

Minimally Invasive Spine Surgery (MISS) History and development

HA Convention Masterclass

3rd May 2016

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Associate consultant

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Venue

HA Convention 2016

Once upon a time.....



Concept of Minimally Invasive Surgery.....



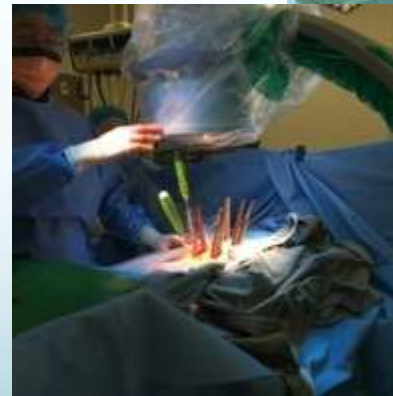
Hey, we can!



Cholecystectomy

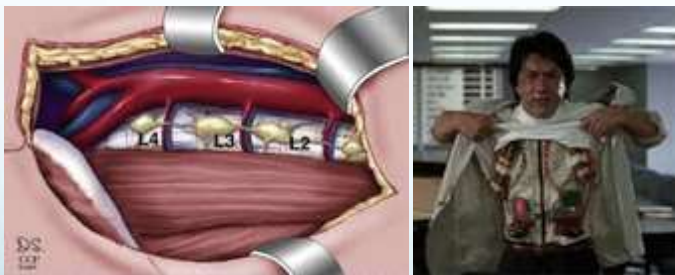
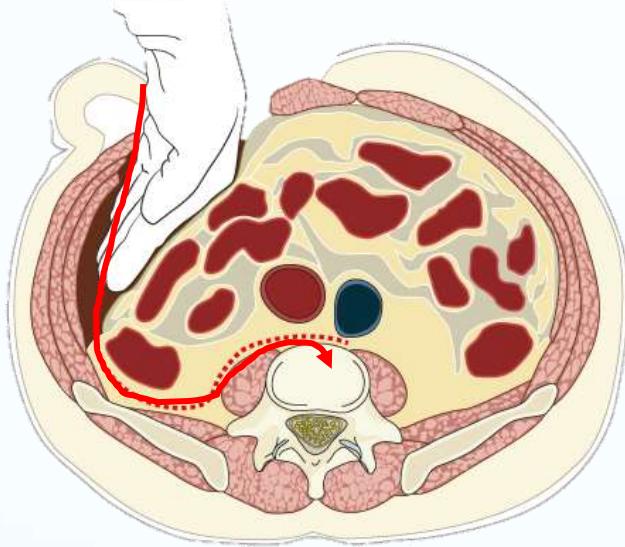


Video assisted Thoracotomy

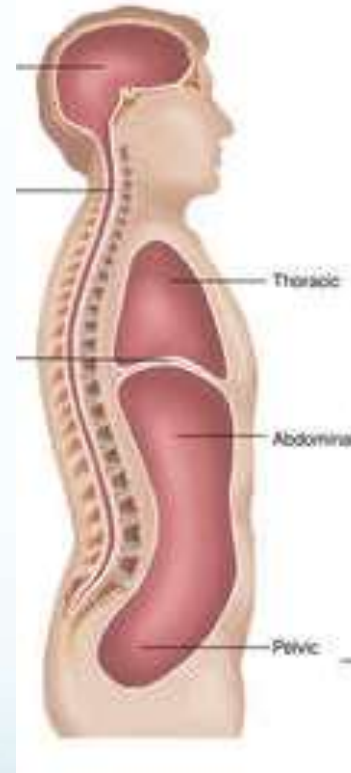


Minimally invasive spine surgery

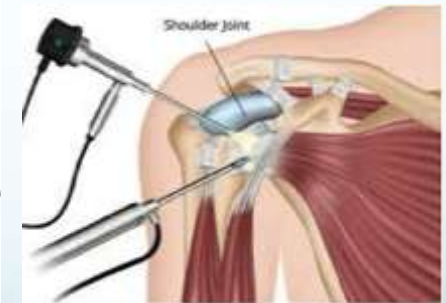
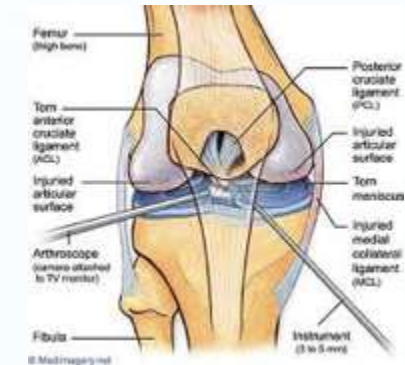
How special is spine surgery?



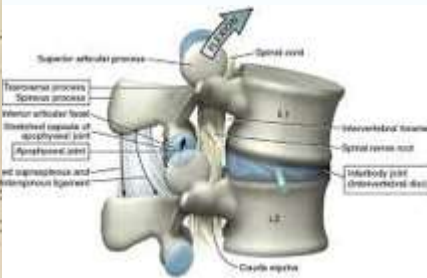
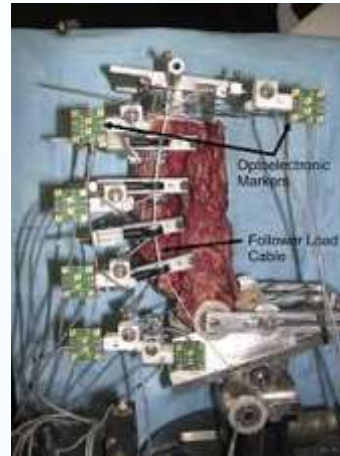
Deep seated and surrounded by important organs and structure



There is no true cavity in the spine



How special is spine surgery?



Sophisticated global spine function

Safety

Development of MISS



**Image guidance
Technology**



**Better
Visualization**



**Refined
instrument**



Improvement of visualization

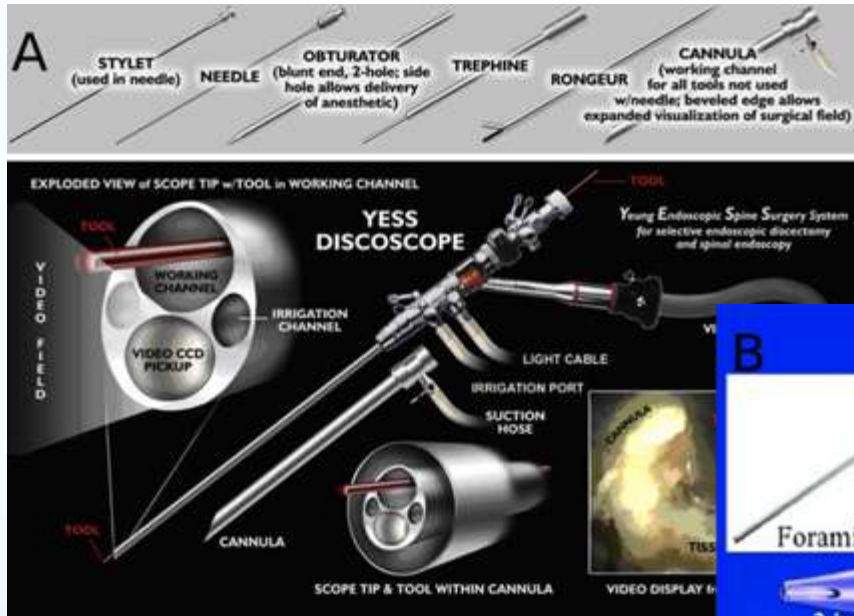


Surgical microscope



Surgical endoscope

Improvement of visualization



Multiple working channel

Refined micro-instrument



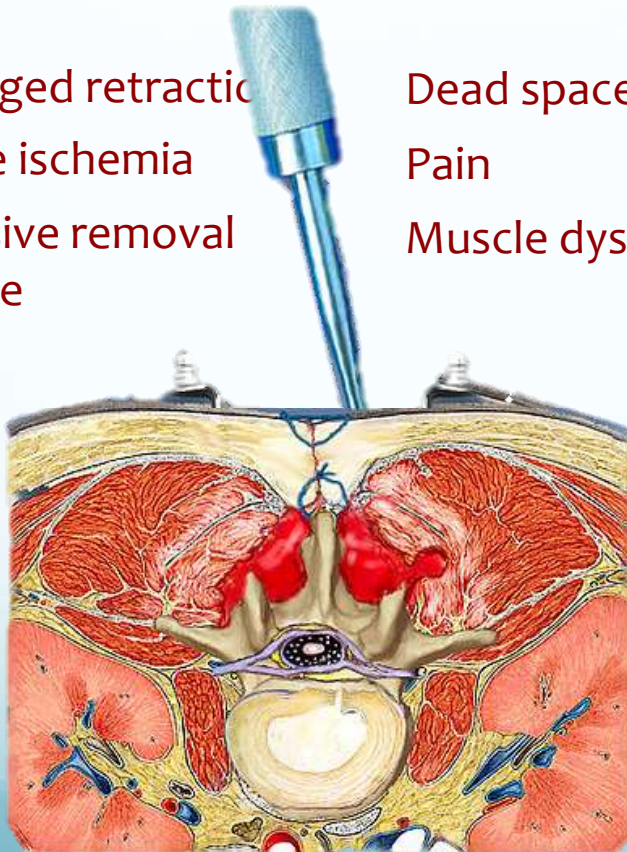
Spinal endoscope

Soft tissue splitting technique

Dissection in open surgery

Prolonged retraction
Muscle ischemia
Excessive removal
of bone

Dead space and scar
Pain
Muscle dysfunction



Serial tubular dilator

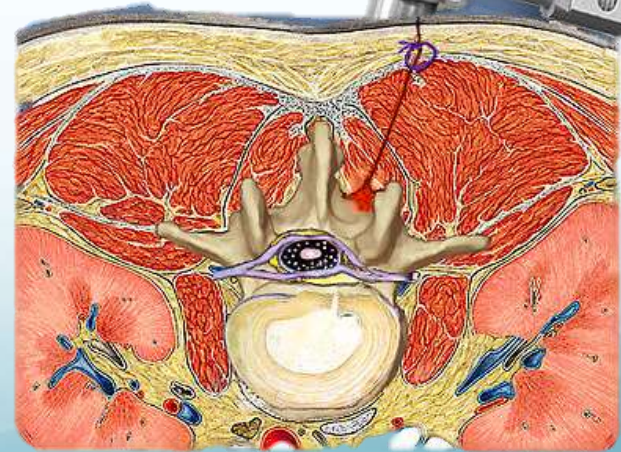
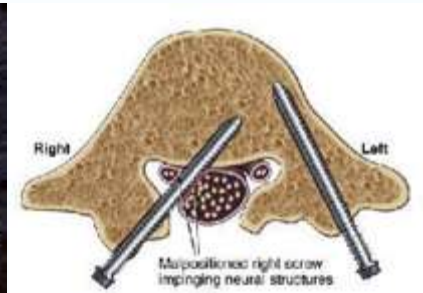


Image guidance technology

- Pedicle screws is the commonest instrumentation.....



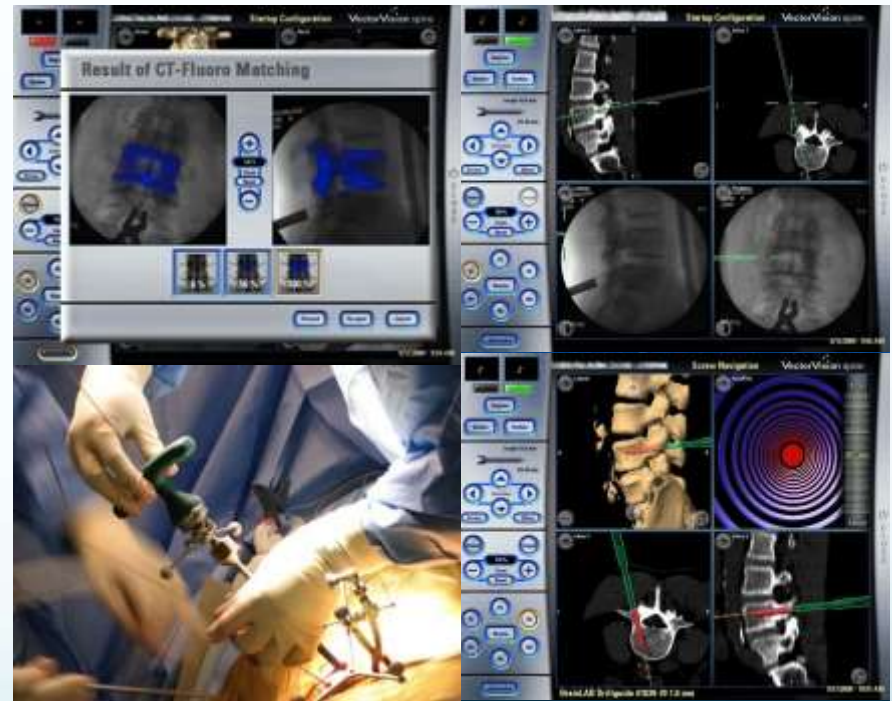
Misplacement of screws can be disastrous



Image guidance technology



Intraoperative X-ray



CT- Flouro matching navigation

Image guidance technology



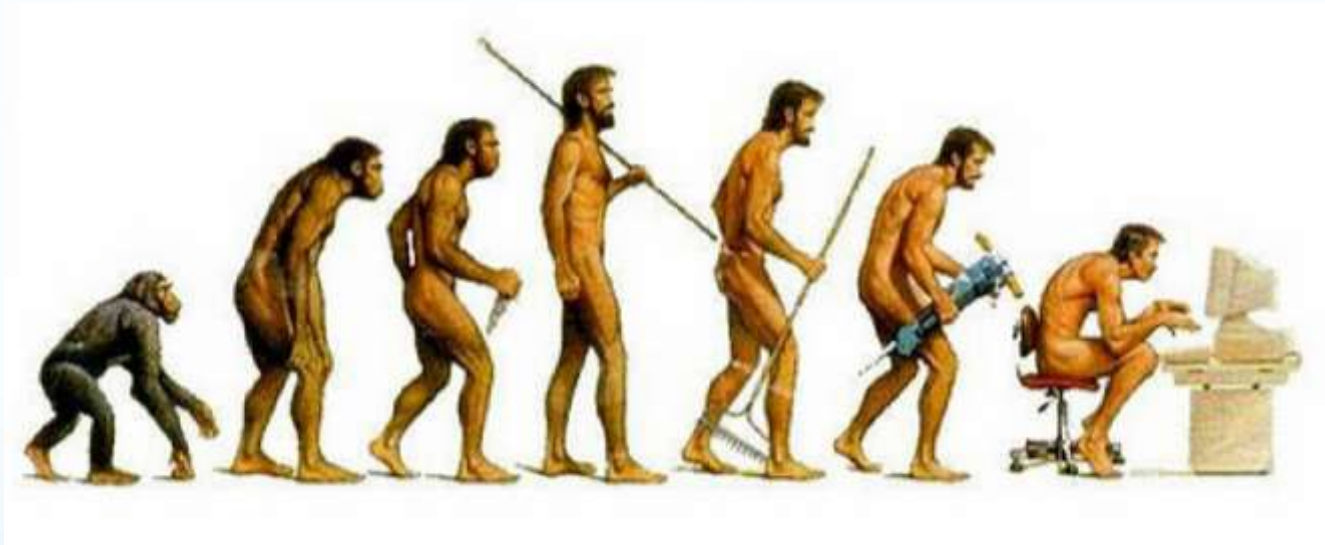
Screw insertion

Percutaneous screw insertion



Intraoperative 3D CT

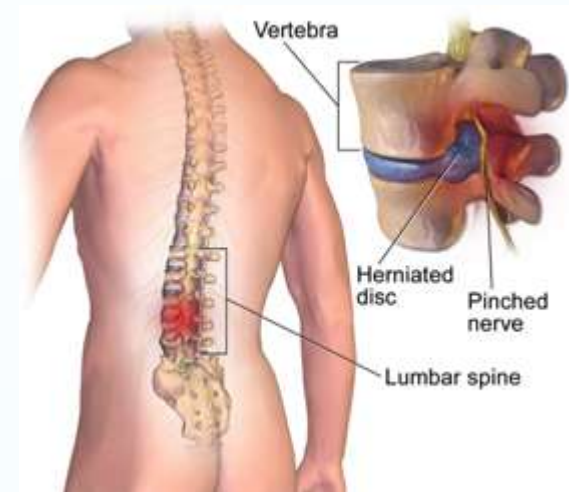
Historical development of MISS....



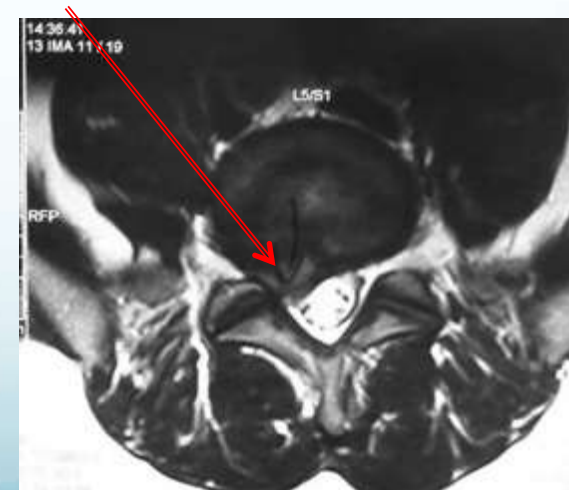
Lumbar disc herniation



*What's wrong?
So painful!*



*You suffer from
Sciatica la!*



Development of lumbar PID surgery

Microendoscopic Discectomy (MED) Endospine

Open Discectomy

Microdiscectomy



Hippocrates (460-370BC)



Mixer & Barr (1933)



Gazi Yasargil (1967)

Casper (1977)



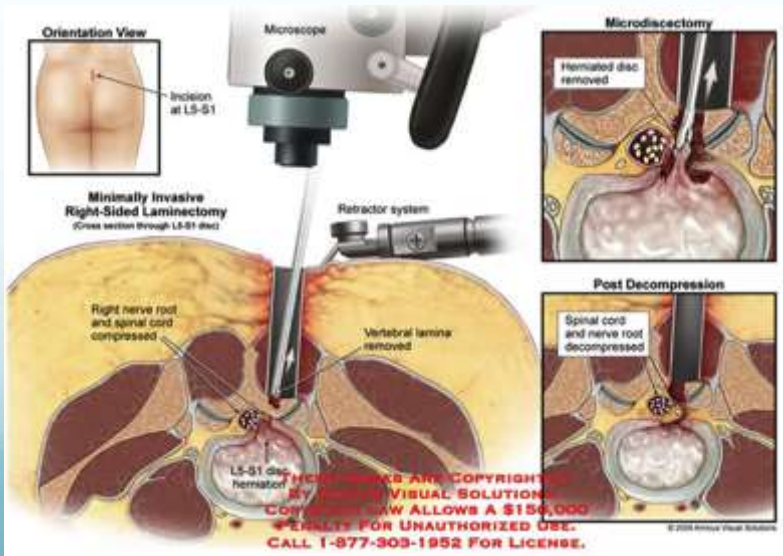
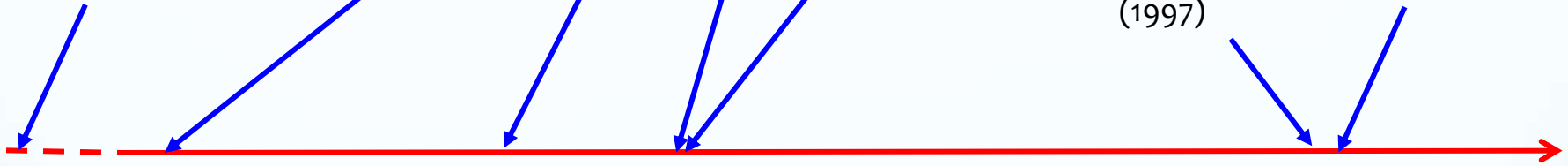
Williams (1978)



Foley & Smith (1997)



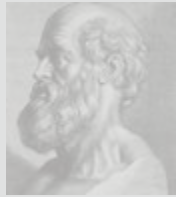
Destandau (1998)



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Development of lumbar PID surgery

Open Discectomy



Hippocrates (460-370BC)



Mixter & Barr (1933)



Gazi Yasargil (1967)

Microdiscectomy



Casper (1977)

Williams (1978)

Microendoscopic Discectomy (MED) Endospine



Foley & Smith (1997)



Destandau (1998)



Smith (1963)

Chemo-nucleolysis

Hijikata (1975)



Percut. Lumbar discectomy

Onik (1980)



Percut. Laser discectomy

Ascher and Choy (1986)

Internal indirect decompression



G.

Development of lumbar PID surgery

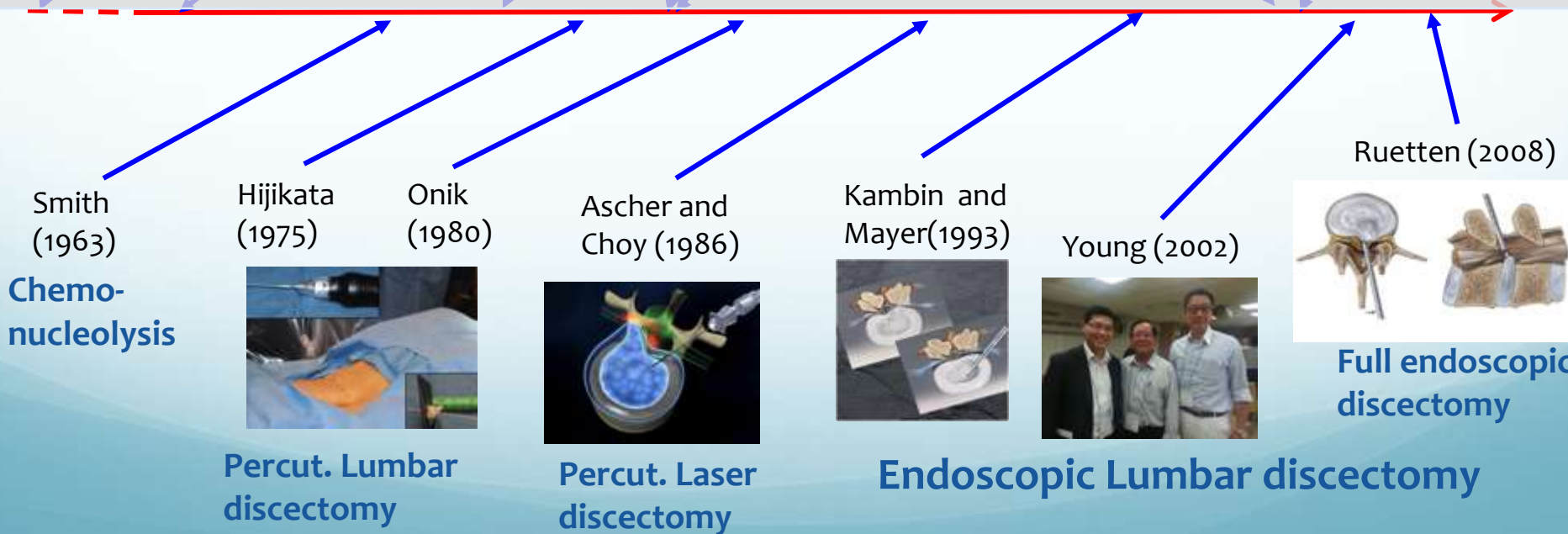
Interlaminar approach (GA)



Posterolateral approach (LA)



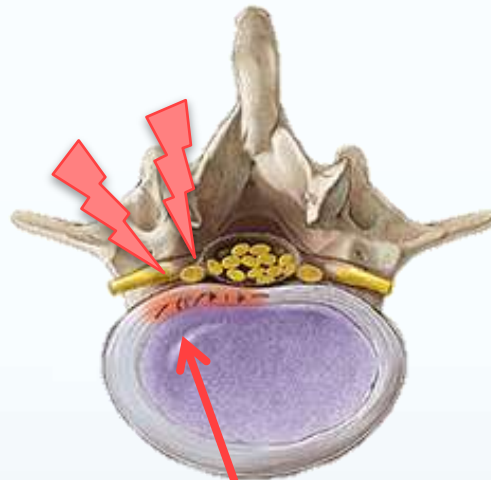
Hip (46)



Microendoscopic Discectomy (MED) Endospine

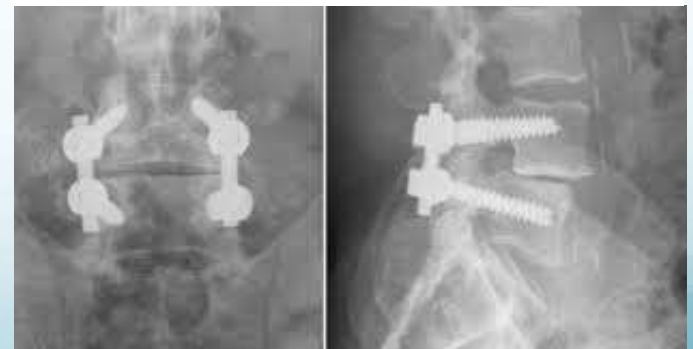
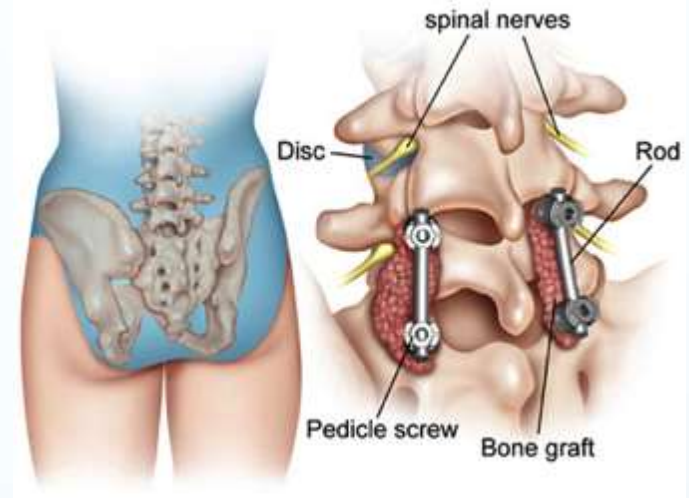
Degenerative disc and back pain

- One of the major source of back pain.....



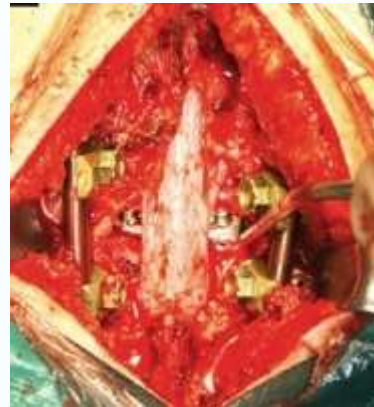
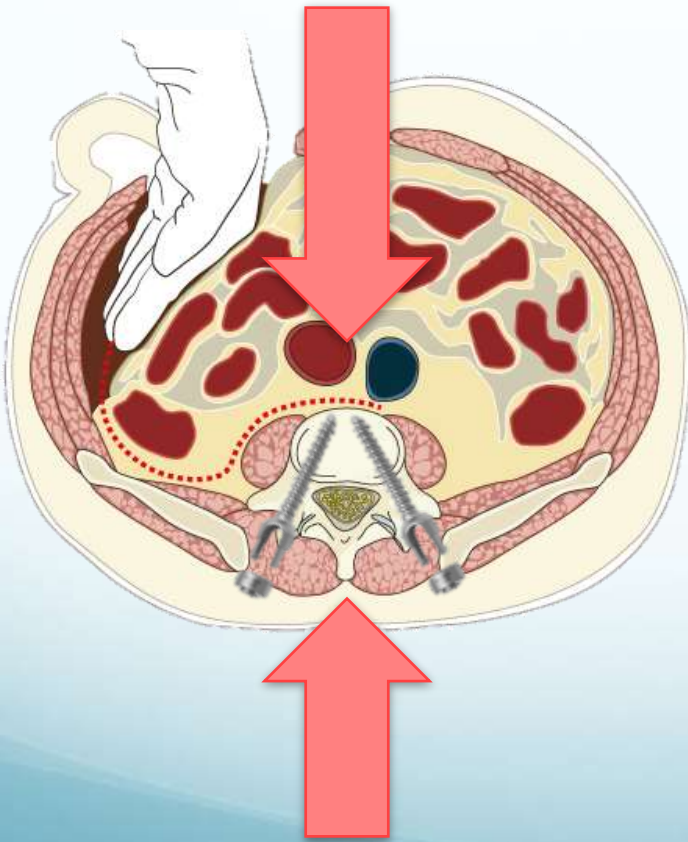
Pain fibers at the periphery of the disc

Spinal fusion for those with failed conservative treatment



Degenerative disc and back pain

- Result of spinal fusion is promising.....



Surgical trauma with the exposure

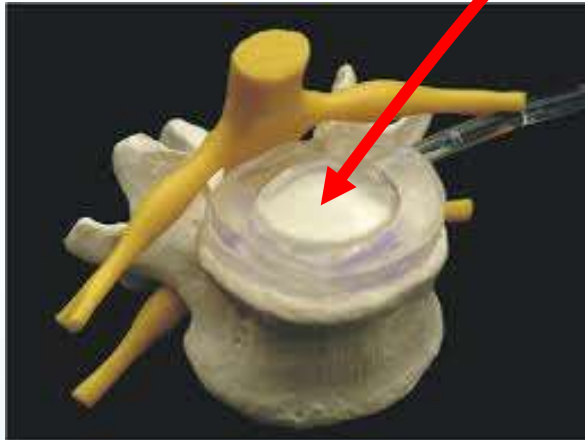


Loss of motion segment



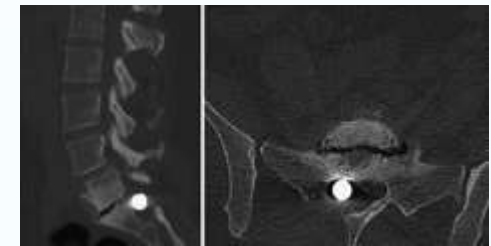
Degenerative disc and back pain

- Prevent collapse of the disc space



Put 'something' back into the disc space

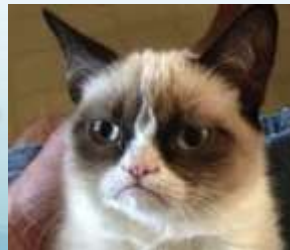
- Acrylic
- Glass
- Bone cement
- Metal



Pain and displacement

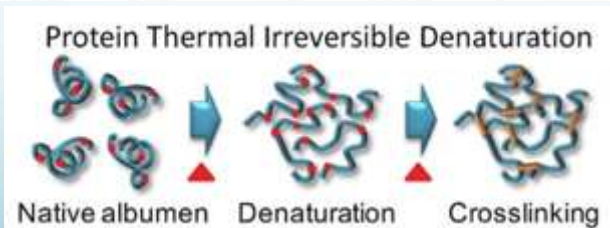
Later in the 90s

- Silicone
- Hydrogel
- Synthetic polymer

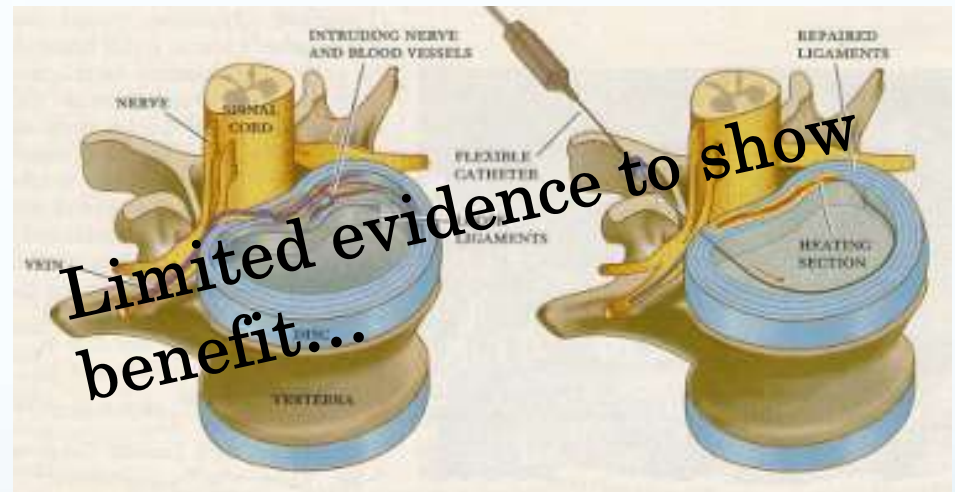


Degenerative disc and back pain

- Cooking ideas.....



Heat will denature the protein

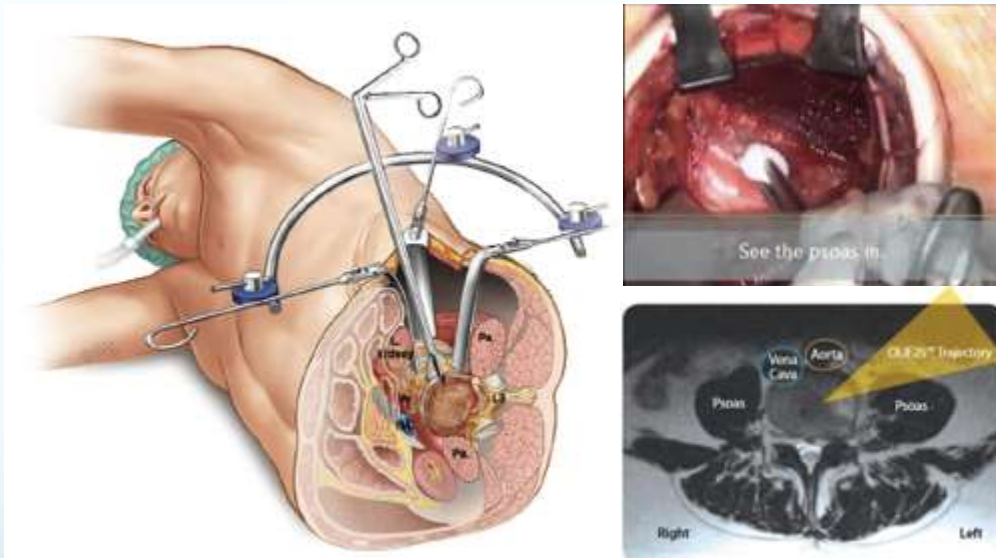


Intradiscal Electrothermal (IDET) Annulolasty

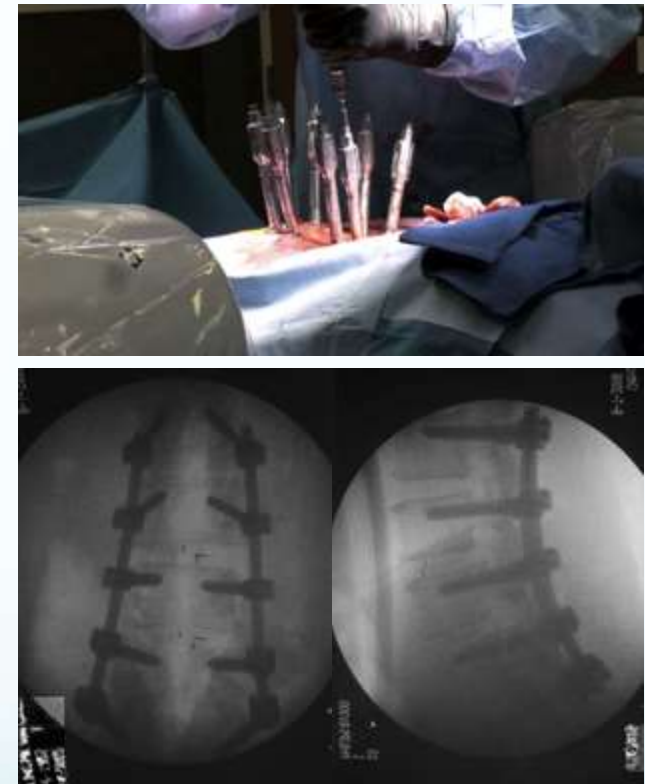
Limited evidence to show benefit...

Degenerative disc and back pain

- MISS in Spinal fusion



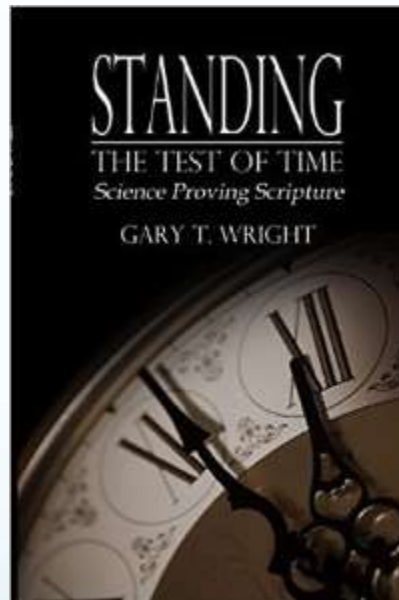
Highly specialized retractor for lumbar interbody fusion



Percutaneous screw insertion under image guidance

History and development of MISS.....

- MISS is unique and special.....



History and development of MISS.....

- Patients are becoming more informed.....



Thank you

- Any questions?

