

1

2

12

T2

3mm

가

(43%),

(43%),

(67%),

(43%),

(43%),

(60%)

(pelvic floor) (levator ani 12 ,
muscle) (pelvic diaphragm) 47.8 (37-59) . 12 3 ,
(endopelvic fascia) (urogenital 2 (0-3) ,
diaphragm) (1, 2), 1-20 .
가 5 ,
(bladder outlet closure mechanism) 26.2 (21-31) .
(stress MRI GE 1.5T(Signa advantage, GE Medical
urinary incontinence) System, Milwaukee, Winsconsin, U.S.A.) Pelvic-ar-
ray coil (Field of view) 20-24cm,
(Matrix size) 512 × 256 , 3mm,
(number of excitation) 2 T2
(TR/TE = 3000/85)
(perineal membrane) .
MRI (levator ani muscle)
가 (urethropelvic liga-
ments)
Mann-Whitney U test
(p<0.05).

1

2

1999 11 5 2000 1 12

(Table 1).

55.0 ± 7.87 , 70.17 ± 10.21
가 (p<0.05).

가 ,

5 (42%) 가 ,

8 (67%) 가 .

Table 1. Anatomic Differences in Pelvic Floor for Normal Controls and Women with Stress Urinary Incontinence Using High Resolution MRI

	SUI (n= 12) (%)	Controls (n= 5) (%)
Levator ani muscle		
Angle (°)*	70.17 ± 10.21	55.0 ± 7.87
Asymmetry	5(42)	0(0)
High Signal	8(67)	0(0)
Discontinuity	0(0)	0(0)
Distance between symphysis & urethra (mm)		
Ant. wall*	13.4 ± 3.7	9.25 ± 0.96
Post. wall*	29.0 ± 5.56	12.5 ± 1.29
Urethropelvic ligament		
Absence	5(43)	0(0)
Dorsal angulations	5(43)	0(0)
Discontinuity	6(60)	0(0)

Note : SUI : stress urinary incontinence

* : differences between SUI and controls were statistically significant(p< 0.05)

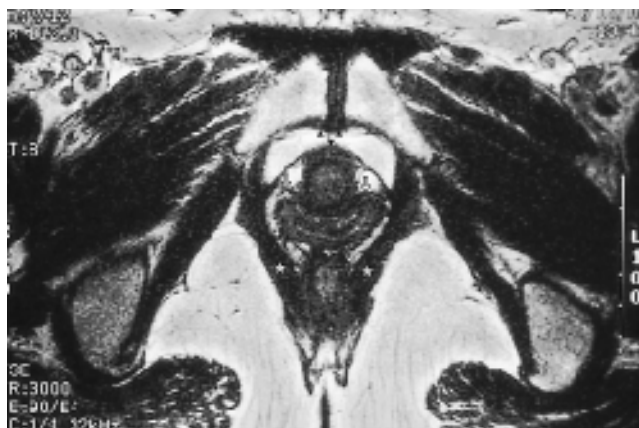


Fig. 1. Normal nulliparous anatomy. A T2- weighted FSE axial scan of the pelvic floor at the level of proximal urethra demonstrates low signal intensity of urethropelvic ligaments(UPL)(arrows) which is extending from levator ani muscle to lateral wall of proximal urethra. The smooth, ventral angulations of UPL, sharp angulations and low signal intensity of levator ani muscle* and close contact of urethra to symphysis pubis(arrowheads) are noted.

(p<0.05).

(Fig. 1),

(2)

(43%)

(Fig. 2, 3)

가

가

(3)

12

5

, 5 (43%)

, 6 (60%)

(urodynamic)

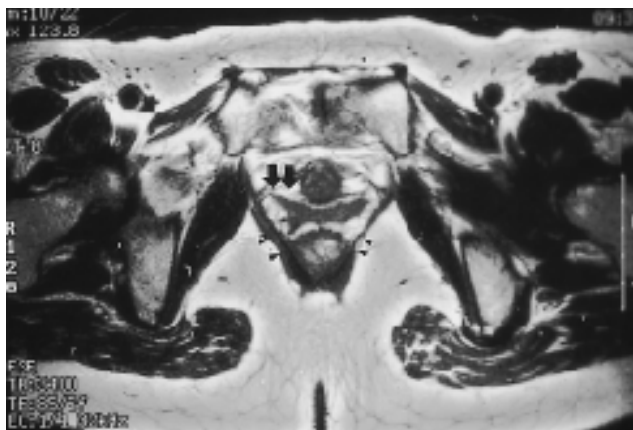


Fig. 2. Anatomical changes in patient with stress urinary incontinence. FSE axial scans of the pelvic floor at the level of proximal urethra shows unilateral absence of UPL on the right side(arrows) and asymmetry of levator ani muscle(arrowheads).

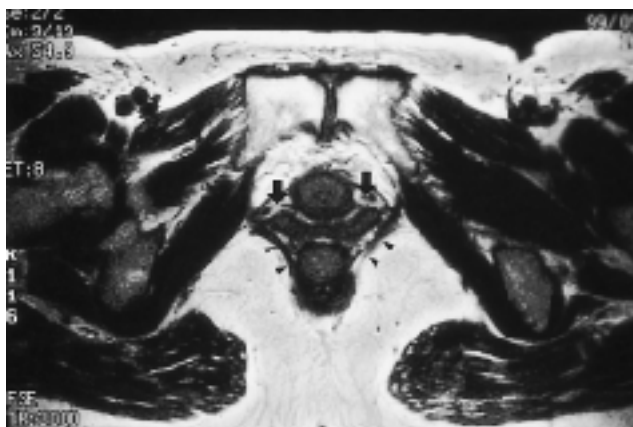


Fig. 3. Anatomical changes in patient with stress urinary incontinence . FSE axial scans of the pelvic floor at the level of proximal urethra shows discontinuity and dorsal angulations of UPL(arrows) and widening of levator ani sling (arrowheads).

MRI

tinence

(1, 4). con-

MRI

(1, 5, 6), MRI

가

(6-10).

20%
가

MR

(11),
가

(muscular floor)

가 ,
 , hammock
 , 가

(1,

11, 12).

가 가

(2)

가 8 (67%)
가 ,

가 (1, 13).

가

가 ,

Klute (11)

(musculofascial

support) 가 가 ,

(3, 5, 11).

가 ,

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MR Imaging of Pelvic Floor in Stress Urinary Incontinence¹

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Purpose : To demonstrate the anatomy of the female pelvic floor and to determine the anatomic differences between normal controls and women with stress urinary incontinence, using MRI.

Materials and Methods : Five healthy, young, nulliparous women and 12 with stress urinary incontinence underwent MR imaging. We obtained FSE T2-weighted axial images, 3mm thick, of the region extending from the urethrovesical junction to the perineal membrane. The following parameters were determined : angle, asymmetry and signal intensity of the levator ani muscles, the distance between the urethra and symphysis, and the presence, shape and angulation of urethropelvic ligament.

Results : In contrast to normal controls, frequent findings in women with stress incontinence were as follows : increased angle(43 %), asymmetry(43 %) and higher signal intensity(67 %) of the levator ani muscles; increased distance between the urethra and symphysis; loss(43 %), discontinuity (60 %) and dorsal angulation(43 %) of the urethropelvic ligament .

Conclusion : In women with stress urinary incontinence, MRI clearly demonstrates the anatomy of the female pelvic floor, changes in the levator ani muscles, the distance between the urethra and symphysis, and the urethropelvic ligament. The modality can therefore be used to evaluate the anatomical changes occurring in cases of stress urinary incontinence.

Index words : Pelvic organs, MR
Pelvis, abnormalities
Urine, incontinence

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