

: Placenta, abnosmalities
 Placenta, US
 Ultrasound (US), Dopples studies

HCG 가 , 10

HCG 가 [1-4].

[5-11].

HCG , 가
 [1-7].

7 ~4 . 15

1 , 2

5

94 6 98 5 , 4

24

. 18 HCG 1 4.5
mIU/ml , 17 6~8729 mIU/ml(853.43
± 2218.33 mIU/ml) 가 .

24

가 . 11 , 6

HCG

Ultramark

, 7

9-H, DH (Advanced Technology Laborator-ies, Bothell, WA),
5.0 MHz

1.4~6.4 cm (3.42±1.40 cm)

, 19 (79.2%) , 2 (8.3%) , 3
(12.5%) . 3 (12.5%)

4 MHz, spatial peak and temporal average in-
tensity 40-92 mW/cm2, (pulse repetition fre-
quency) 2-8 kHz, wall filter 100 Hz, 4-

, 21 (87.5%) , 12

20 cm/sec, 2-3 cm, 30-60

(57.1%) 가 . 17

5

가

19 가 (Fig. 1).

subendometrial halo

19 1 3 (15.8%), 2 11
(57.9%), 3 5 (26.3%) . 9 (47.4%)

, 9 (47.4%) , 1
(5.2%)

1 , 1/3~2/3 2 , 2/3

15.4~99.3 cm/sec (47.33±22.75 cm/sec)

3

0.17~0.43 (0.31±0.07)

가 1 , 가 2 ,

21 가 1 가
5 (23.8%), 2 가 12 (57.1%), 3 4 (19.1%)

가 3

11.8~106.0 cm/sec(

21 , 2

46.99±29.65 cm/sec) , 0.19~0.49(0.35±
0.09)

1

HCG

HCG

7

1 ~1

HCG

1116.0±2583.9 mIU/ml, 170.9±278.8 mIU/ml

SPSS (Window 95, 7.0 version)

가 (p>0.05).

HCG

가 T-test

3 HCG 7.4±1.9, 1993.0±3374.5,

가 HCG

135.4±191.5 mIU/ml

가

가 one-way ANOVA

(p>0.05). HCG

(analysis of variance) post-HOC test

(Table 1, p>0.05).

HCG

Pearson correlation

P-

value 0.05

22 44 (31.39±5.31)

. 7 2 ~2 , 3

(placenta accreta) , 17 2 ~5

Table 1. Correlation Coefficients among Serum HCG & Size of Retained Placenta between Color Doppler Sonographic Parameters

	PSV	RI	m-PSV	m-RI
HCG	-.105	.396	-.260	-.225
Size	.121	-.505*	-.230	-.251

PSV (peak systolic velocity), RI (resistive index),
m-PSV (myometrial PSV), m-RI (myometrial RI)

* : p < .05

가
 3.2±1.3 cm, 4.1±1.6 cm
 가 (p>0.05).
 2.0±0.7, 3.4±1.2, 3.8±1.6 cm
 가 (p>0.05).
 (r=-0.505, p=0.033<0.05) (Fig. 2,3)
 가
 (Table 1, p>0.05).
 2, 20, 1, 1, 2, 18, 17, 가 (trophoblastic cell) (uteroplacental vessel) 가 (Fig. 1).
 가 1 가 . 6
 , 4
 가 2 가
 가 2 가
 (hyalinization)
 가
 (Fig. 4).

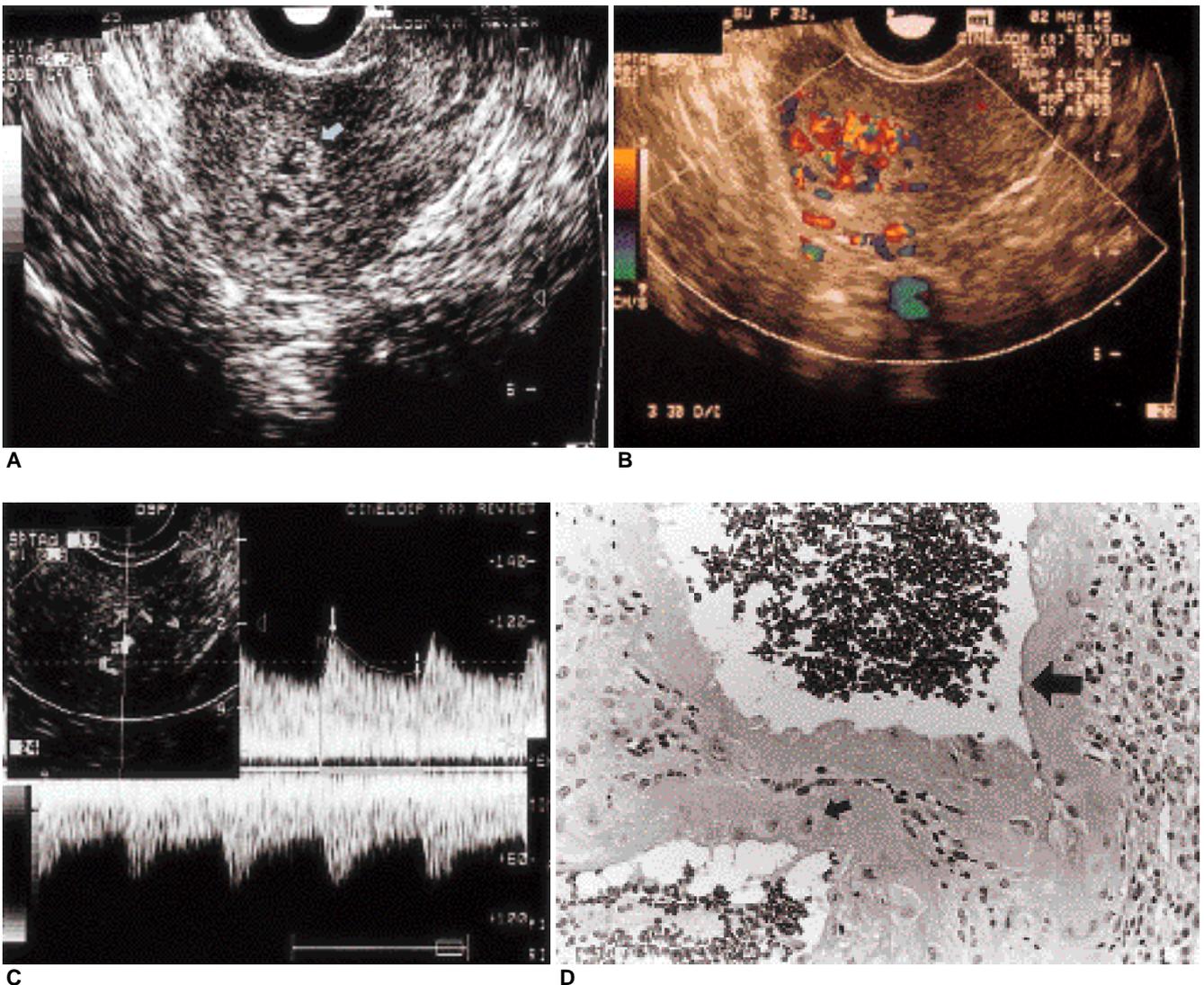


Fig. 1. **A.** Sagittal image of the uterus demonstrates a 2.7 × 2.5 cm sized mass in the fundus showing hyperechoic and inhomogeneous echotexture (white arrow) with cystic changes (white arrow head). **B,C.** Blood flow of grade 3 is seen in the periphery and center of the mass with peak systolic velocity of 92.5 cm/sec and resistive index of 0.33. **D.** Dilated uteroplacental vessels (large black arrow) are seen with angioinvasion by intermediate trophoblasts (small black arrow). H-E, × 400.

HCG 7 5 mIU/ml
 HCG 5.4, 8.7, 28.9, 32.8,
 88, 1262, 4409 mIU/ml

[1-2].

HCG

가

HCG

HCG 가

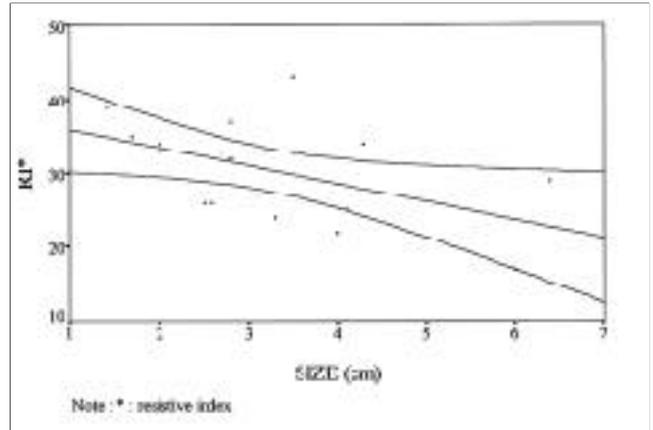
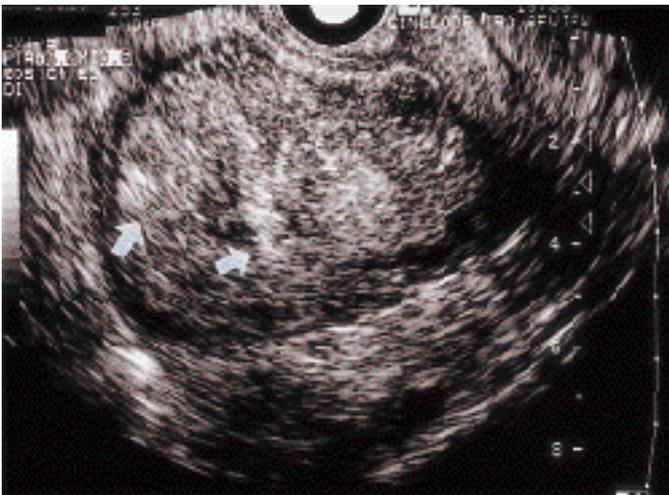
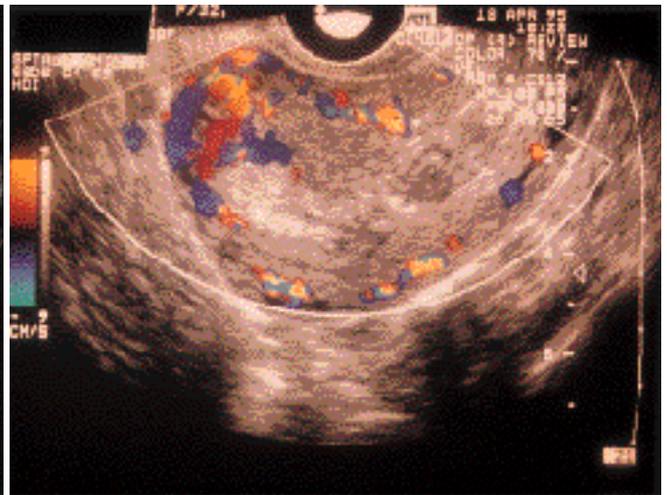


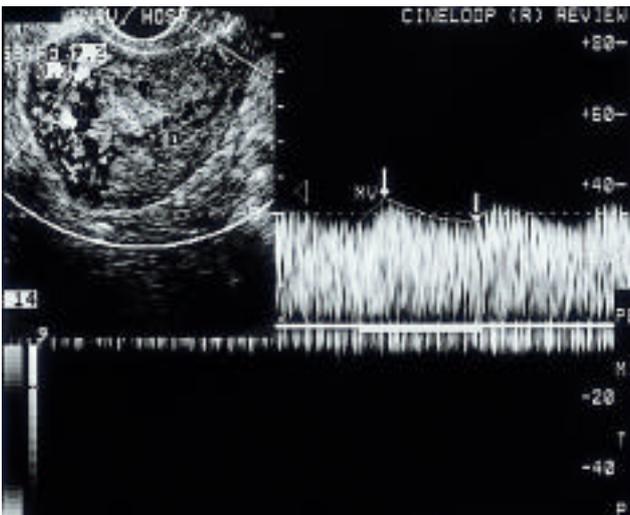
Fig. 2. Regression analysis according to size versus resistive index in retained placenta shows downward slope, meaning negative correlation between size and resistive index of retained placenta ($r=-0.505$, $p=0.033<0.05$).



A

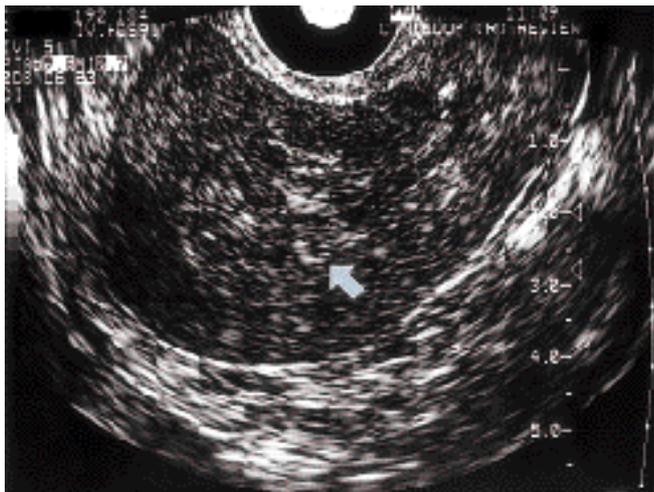


B

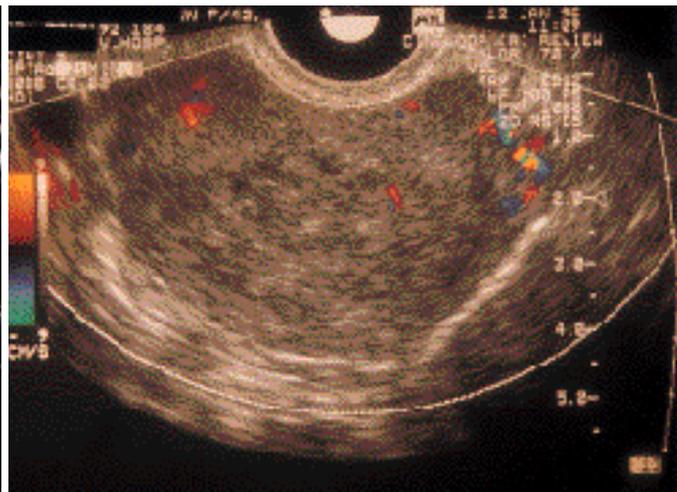


C

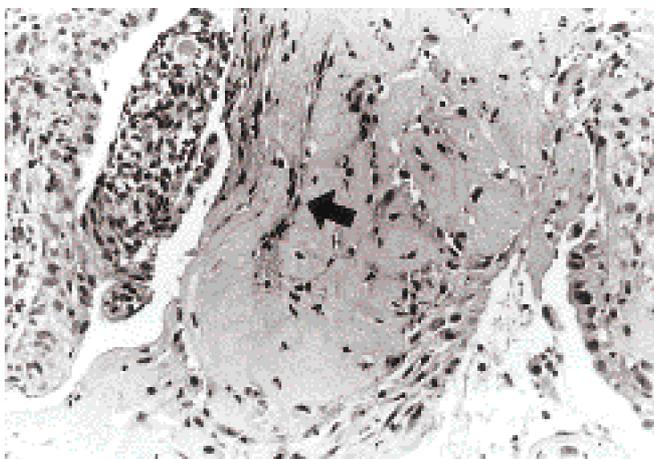
Fig. 3. A. Sagittal image of the uterus demonstrates a 6.0 x 3.2 cm sized mass in the fundus and corpus showing hyperechoic and inhomogeneous echotexture (white arrows) with cystic changes (white arrow head). **B,C.** Blood flow of grade 2 is seen in the periphery and center of the mass with peak systolic velocity of 54.4 cm/sec and resistive index of 0.17. This case represents retained placenta with the largest size and the lowest resistive index in our study.



A



B



C

Fig. 4. **A.** Sagittal image of the uterus demonstrates a 3.4 x 1.8 cm sized mass in the fundus and corpus showing slightly hyperechoic and inhomogeneous echo texture (white arrow). **B.** No blood flow is seen in the mass. **C.** Collapsed uteroplacental vessel (black arrow) surrounded by hyalinization and inflammatory infiltrates. H-E, x 400.

가 0.35
 가 0.45
 [10,11].
 HCG
 가 [1-4].
 HCG가 가
 HCG
 가
 [3-7].
 가
 (hydatidiform mole)
 (hydropic change) 가
 가
 [8-10].
 47.33 ± 22.75cm/sec
 cm/sec
 0.30
 [10,11].
 가
 HCG
 가
 가
 7.3
 0.31 ± 0.07 8
 0.35 ~ 0.45

[14-16].

가 HCG
가 HCG

HCG 가

가

가

가

가

HCG

가

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= Abstract =

Transvaginal Color Doppler Sonographic Findings of Retained Placenta

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PURPOSE : The purpose of this study was to evaluate the efficacy of transvaginal color Doppler sonography (TVCDS) in the diagnosis of retained placenta.

MATERIALS AND METHODS : 24 cases pathologically diagnosed retained placenta and underwent TVCDS before treatment were included in this study. The clinical findings, TVCDS findings, and pathological findings were reviewed retrospectively. We evaluated size, location, echo character, and myometrial invasion with gray scale. Presence, grade (1-3), location, peak systolic velocity (PSV), and resistive index (RI) of blood flow in retained placenta were observed.

RESULTS : In transvaginal sonography, 21 cases had cystic changes and heterogeneous echo texture in retained placenta. The sizes of retained placenta were 1.4~6.4 cm (mean 3.4 cm), and 17 cases demonstrated myometrial invasion. In TVCDS, 19 cases showed blood flow in retained placenta but 5 cases did not. Most blood flows were grade 2 and located in either periphery or both periphery and center of the mass. PSV were 15.4~99.3 cm/sec (mean 47.33 ± 22.75 cm/sec) and RI were 0.17~0.43 (mean 0.31 ± 0.07). RI of blood flow in retained placenta negatively correlated with the size ($p=0.033<0.05$).

CONCLUSION : Retained placenta demonstrated with TVCDS shows blood flow of high velocity and low impedance. TVCDS may be a useful tool in the diagnosis of retained placenta.

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