 C. On sagittal T2-weighted image in closed mouth position, joint effusion is noted in the superior joint space and posteriorly located slightly high signal intensity lesion is noted. It is thought to represent a hemarthrosis (arrowheads). The signal intensity of bone marrow of fractured condylar head shows intermediate signal intensity as same as that of the mandibular ramus.

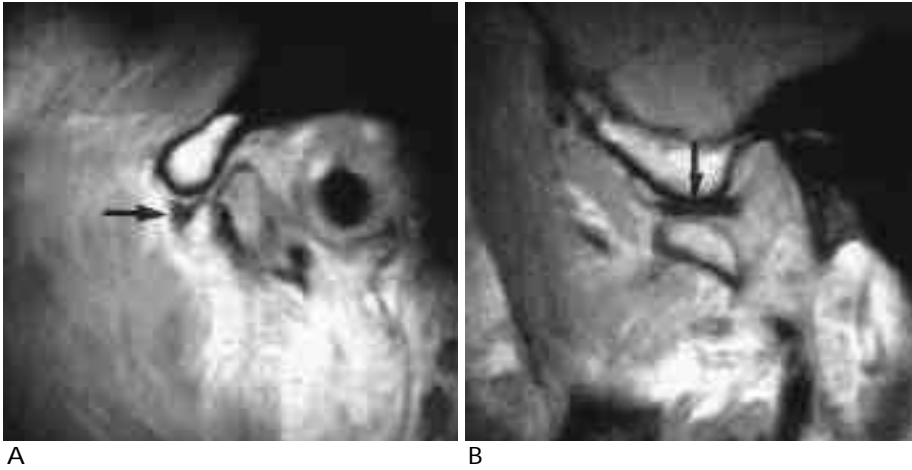


Fig. 3. Deformity of disk in a 24-year-old male patient with bilateral condylar neck fracture.

A. On sagittal proton density-weighted image in closed mouth, disk is deformed (arrow) and displaced anteriorly. However, the signal intensity of disk is low and a tear is not recognized. B. On sagittal closed mouth proton-weighted image scanned medially, disk is displaced anterioromedially along with the medial portion of condylar head.



Fig. 4. Capsular tear in a 42-year-old female patient with right condylar head fracture. On sagittal T2-weighted image shows disruption (arrow) of linear line representing capsule (arrowheads). Large amount of joint effusion is note in superior and inferior joint space. Band like low signal intensity (white large arrow) and circular intermediate signal intensity (white small arrow) in the superior joint space are thought to represent a blood clot.

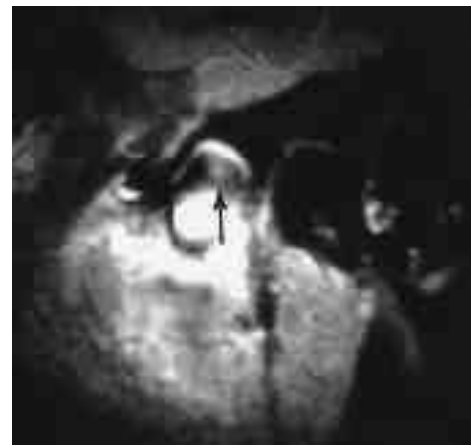


Fig. 5. Sagittal T2-weighted image of 53-year-old female patient with right condylar neck fracture demonstrates high signal intensity of retrodiskal tissue (arrow).

가 가 가2 ,  
가 가 가1 .  
T2  
(Fig. 2-5), 19% (6/31)  
(Fig. 3). 3% (1/31) T2 가  
(Fig. 4).  
T2 가 16% (5/  
31) , 2 가  
(Fig. 5), 3 가  
1 가  
가  
71% (22/31)  
(Fig. 2-4), 22 4  
T2

, 1  
, 1  
가 . (Fig. 2C, 4).

14-30%  
,  
,  
가  
(1,2).

(2). 가

(periosteum)  
 (ramus)  
 (coronoid process)  
 CT,  
 panoramic , Towns  
 가  
 가 (6,7),  
 가 29%  
 3  
 가 가  
 가 가  
 가 (2,9).  
 가  
 (4-7).  
 T1 , T2 Katzberg (rotation) (sideway)  
 (9,10). 가 가 (12).  
 Schellhas  
 (medial periosteal surface) 20%가  
 (11). T2 , 2 (articular  
 eminence)  
 가 V 가  
 (distraction)  
 Takaku Sullivan 가 가  
 (lateral pterygoid muscle)  
 (insertion)  
 가 (6,7).  
 가 2 가 2 (tear)  
 가 7 가 (rupture)  
 36%(5/14) , 14%(2/14) (6,7).  
 , 50%(7/14) 가 Takaku 가 (joint capsule)  
 가 가



## **MR Imaging of the Temporomandibular Joint in Patient with Acute Mandibular Condylar Fracture<sup>1</sup>**

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**Purpose :** To analyze various MR imaging findings and thus evaluate the usefulness of MR imaging of the temporomandibular joint in patient with acute mandibular condylar fracture.

**Materials and Methods :** MR imaging was performed within 1 week after trauma in 25 patients (total joints studied= 31) in whom condylar fracture had been diagnosed by simple radiographs. We analyzed the signal intensity of bone marrow and disk, displacement of bone fragment and disk, deformity. In addition, MRI findings of retrodiskal tissue, joint capsule and joint effusion were evaluated.

**Results :** No abnormal signal intensity was noted in bone marrow or disk. Displacement of a condylar fracture fragment was observed in 24 joints(77 %) (anteromedial, 63 %; medial, 25 %; anterior, 4 %; anterolateral, 4 %; and lateral, 4 %). Disk displacement occurred in 23 joints(74 %) (anteromedial, 65 %; medial, 9 %; anterior, 18 %; anterolateral, 4 %; and lateral, 4 %). In 17 joints (55 %) the disk was displaced along with the fractured condylar fragment, and disk deformity was noted in five joints(16 %). MR imaging (T2WI) revealed a capsular tear(n= 1), joint effusion(n= 26), and high signal intensity in the retrodiskal tissue(n= 6).

**Conclusion :** MR imaging provided information concerning condylar fragments, disks, retrodiskal tissue, capsules, and joint effusion. In patients with acute mandibular condylar fracture, MRI is therefore useful for evaluation of the temporomandibular joint.

**Index words :** Jaws, fracture

Jaws, MR

Joints, temporomandibular

Joints, MR

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