

**Is pelvic incidence is related with the resorption of lumbar disc
herniation?**

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Study background

Good prognostic factors

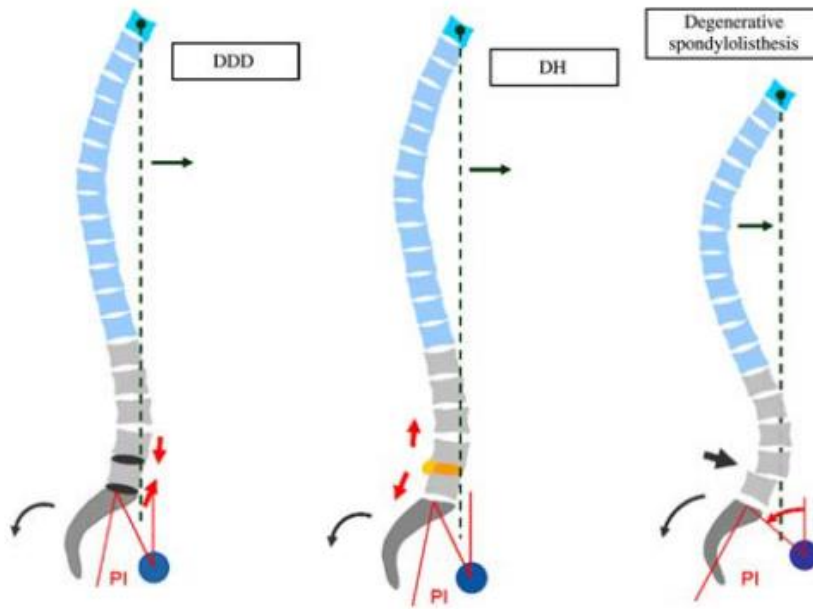
- **Age** (Autio et al, Spine, 2006)
- **PLL penetration** (Ahn et al, Spine, 2000)
- **Size of herniation** (Komori et al, Spine, 1996)
- **Rim enhancement** (Autio et al, Spine, 2006)

Poor prognostic factor

- **Modic change** (Shan et al. Spine. 2014)

The resorption of the herniated disc **has been considered as an important factor to predict the favorable outcome.** (Komori et al, Spine, 1996)

Study background



Cedric et al, Eur Spine J, 2007

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ORIGINAL ARTICLE

Radiological analysis of upper lumbar disc herniation and spinopelvic sagittal alignment

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Pelvic incidence is a constant radiographic factor, has been found to be related with disc degeneration.

Disc degeneration and herniation is related with lower or normal PI.

The higher prevalence of short LL and long TK with low PI in the upper lumbar disc group.

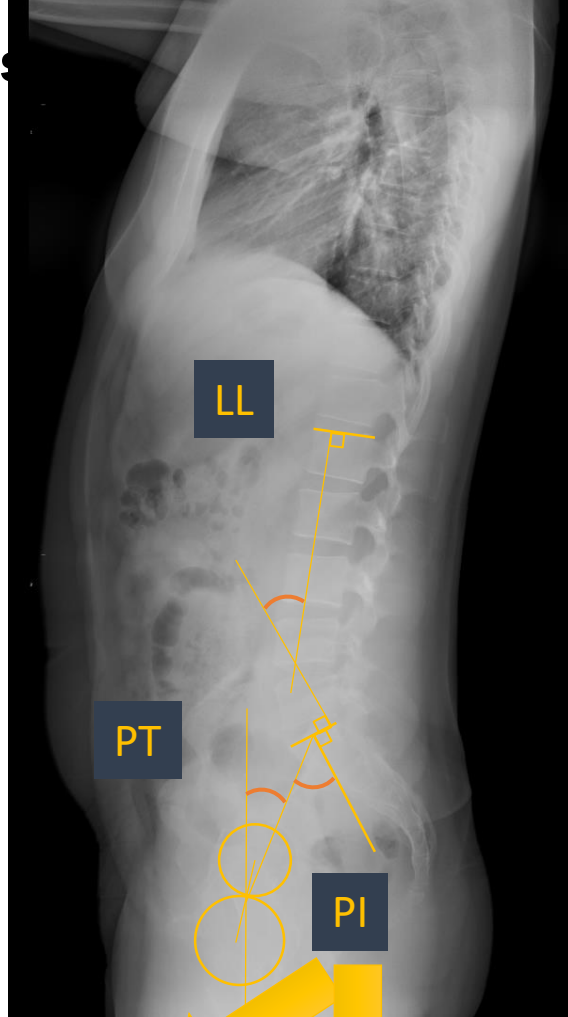
Objectives

- This study was designed to evaluate the relationship between **spinopelvic parameters** and **the resorption of disc herniation**.

Methods

- Consecutive **56 Patients** who were diagnosed with **symptomatic HNP**,
 - Confirmed with Hx taking, P/Ex and MRI.
 - Without neurology
 - Without previous spinal disorder
- **One year of conservative treatment** under informed consent
- **Re-evaluation with MRI after 1 year**

Methods



- **Level**
- **PLL intactness**
 - (Ahn et al, Spine, 2000)
- **Type**
 - (Fardon et al, The Spine J, 2014)
- **Disc degeneration**
 - (Priffmann et al, Spine, 2001)
- **Modic change**
 - (Fardon et al, The Spine J, 2014)
- **Volumetric change**
 - (Autio et al, Spine, 2006)

High PI group
($PI > 45^\circ$), n=30

Low PI group
($PI \leq 45^\circ$), n=26

Various parameters of herniated lumbar disc were measured from initial MRI

Volumetric change was measured by comparing initial and follow-up MRI

Patients were allocated according to pelvic incidence $> 45^\circ$ or not

Results

	High PI (n=30)	Low PI (n=26)	<i>P</i>
Age (years)	44.93±15.84	36.31±14.68	0.149
Sex (M:F)	14:16	20:6	0.137
Affected level			0.986
L3-4	2	2	
L4-5	18	16	
L5-S1	10	8	
Disc degeneration			0.144
I	0	0	
II	4	2	
III	16	6	
IV	8	18	
V	2	0	
Modic change			0.916
None	28	24	
Type I	2	2	
Type II	0	0	
Type III	0	0	
PLL intactness			0.372
Intact	4	8	
Ruptured	26	18	

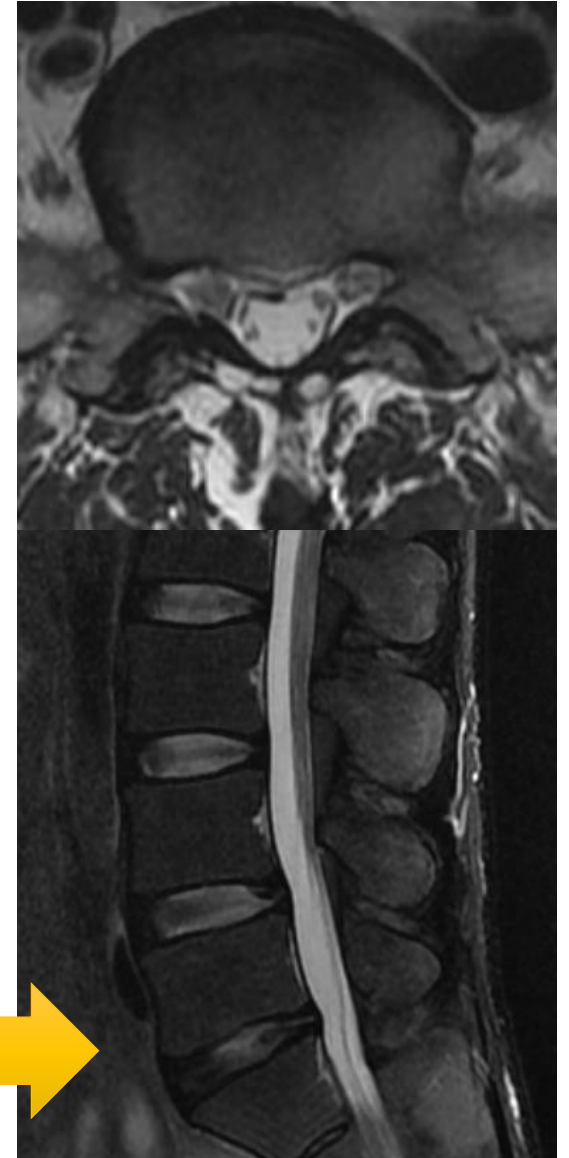
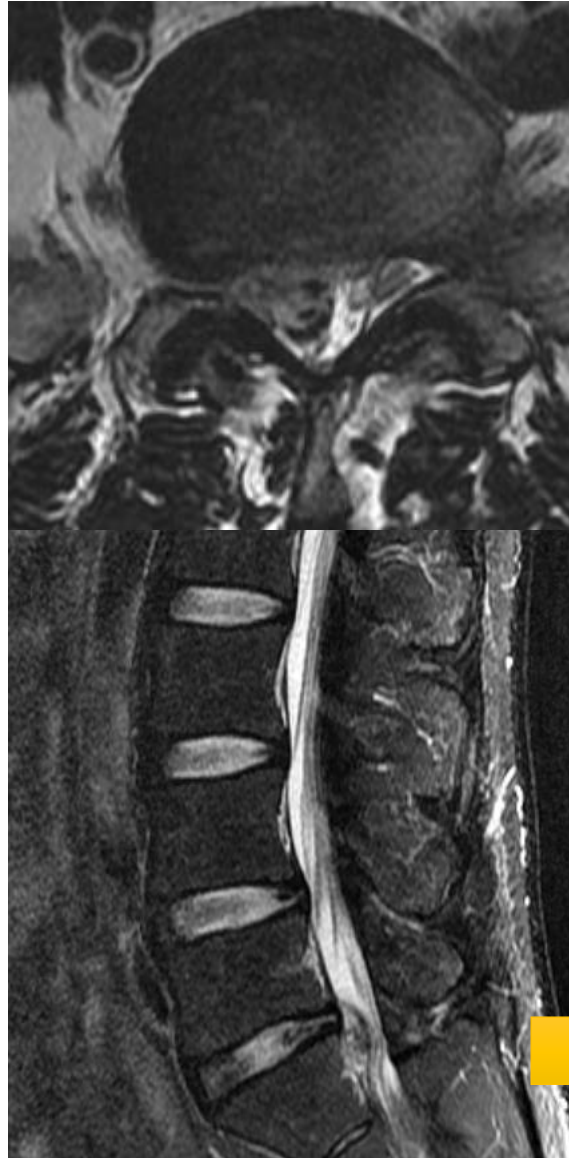
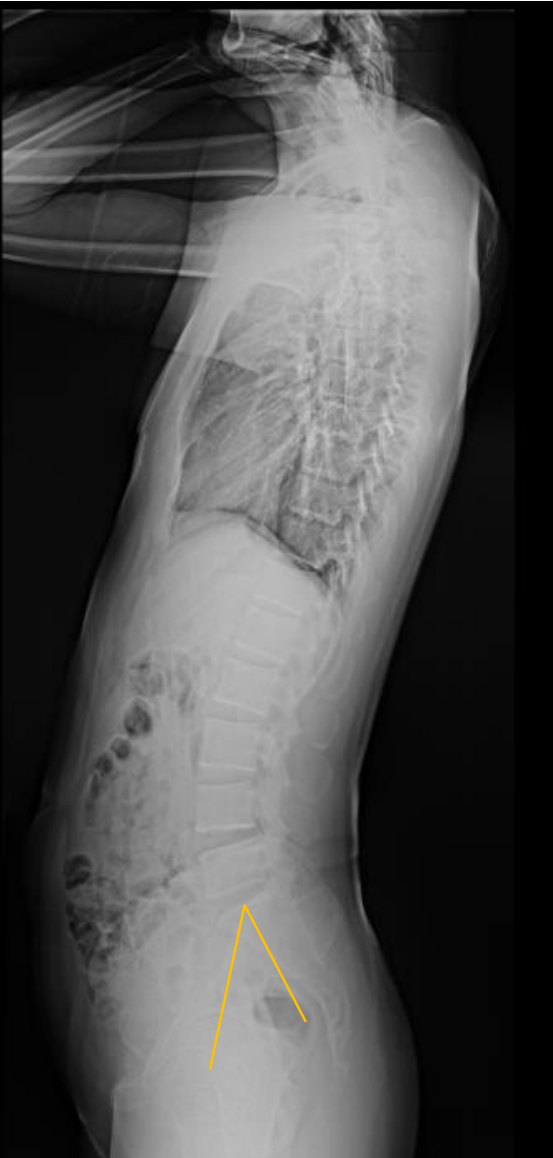
No significant differences in age, sex, affected level, disc degeneration, Modic change, and PLL intactness

Results

	High PI (n=30)	Low PI (n=26)	<i>P</i>
Pelvic incidence (°)	51.51±7.29	34.86±7.46	0.001*
Pelvic tilt (°)	17.14±7.69	9.58±7.14	0.012*
Lumbar lordosis (°)	47.62±11.20	31.22±15.63	0.003*
Herniated disc type			0.071
Protrusion	10	0	
Extrusion	14	18	
Sequestration	6	8	
Initial volume (mm ³)	637.53±237.37	1065.66±616.99	0.020*
Final volume (mm ³)	591.29±301.35	580.14±419.85	0.936
Resorption volume (mm ³)	46.24±300.39	485.52±423.19	0.004*
resorption rate (%)	1.91±44.06	41.57±27.89	0.010*

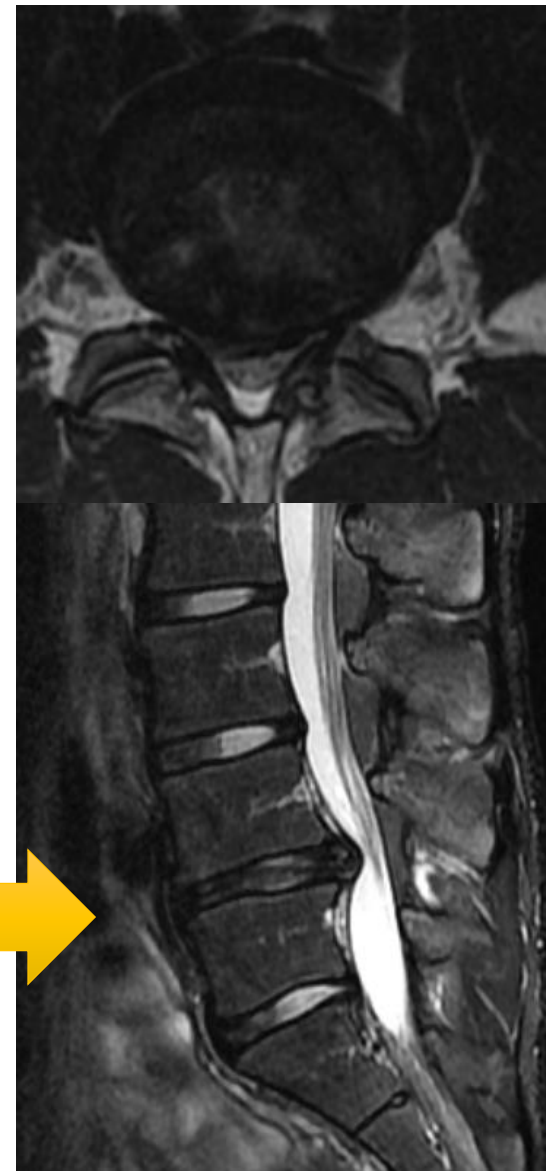
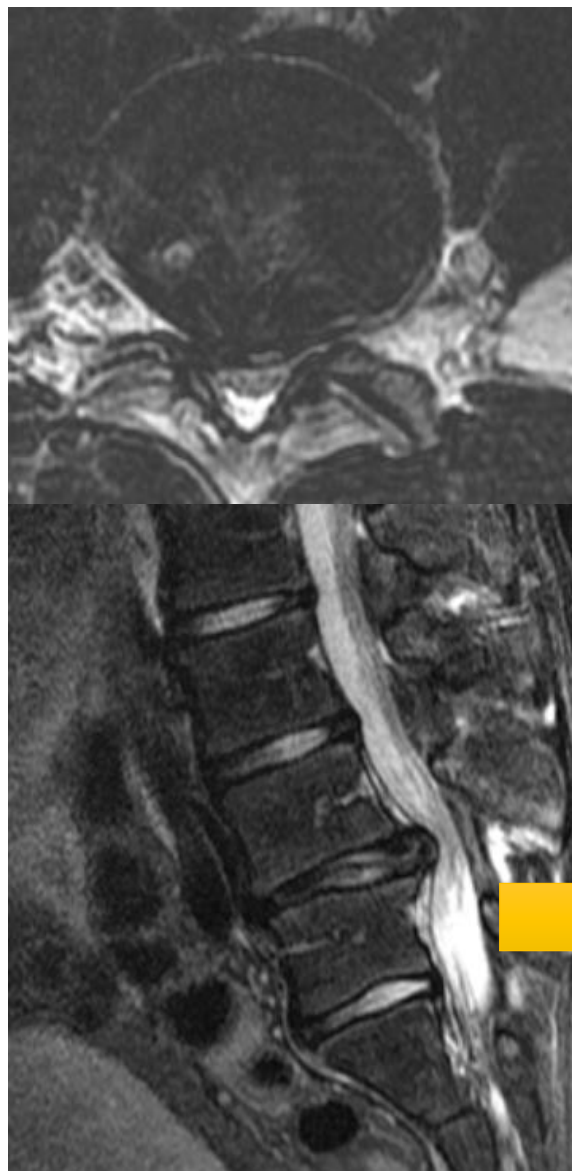
In Low PI groups, herniated disc volume was larger and volume of resorbed disc herniation was larger.

Cases



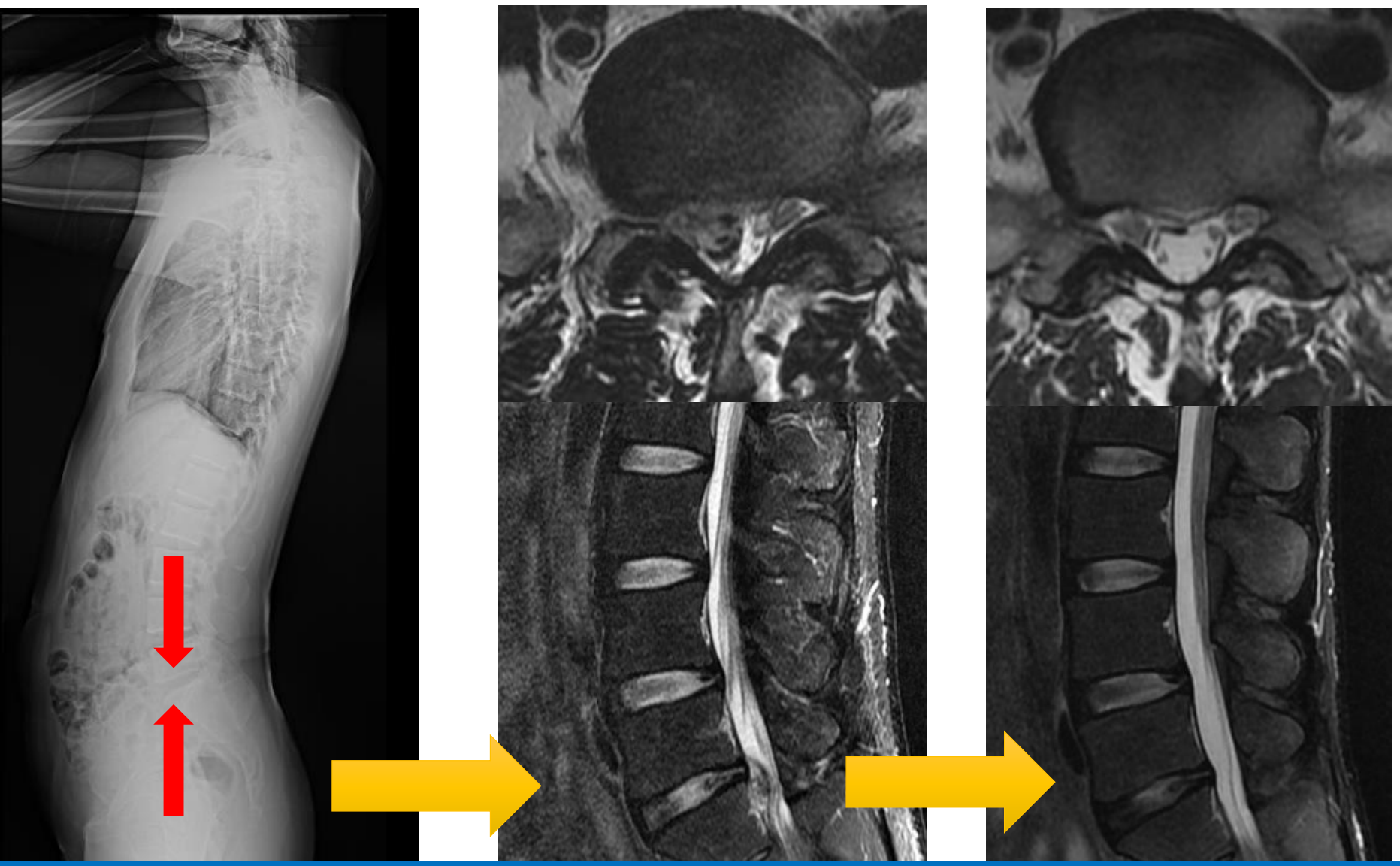
PI = 37.1°, Initial disc volume = 1280.16mm³, Resorption volume = 976.046mm³

Cases



PI = 66.27°, Initial disc volume = 901.915mm³, Resorption volume = 185.767mm³

Discussion



Compressive force induced by low PI may be related with larger volume of HNP, which may influence the larger resorption volume of HNP indirectly.

Conclusions

- **Initial herniated disc volume and resorption volume of herniated disc were larger in low pelvic incidence group.**
- **Low pelvic incidence may be related with the larger amount of herniated disc and resorption of herniated disc.**