

HDI 3000 (Advanced Technology Laboratories, Bothwell, Washington, U.S.A.) 10 MHz

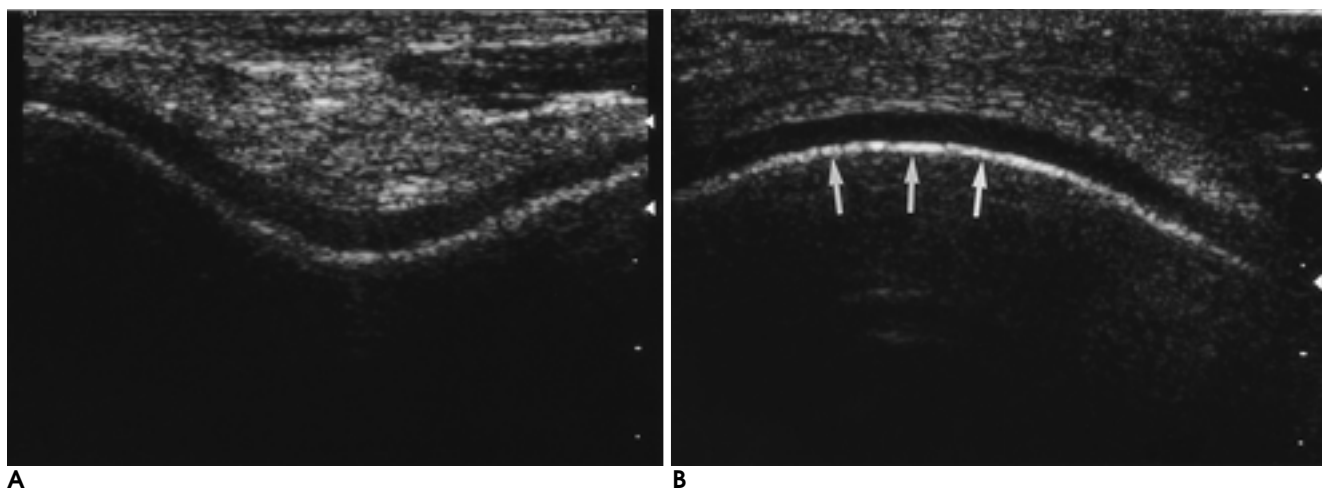
983

가  
가  
가  
가 1 mm  
가  
가  
가 3 mm



(Fig. 2). 1.4 - 2.4 mm

	Medial Condyle (mm)	Lateral Condyle (mm)
1	2.2	1.4
2	2.4	2.2
3	2.0	1.9
4	1.6	0.8
5	1.6	1.6
6	1.8	1.5
7	1.4	1.0
8	1.5	1.1
9	2.1	1.6
10	1.6	1.6
Mean	1.82	1.47



984

1.82 mm  
mm (Table 1)  
( $P < 0.01$ ).

0.8 - 2.2 mm

1.47

가 . 16 (80%) 14 (70%)

20 가  
16 (80%)/ 10 (50%) (Table 2).

가 가

가

가

가

17 (85%)/

16 (80%) (Fig. 3A).

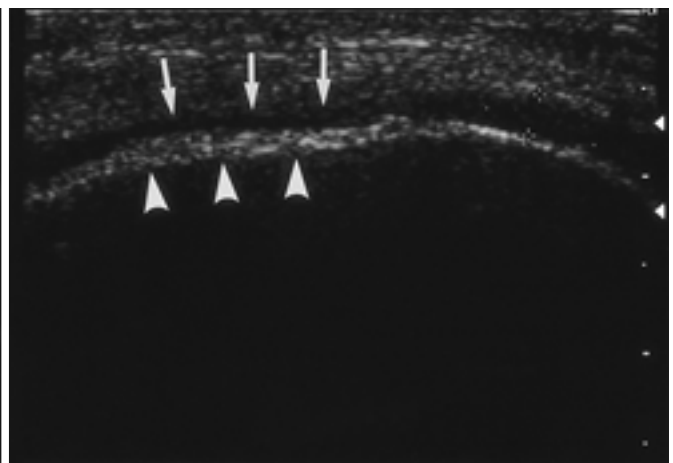
가

**Table 2.** Sonographic Findings of Articular Cartilages in Osteoarthritis (20 patients)

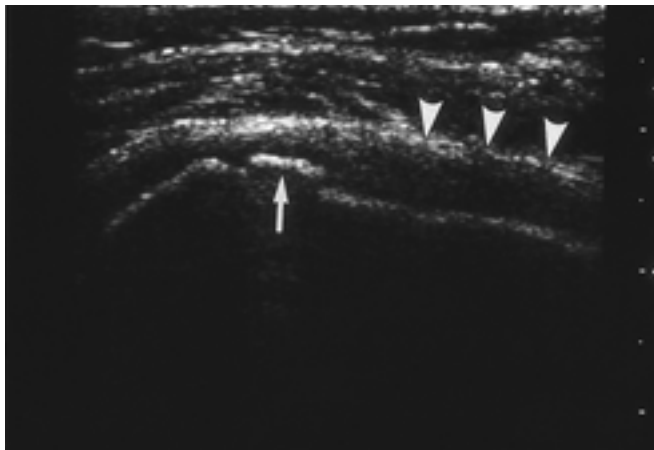
Abnormalities	Medial Condyle	Lateral Condyle
Thinning or Thickening	18	14
Poorly-defined surface	16	10
Increased echogenicity	17	16
Thick subchondral band	5	4
Osteophyte	13	12



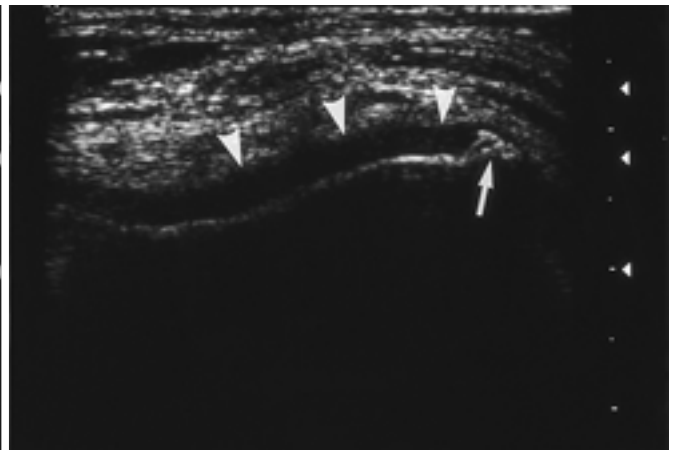
A



B



C



D

**Fig. 3.** Osteoarthritic articular cartilage.

**A.** Transverse scan through the medial condyle shows poor definition of cartilage surface and increased echogenicity of the cartilage (arrows).

**B.** Longitudinal scan through the medial condyle shows cartilage thinning (arrows) and thick subchondral hyperechoic band (arrowheads).

**C.** Longitudinal scan through the medial condyle shows marked thickening of articular cartilage (arrowheads). A linear echogenic lesion (arrow) in the deep layer of cartilage regarded as an osteophyte, which connected with the subchondral hyperechoic band (not shown here).

**D.** Transverse scan demonstrates focal bulging contour suggesting osteophyte at cartilage-bone interface of the lateral condyle (arrow). The adjacent articular cartilage shows normal appearance (arrowheads).

(Fig. 3B). 2 가 가  
가  
(Fig. 3C). 가  
5 (25%)/ 4 (20%) , 13  
(65%)/ 12 (60%) (Fig. 3C, D).  
(5, 15),  
(10).  
가 (11). proteoglycan  
proteoglycan ,  
가 가 .  
proteoglycan , 가  
(cluster) . 가 가  
(12).  
가  
가 (13). 가 가  
가 가 가  
(14), 가  
가가  
가  
가 2 가가  
가 가  
(5). 가 가  
가 가  
(6), 가  
가  
0.8 - 2.4 mm  
( :  $1.82 \pm 0.34$ , :  $1.47 \pm 0.42$  mm)  
(Table 1).  
lagnocco (8) 18 - 36  
 $2.07 \pm 0.63$ ,  $2.10 \pm$   
0.71 mm  
가  
. Jonsson (9) 10 (24 -  
77 , 50)  $2.11 \pm$   
0.26 mm  
가

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## Sonographic Evaluation of Femoral Articular Cartilage in the Knee<sup>1</sup>

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**Purpose:** To investigate the usefulness of sonography for the evaluation of osteoarthritic articular cartilage.

**Materials and Methods:** Ten asymptomatic volunteers and 20 patients with osteoarthritis of the knee underwent sonographic evaluation. For this, the knee was maintained of full flexion in order to expose the deep portion of femoral condylar cartilage. Both transverse and longitudinal scans were obtained in standardized planes. Sonographic images of the articular cartilages were analyzed in terms of surface sharpness, echogenicity and thickness, along with associated bone changes.

**Results:** Normal cartilages showed a clearly-defined surface, homogeneously low echogenicity and regular thickness. Among 20 patients, the findings for medial and lateral condyles, respectively, were as follows: poorly defined cartilage surface, 16(80%) and ten(50%); increased echogenicity of cartilage, 17(85%) and 16(80%); cartilage thinning, 16(80%) and 14(70%) (two medial condyles demonstrated obvious cartilage thickening); the presence of thick subchondral hyperechoic bands, five (25%) and four (20%); the presence of osteophytes, 13 (65%) and 12(60%).

**Conclusion:** Sonography is a convenient and accurate modality for the evaluation of femoral articular cartilage. In particular, it can be useful for detecting early degenerative cartilaginous change and for studying such change during clinical follow-up.

**Index words :** Ultrasound(US)  
Arthritis, degenerative  
Cartilage  
Knee, US

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