

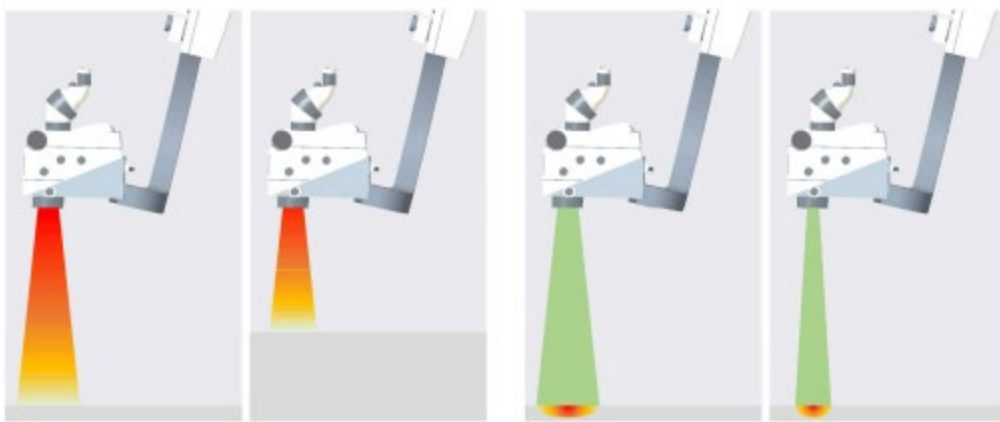
# Lumbar Endoscopic Spine Surgery

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Mr Martin Murphy FRCSI (Neurosurgery) FFSEM  
Consultant Spinal Neurosurgeon

# Rationale

Traditional open discectomy  
direct visualisation aided by magnification



Narrow field of view when microscope at ergonomic height

Straight line visualisation only in a world of curves & corners!  
deep surgical corridors and small incisions



# Rationale

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Traditional open discectomy  
direct visualisation aided by magnification



Move the point of anatomic perspective into the body  
of the patient  
directly into the surgical site  
increases the area of visualisation  
increases the quality of visualisation



Minimizes surgical dissection

# Very Brief History

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Stern “spinoscope” 1936

Kambin 1996 Spinal arthroscopy – diagnostic & therapeutic

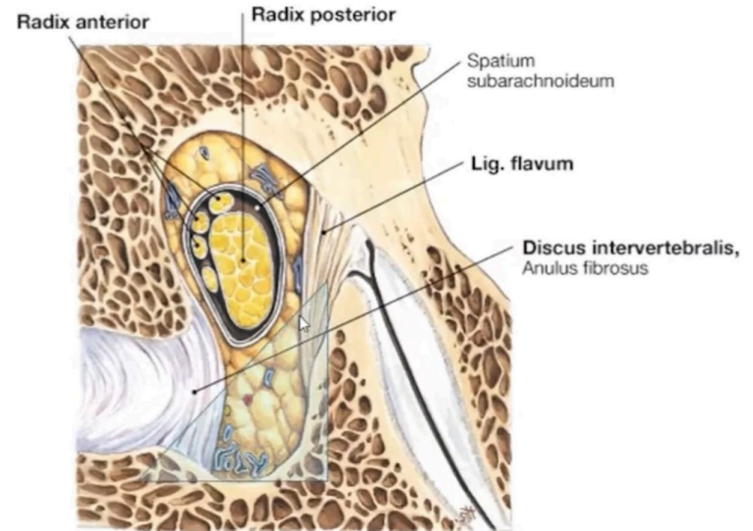
# Very Brief History

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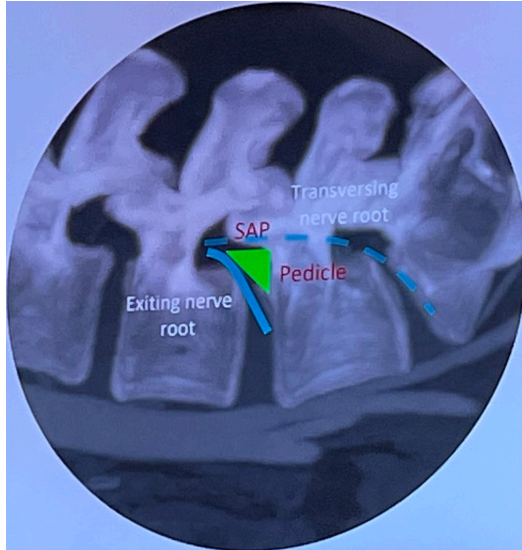
## Kambin-Triangle



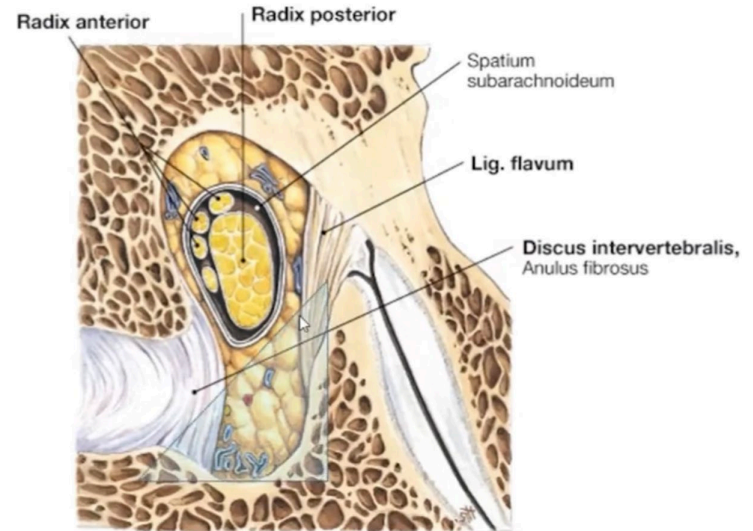
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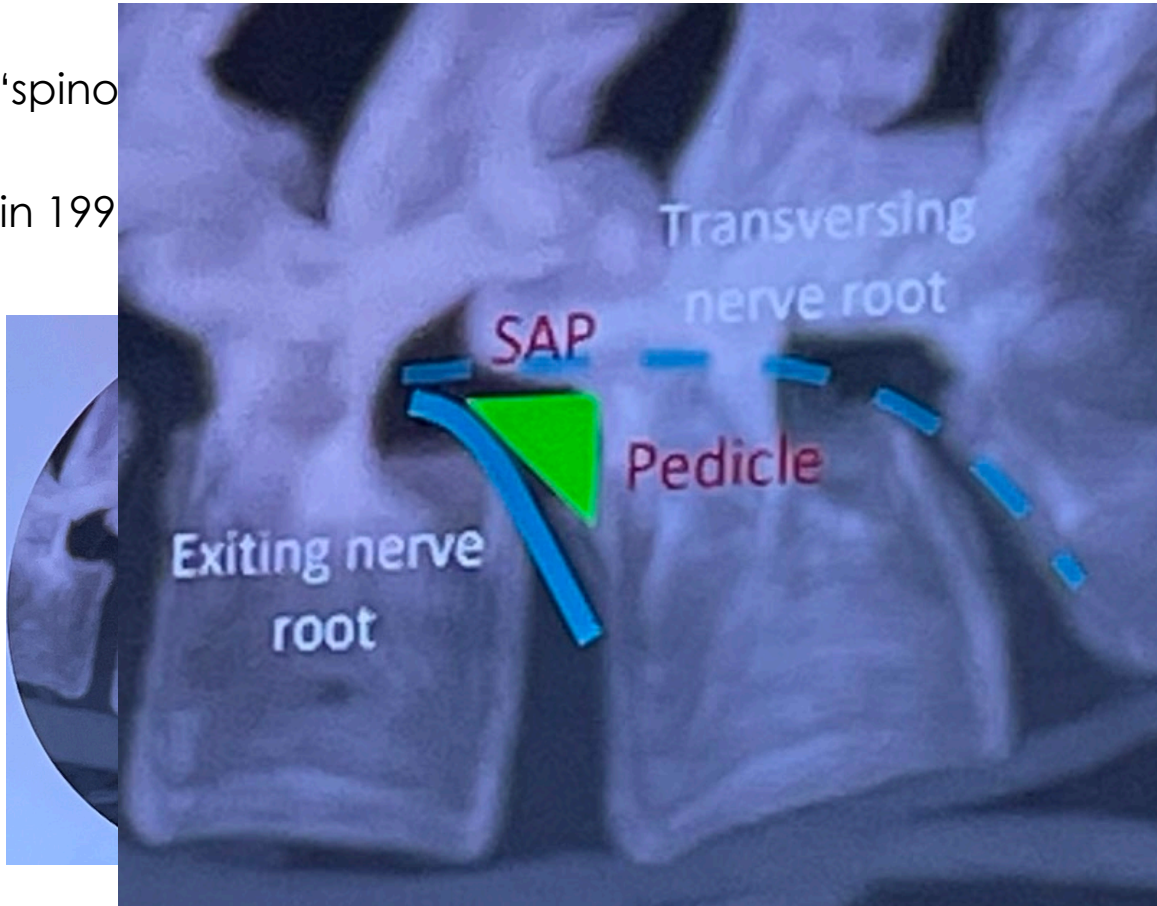
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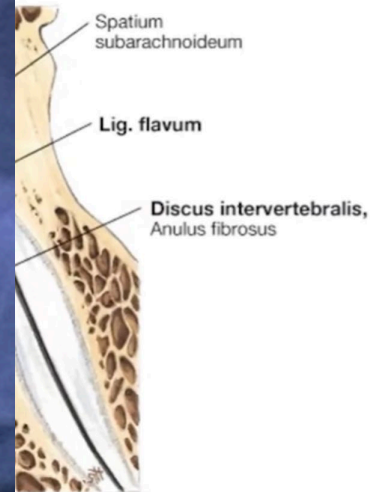
# Very Brief History

Stern "spino

Kambin 199



## n-Triangle



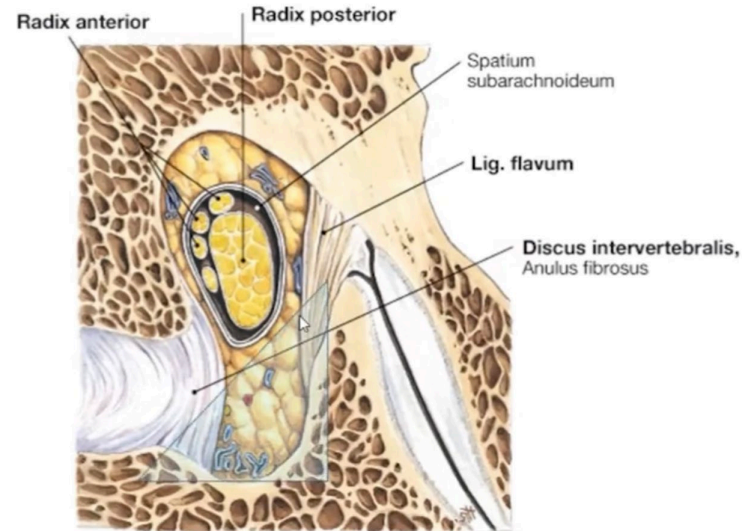
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## Kambin-Triangle





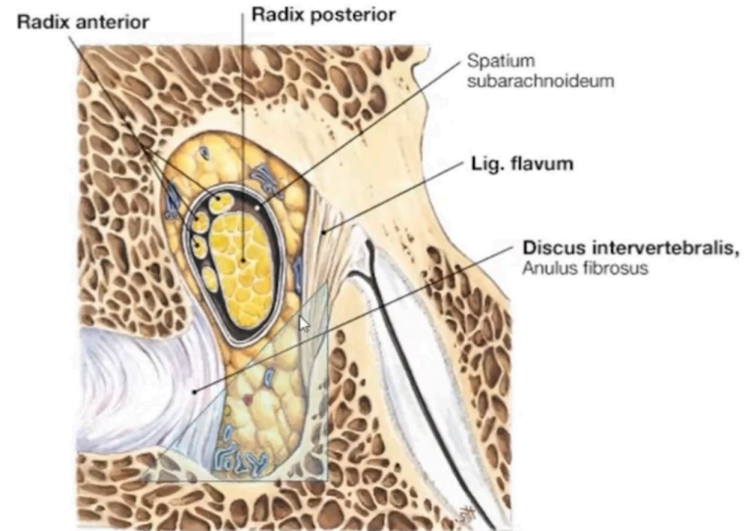
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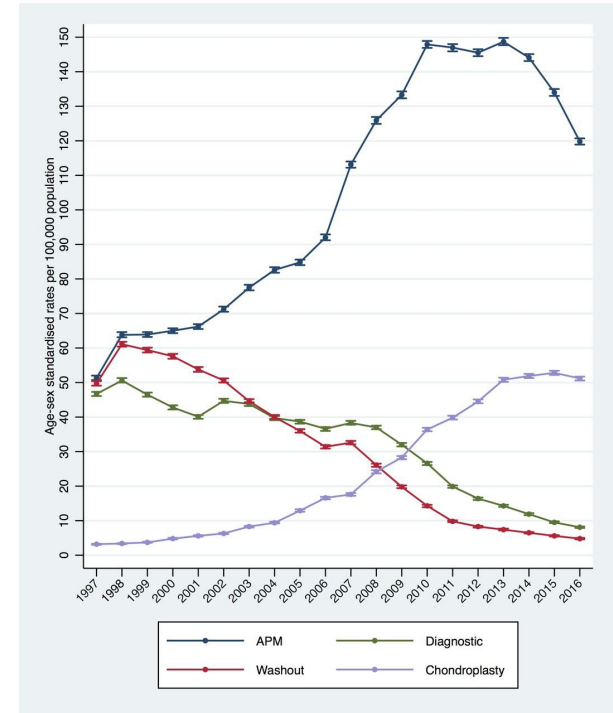
## Kambin-Triangle



# Parallels Between Spine Endoscopy & Arthroscope

1950s & 1960s a developing alternative  
diagnostic tool  
therapeutic platform

Now the most commonly performed  
elective surgery in the world



# Basics

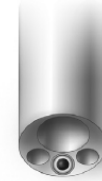
Indirect visualisation

camera placed in proximity to the surgical field

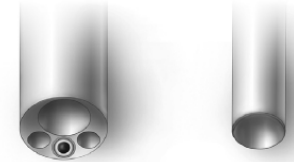
Working channel communicates between surgical field and the outside

increasing number or size creates more collateral tissue disruption

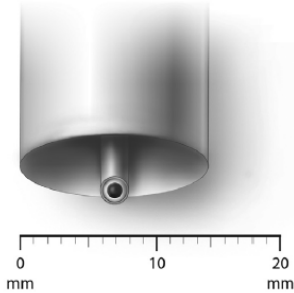
Full Endoscopy



Biportal Endoscopy

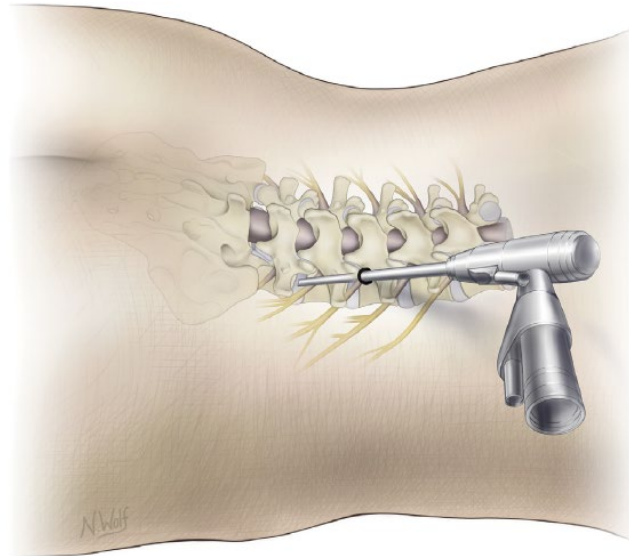


Microendoscopy



## Full endoscopy

- single working channel housing the endoscope & one surgical instrument
- switch from bipolar cautery to bone removal device
- aqueous environment to create space around the surgical field



## Full endoscopy

- single working channel housing the endoscope & one surgical instrument
- switch from bipolar cautery to bone removal device
- aqueous environment to create space around the surgical field

## Advantages

- least amount of collateral damage
- beveled working channel allows use as a retractor
- displace structures outside the working & visual field

## Full endoscopy

- single working channel housing the endoscope & one surgical instrument
- switch from bipolar cautery to bone removal device
- aqueous environment to create space around the surgical field

## Disadvantages

- precludes multiple concurrent instrument use
- precludes independent camera & instrument movement

## Full endoscopy

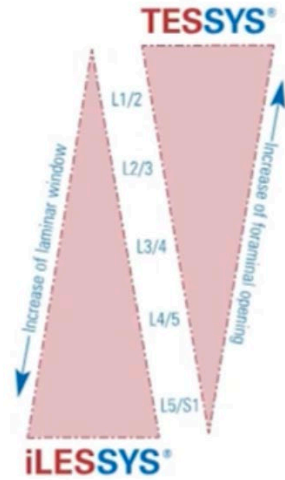
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## LEARNING CURVE

# Approach

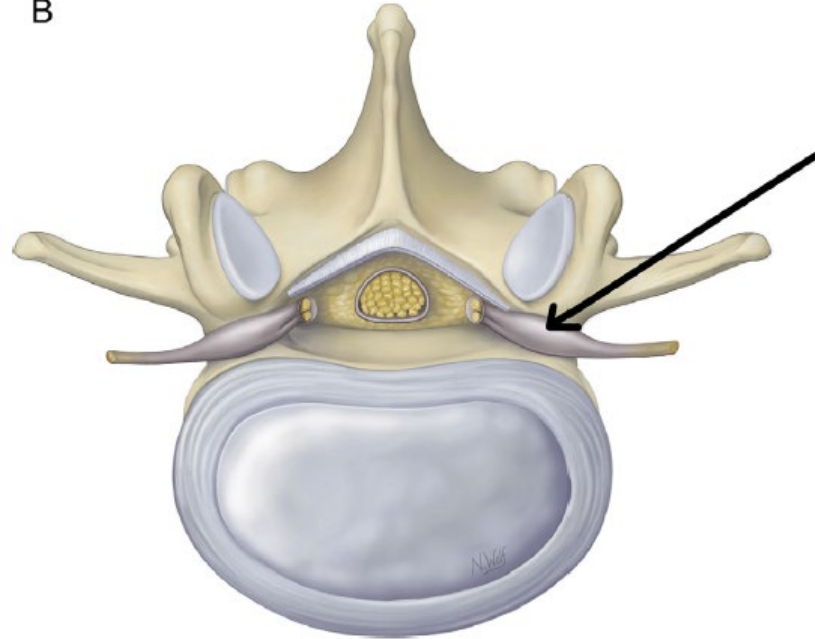




# Approach

Transforaminal

B



TESSYS®

“Transforaminal Endoscopic Surgical System”

# Approach

## Transforaminal



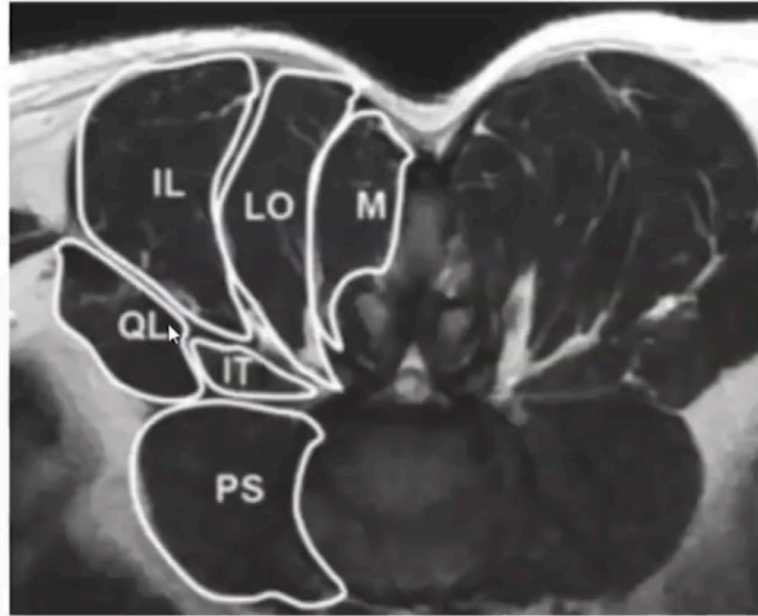
# Approach

## Transforaminal



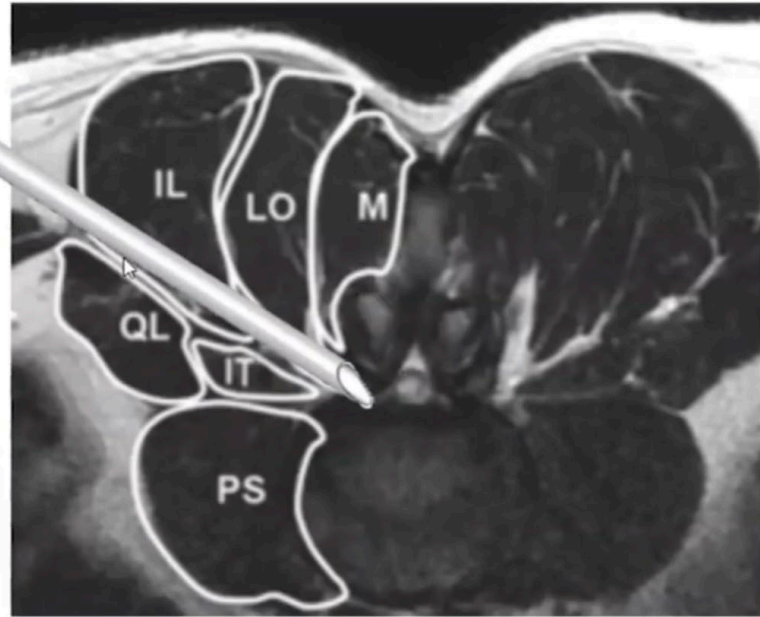
# Approach

## Transforaminal



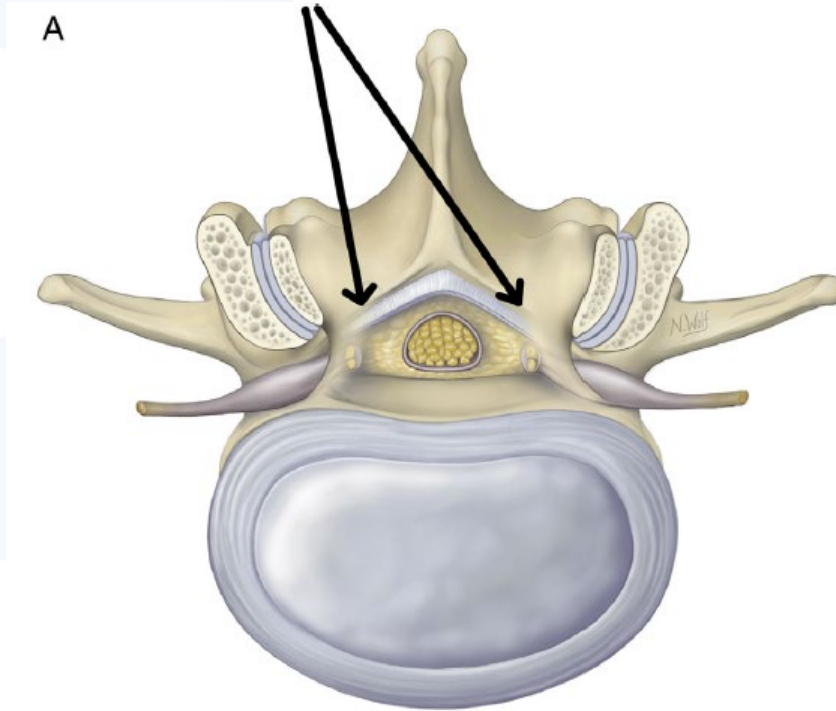
# Approach

## Transforaminal



# Approach

Interlaminar



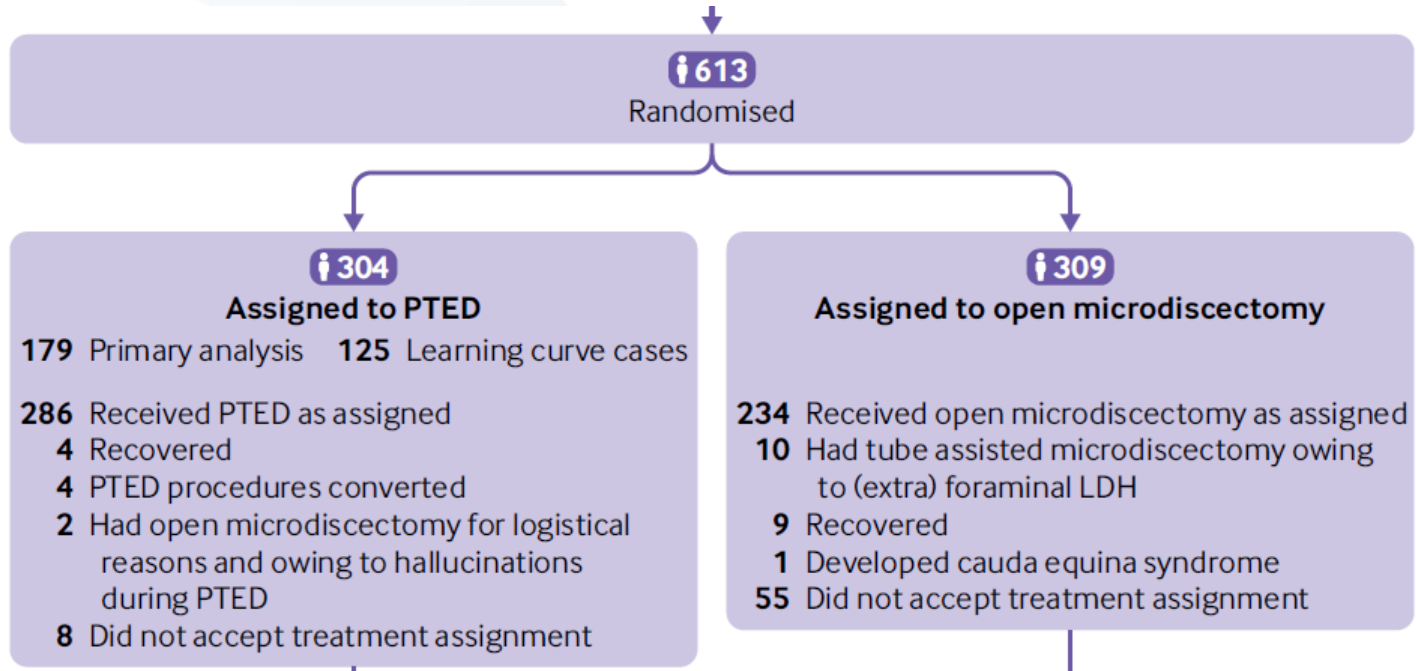
ILESSYS®

“Interlaminar Endoscopic Surgery System”

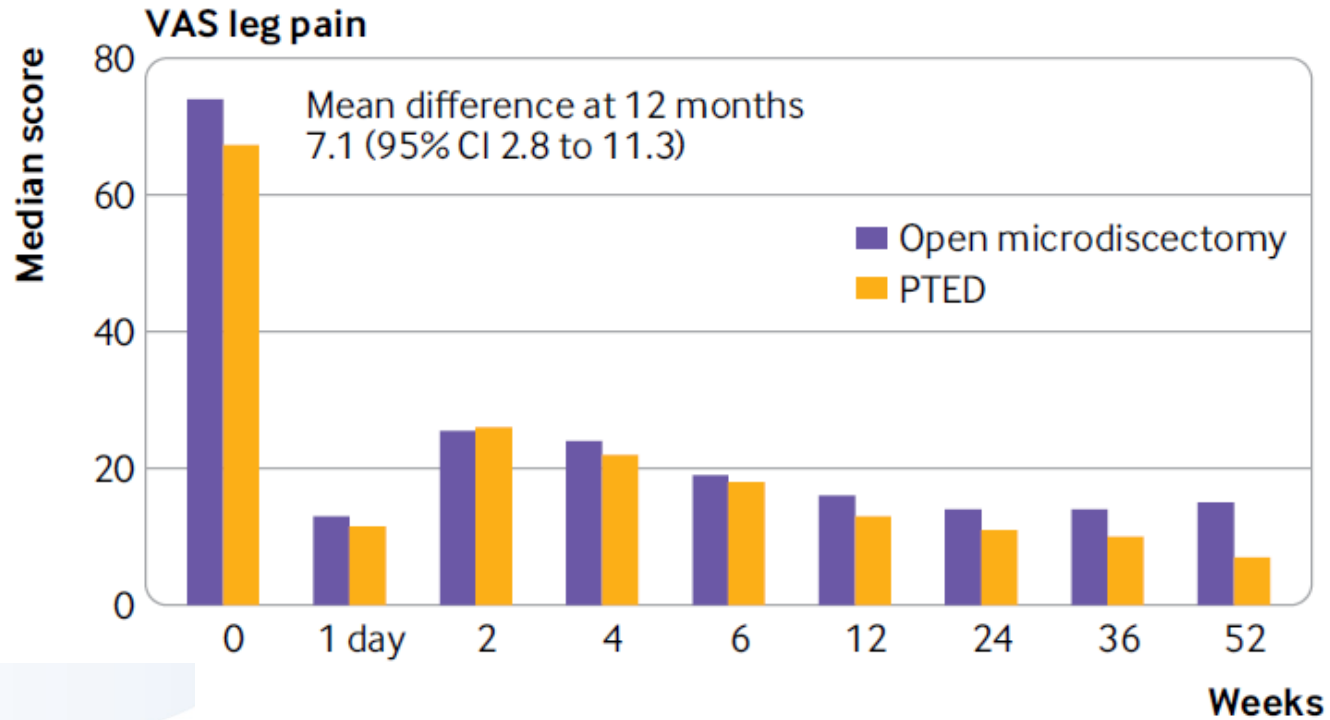
# Full endoscopic versus open discectomy for sciatica: randomised controlled non-inferiority trial

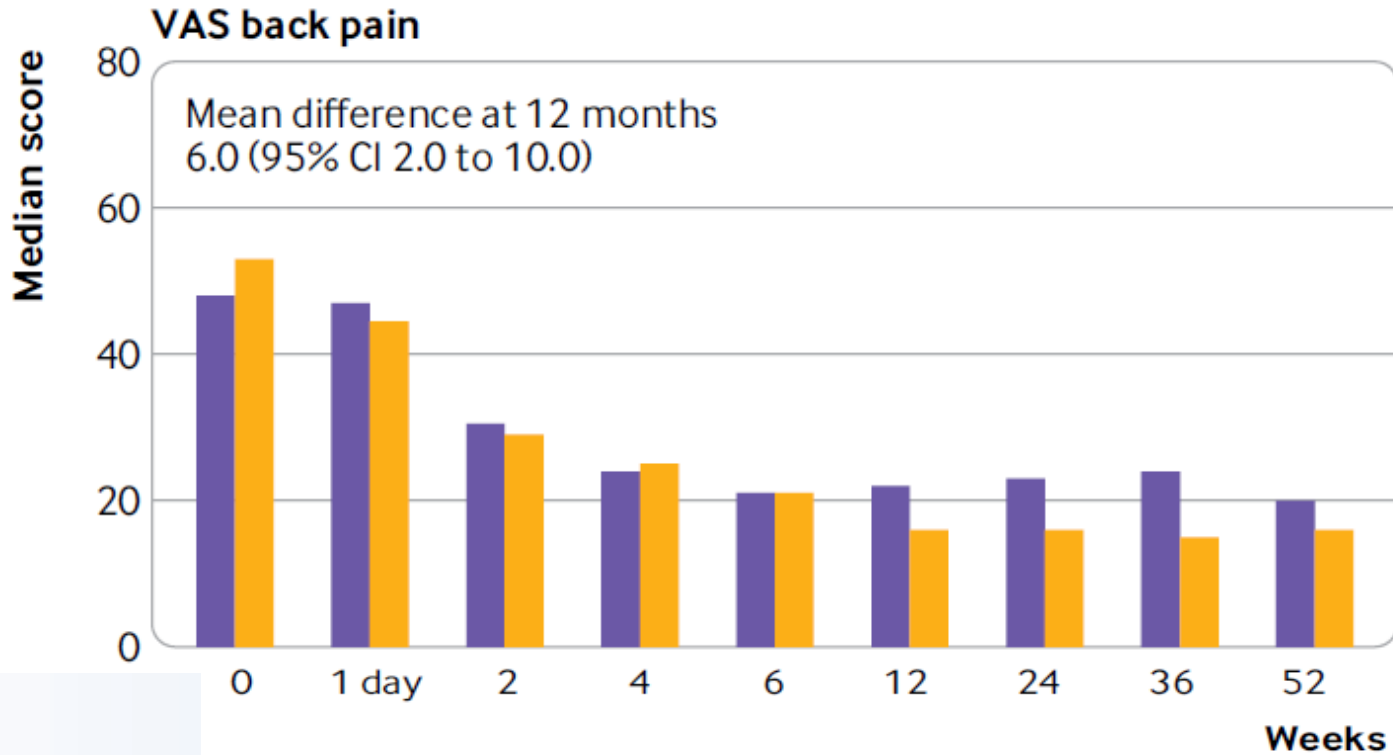
Pravesh S Gadjradj,<sup>1,2</sup> Sidney M Rubinstein,<sup>3</sup> Wilco C Peul,<sup>4</sup> Paul R Depauw,<sup>5</sup>  
Carmen L Vleggeert-Lankamp,<sup>4</sup> Ankie Seiger,<sup>3</sup> Job LC van Susante,<sup>6</sup> Michiel R de Boer,<sup>3,7</sup>  
Maurits W van Tulder,<sup>3</sup> Biswadjiet S Harhangi<sup>1</sup>

BMJ 2022









## **Conclusions**


PTED was non-inferior to open microdiscectomy in reduction of leg pain. PTED resulted in more favourable results for patients' self-reported leg pain, back pain, functional status, quality of life, and recovery.

## Conclusions

PTED was non-inferior to open microdiscectomy in reduction of leg pain. PTED resulted in more favourable results for patients' self-reported leg pain, back pain, functional status, quality of life, and recovery.

published separately.<sup>42</sup> As a result of this study, the Dutch government now reimburses PTED and patients are able to have PTED outside of the experimental setting. This reimbursement also comes with the need

# Cost-effectiveness of full endoscopic versus open discectomy for sciatica

Pravesh Shankar Gadjradj ,<sup>1,2</sup> Hana M Broulikova,<sup>3</sup> Johanna M van Dongen,<sup>3</sup> Sidney M Rubinstein,<sup>4</sup> Paul R Depauw,<sup>5</sup> Carmen Vleggeert,<sup>6</sup> Ankie Seiger,<sup>4</sup> Wilco C Peul,<sup>6</sup> Job L van Susante,<sup>7</sup> Maurits W van Tulder,<sup>4,8</sup> Biswadjiet S Harhangi<sup>2</sup>

BJSportsMed 2021

**Table 2** Mean cost (in euros) per patient receiving PTED and open microdiscectomy and mean cost differences between groups during follow-up

Cost category	PTED n=179, mean (SEM)	OM n=309, mean (SEM)	Cost difference, crude mean (95% CI)	Cost difference, adjusted mean (95% CI)
<b>Direct costs</b>				
Surgery	4500	4095	405	405
Primary care	632 (77)	918 (78)	-287 (-476 to -67)	-307 (-497 to -102)
Secondary care	725 (186)	1061 (222)	-336 (-948 to 140)	-245 (-773 to 243)
Medication	8 (2)	38 (23)	-30 (-93 to -11)	-11 (-26 to 0)
<b>Indirect costs</b>				
Informal care	172 (43)	334 (63)	-162 (-306 to -28)	-152 (-283 to -18)
Absenteeism	4774 (389)	5820 (361)	-1047 (-2050 to -14)	-924 (-1808 to -37)
Presenteeism	3183 (396)	3738 (435)	-555 (-1629 to 503)	-1007 (-1757 to -313)
Unpaid productivity loss	1097 (220)	1629 (180)	-532 (-1019 to 65)	-518 (-1011 to 61)
<b>Total healthcare costs</b>	<b>5865 (215)</b>	<b>6112 (248)</b>	<b>-248 (-901 to 316)</b>	<b>-138 (-711 to 415)</b>
<b>Total societal costs</b>	<b>15 090 (719)</b>	<b>17 633 (700)</b>	<b>-2543 (-4380 to -686)</b>	<b>-2787 (-4401 to -1181)</b>

Please note that the difference in total societal costs of this table slightly differs from that of [table 2](#). This is given by the fact that in the current table, linear regression was used for estimating cost differences, whereas

## **CONCLUSION**

Results suggest that PTED is less costly and more effective and therefore cost-effective compared with open microdiscectomy for patients with lumbar disc herniation from the societal perspective. Therefore, PTED deserves to be included in the treatment armamentarium of sciatica.

# Our Journey

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Site visits

Training Courses

Proctor Visits

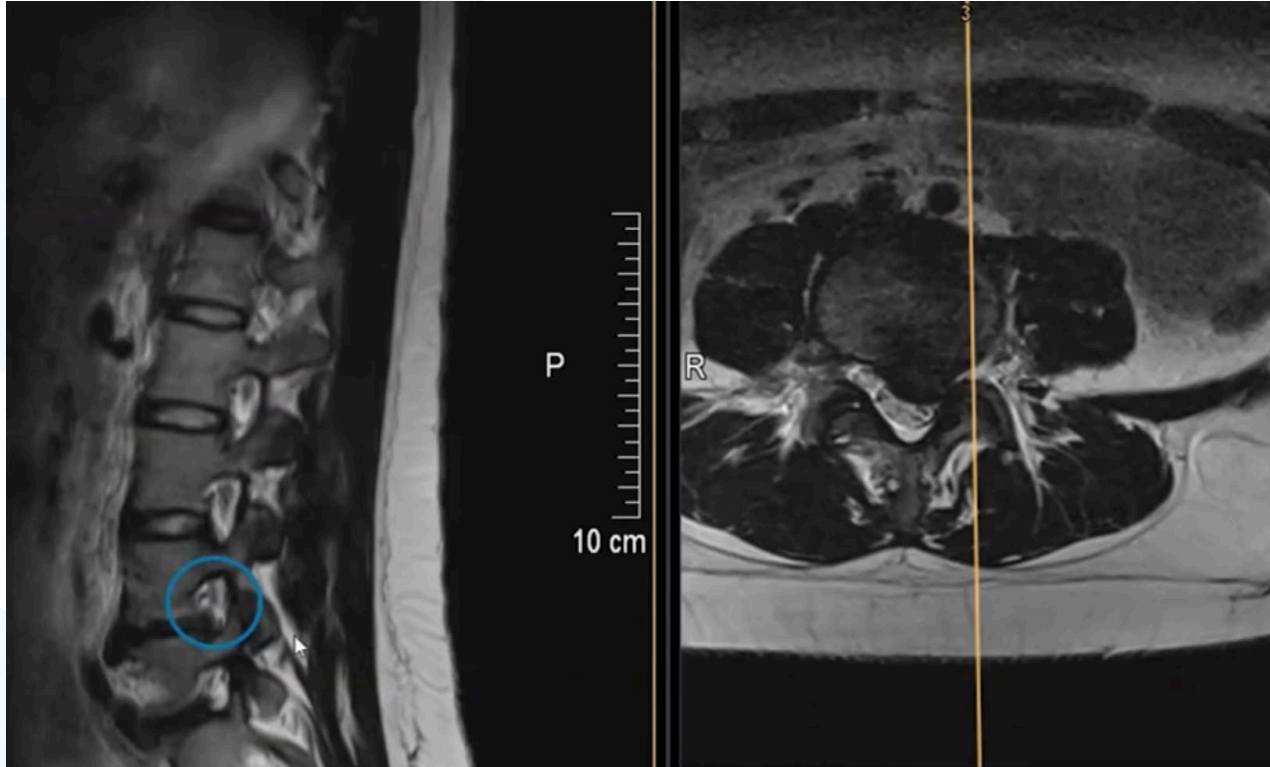
Training Courses again!!



# Our Journey

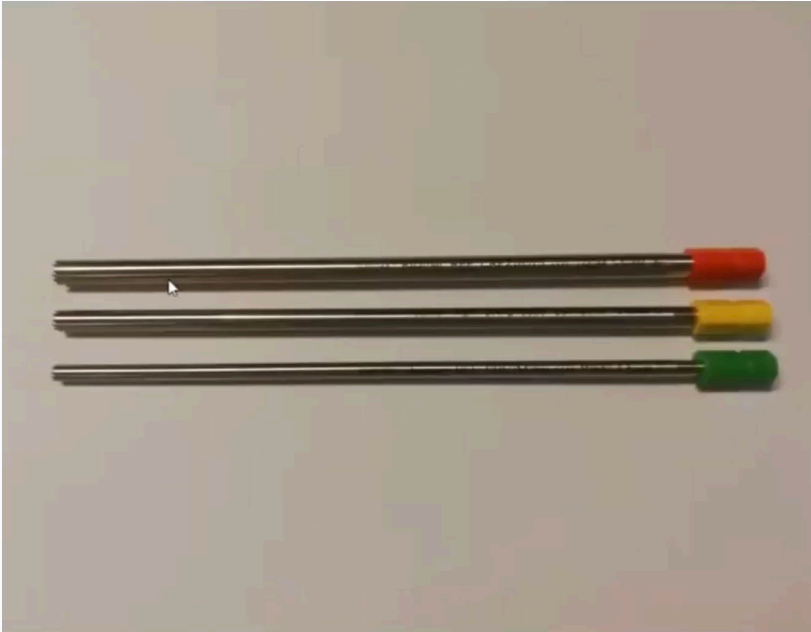


# Case 1



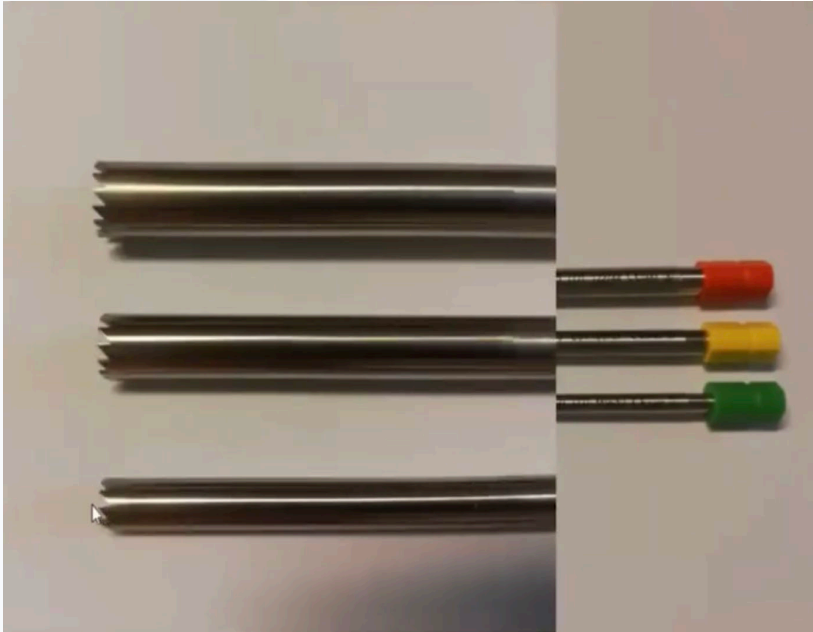
# Our Journey

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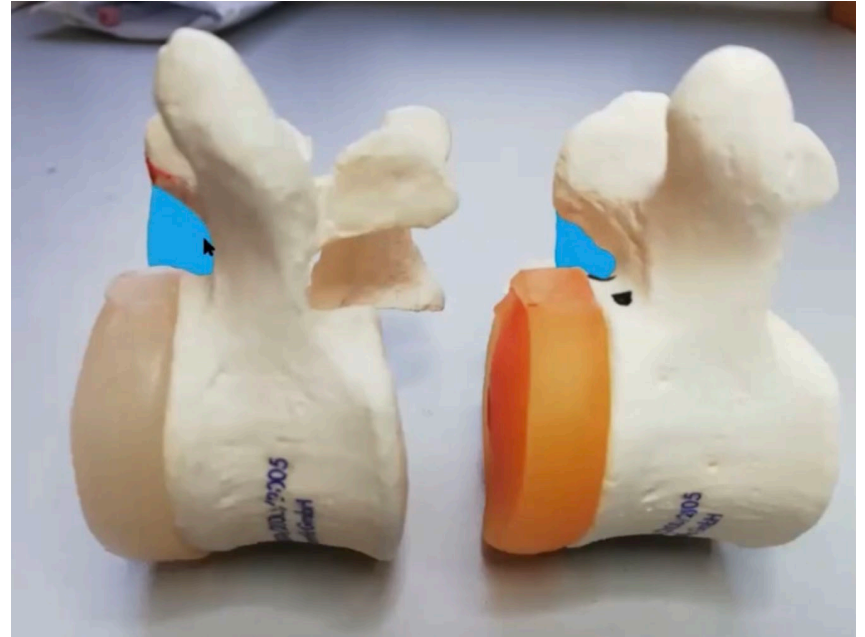
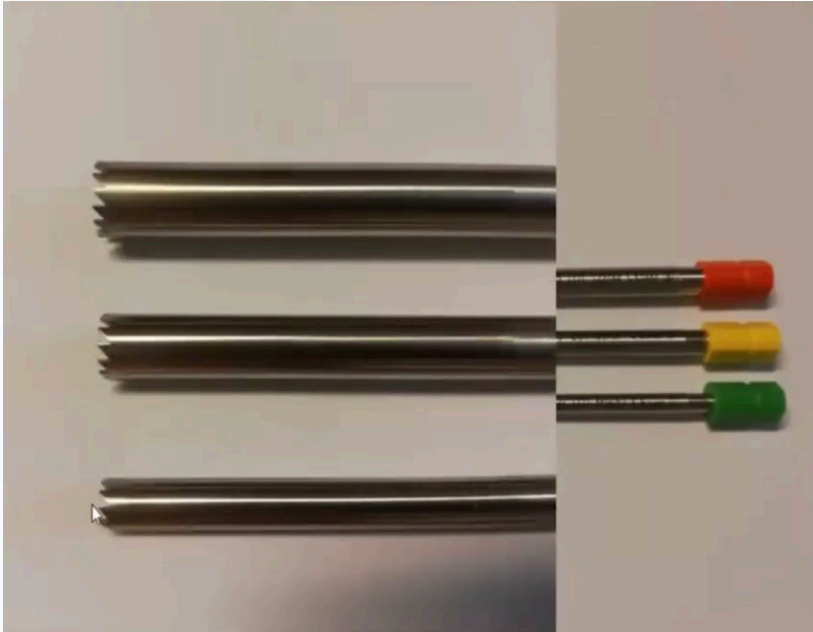


# Our Journey

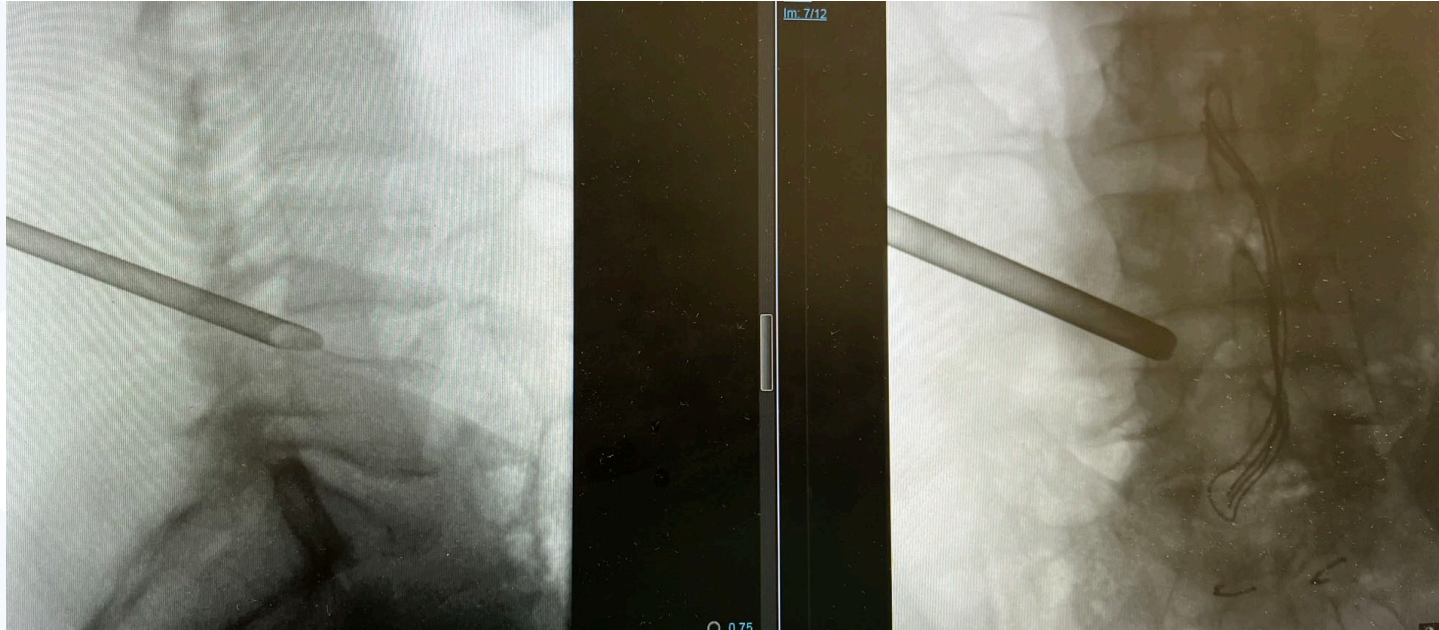
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# Our Journey



# Our Journey



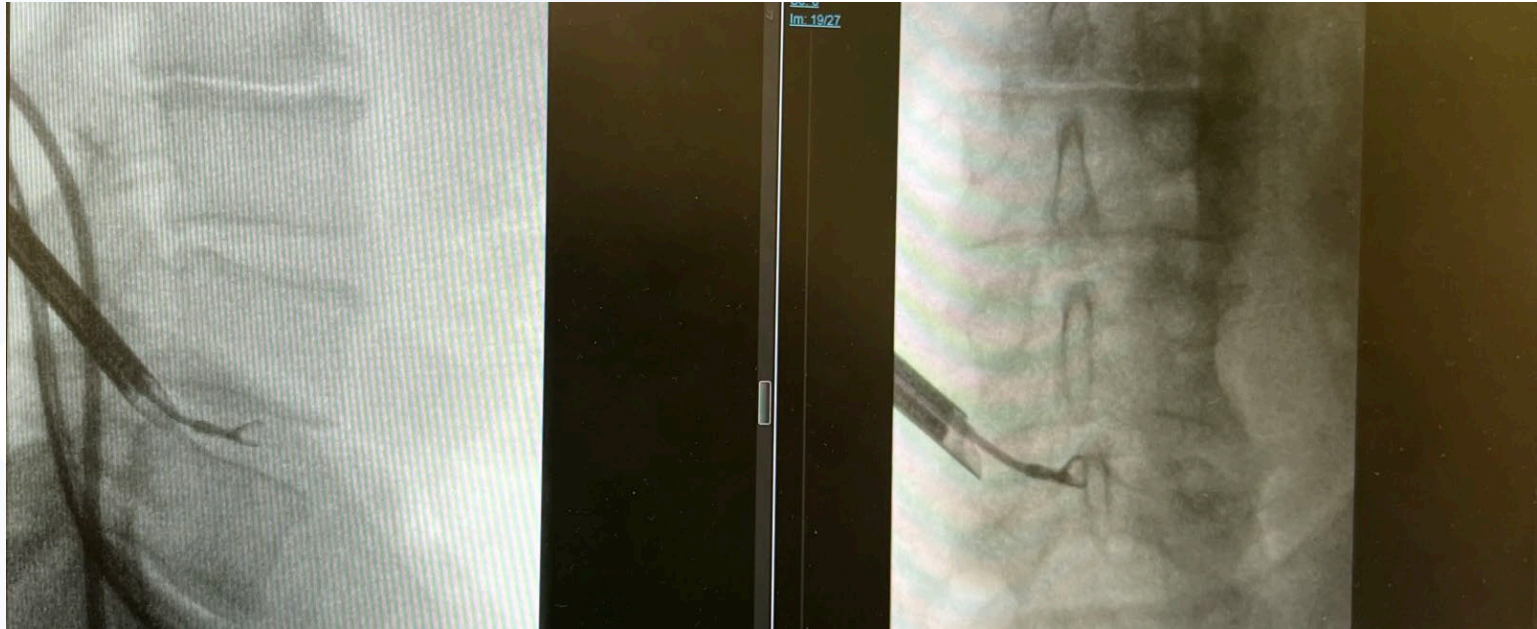
# Our Journey

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# Our Journey

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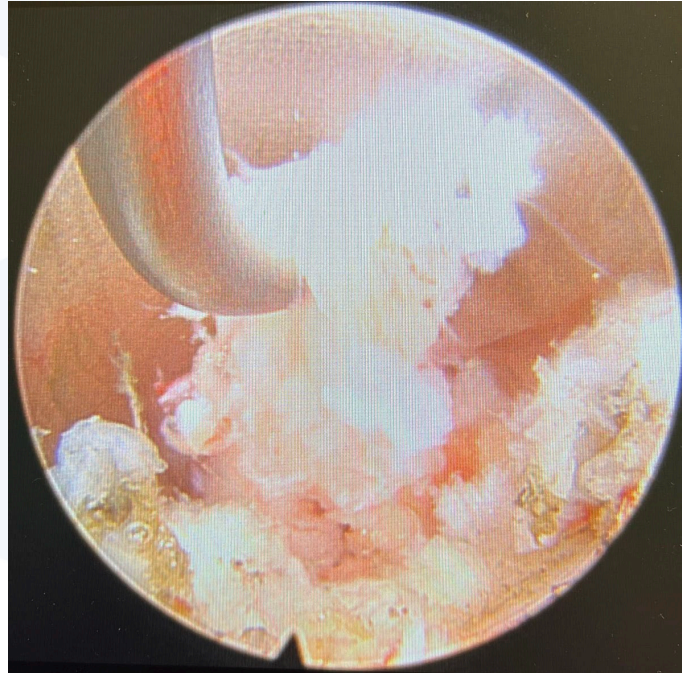


# Our Journey



# Our Journey

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# Our Journey

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Begin interlaminar (L5/S1) cases

Increase patient numbers in TESSYS & ILLESYS

Sedation

Daycase

EndoLIF – daycase fusions!!!