Anterior Lumbar Interbody Fusion:
Discogenic back pain

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Historical perspective

- First clinical report for degenerative condition

Lane & Moore Ann Surg 1948

Close association between fusion rates and clinical success:

80 % fusion	80 % clinical success
	Loguidice Spine 1988
73 % fusion	74 % clinical success
	Blumenthal Spine 1988
72 % fusion	68 % clinical success 10 yr fu
	Penta; Fraser Spine 1997

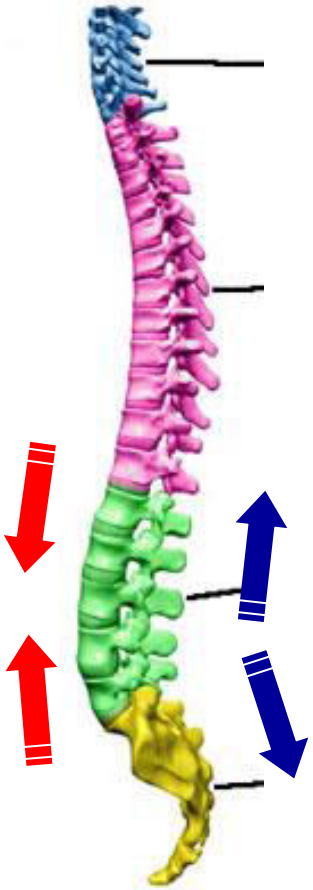
Indications

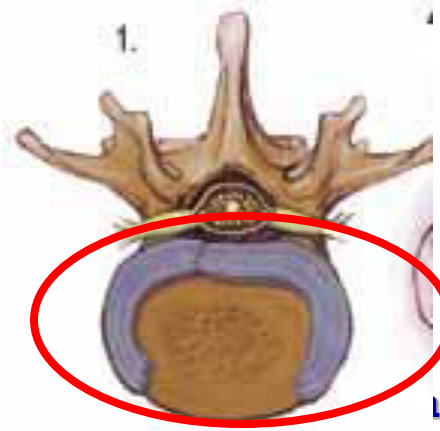
- Axial back pain:
  - Degenerate disc
  - Loss of disc height
  - Loss of sagittal profile
- No root / cauda compression

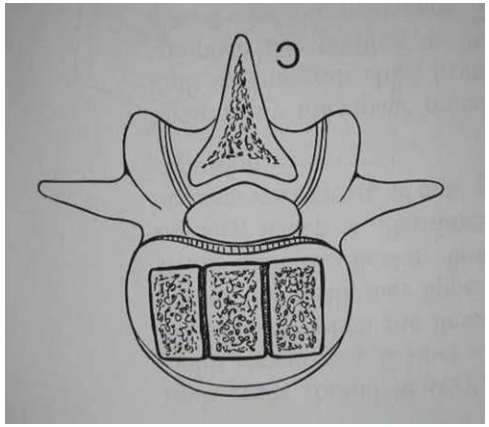
L_{45} ALIF: Floating fusion

Mechanical benefits of ALIF

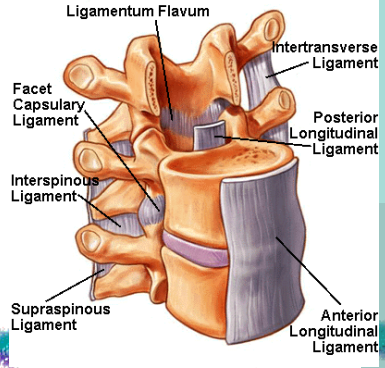
- Anterior ‘compression’ column
- Larger ‘cancellous’ surface area





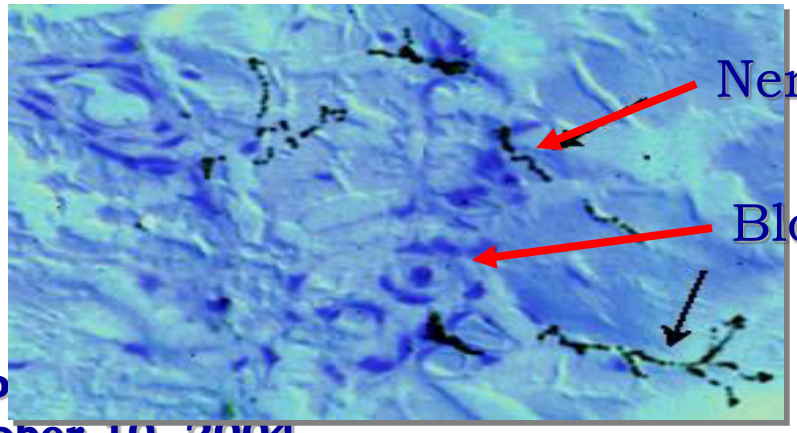


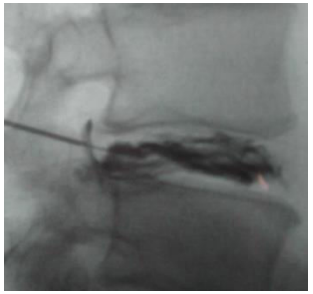
Disc as a source of pain



- Anterior annulus **O'Brien Spine 1979; BMJ 1996**

- Neo-vascularization + nerve ingrowth
  - Internal disc disruption
  - Instability
  - Failed posterior fusion





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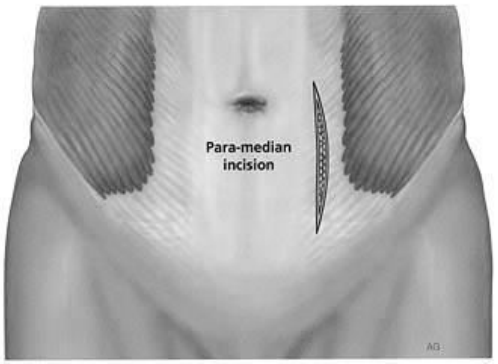
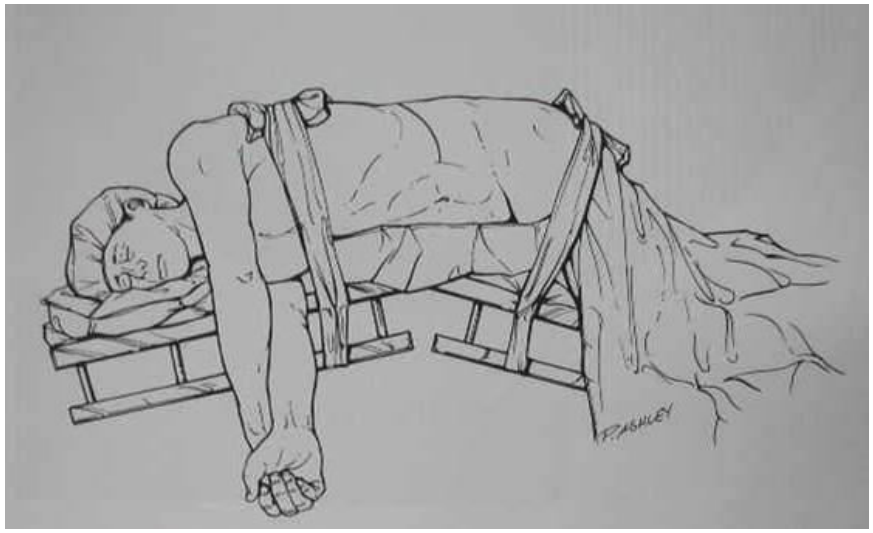
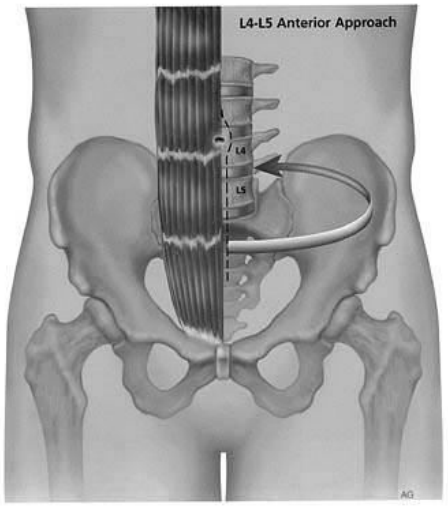
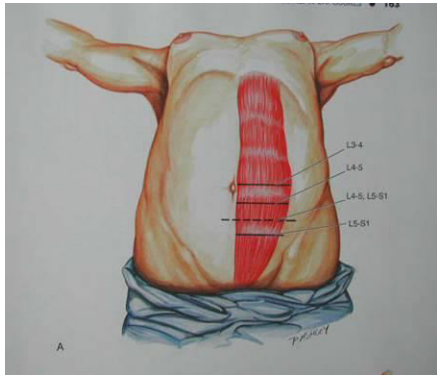
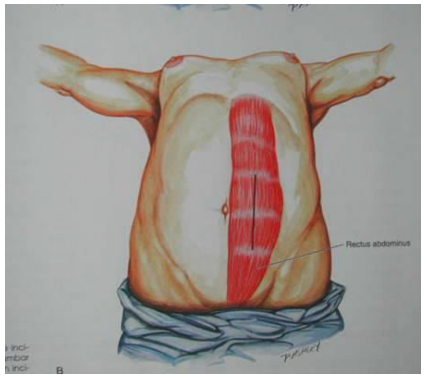
Technique: Position



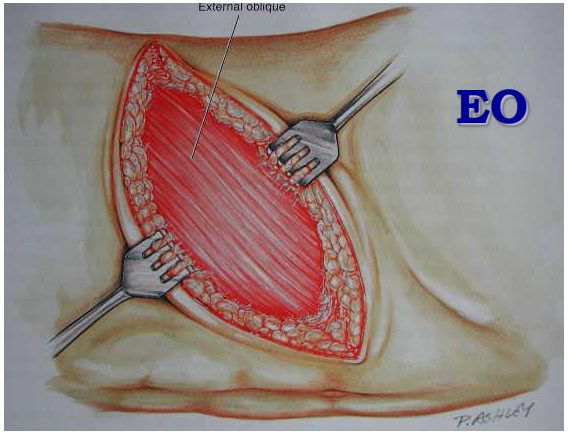


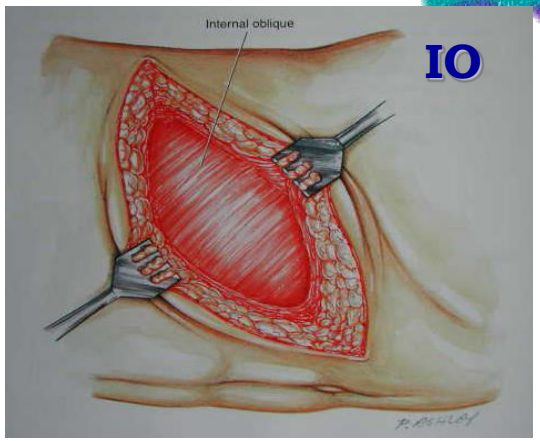


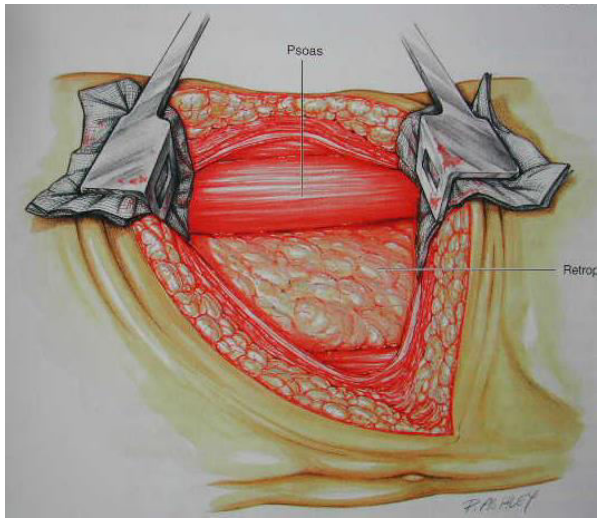


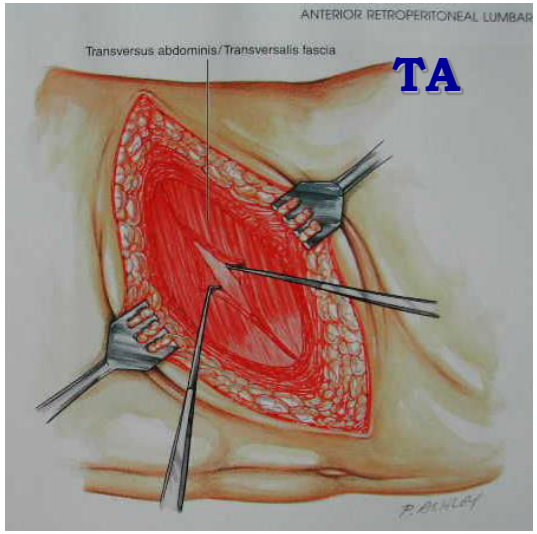


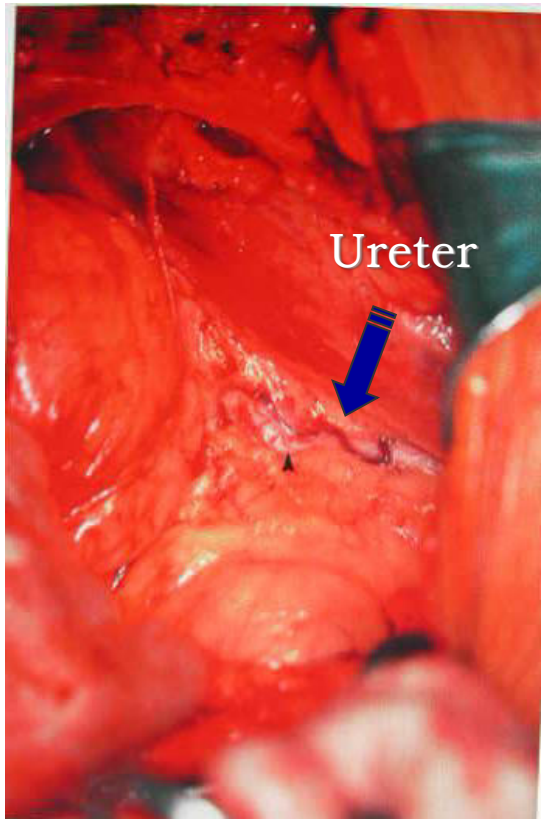
Technique:
Retroperitoneal approach



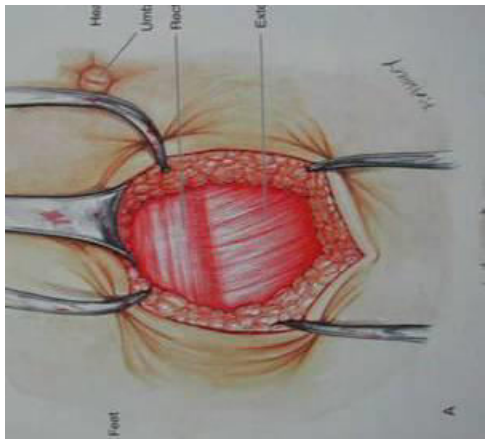


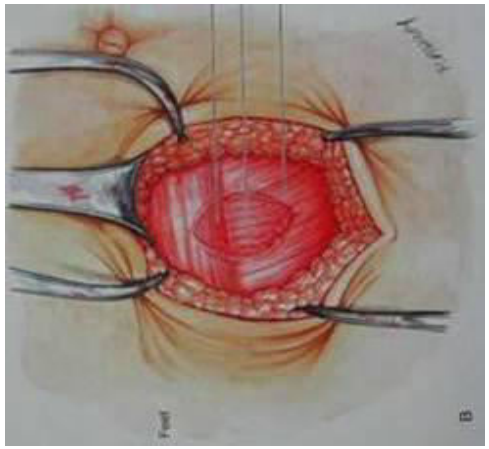


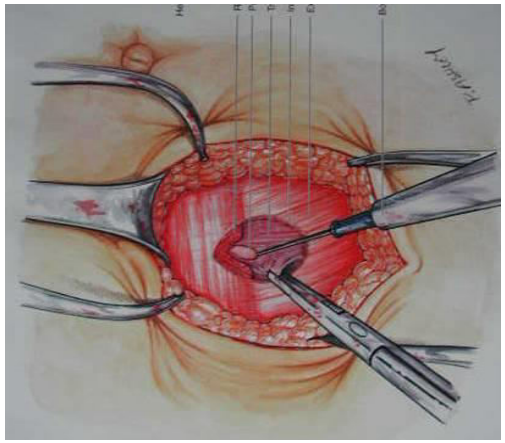


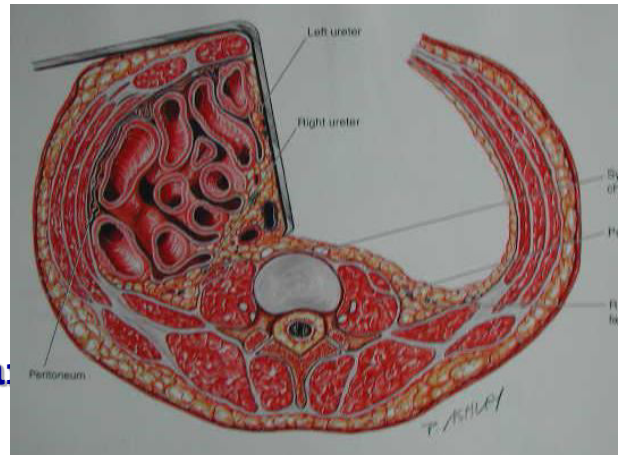


Technique:
Para-rectus retroperitoneal

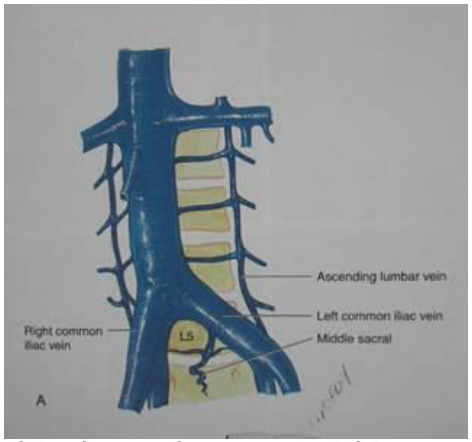


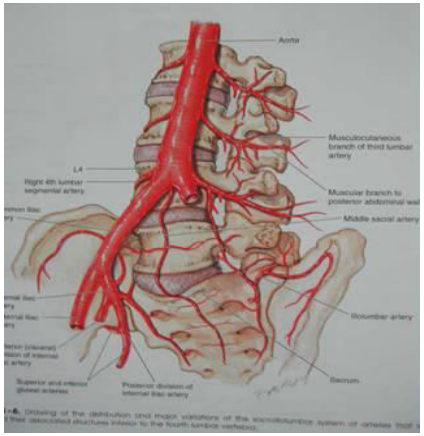


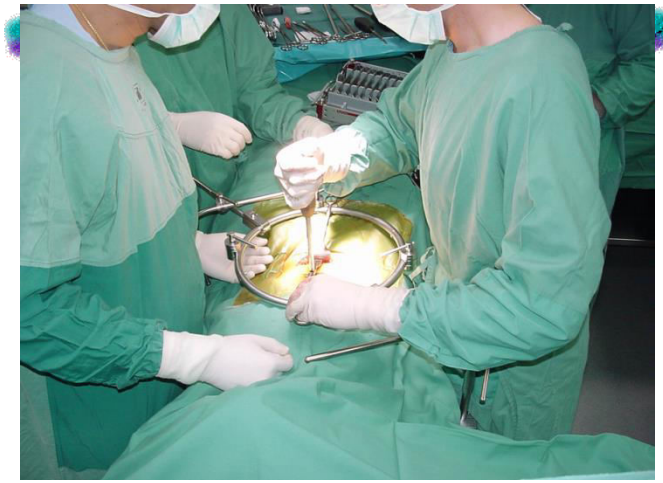




Technique: Disc approach

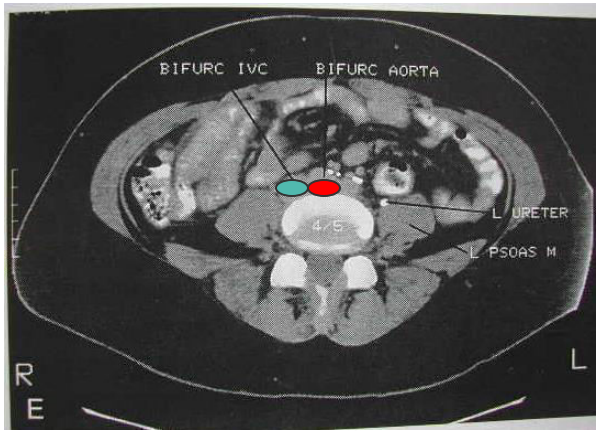


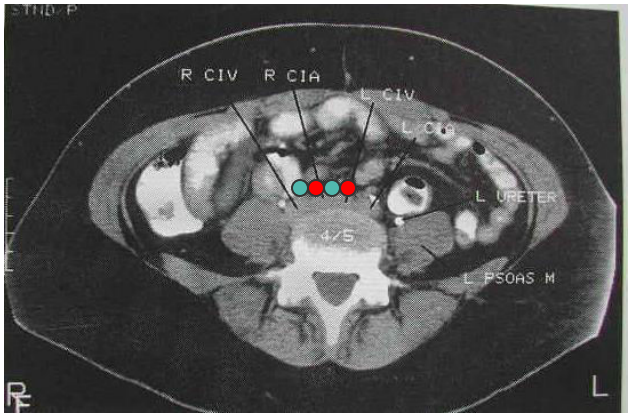


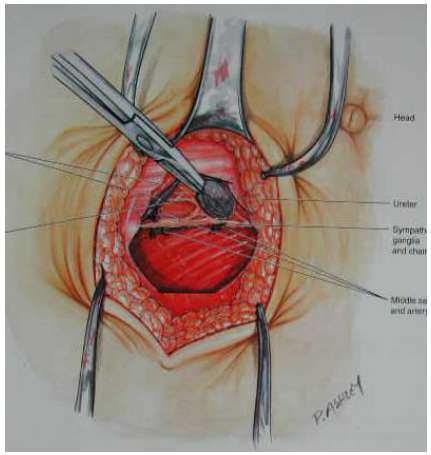


Iliolumbar; L Iliac; middle sacral

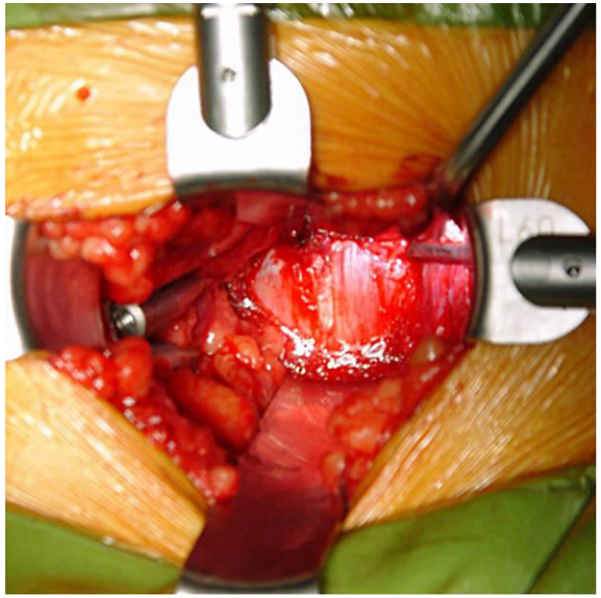
L Iliac art

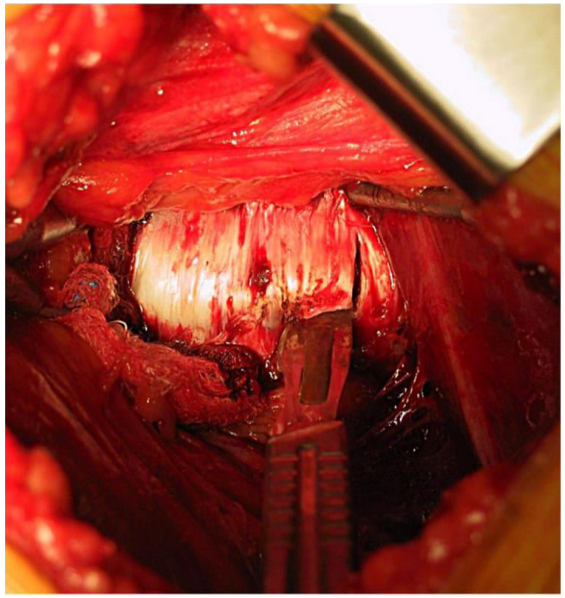


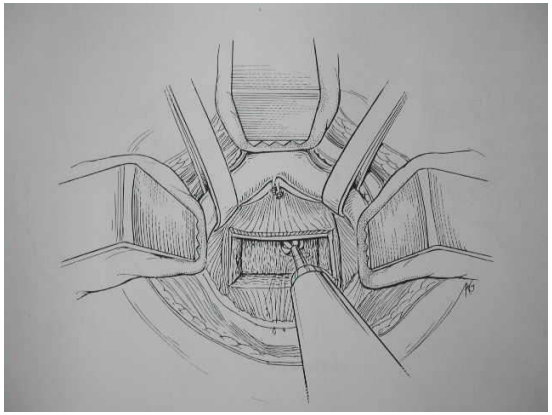


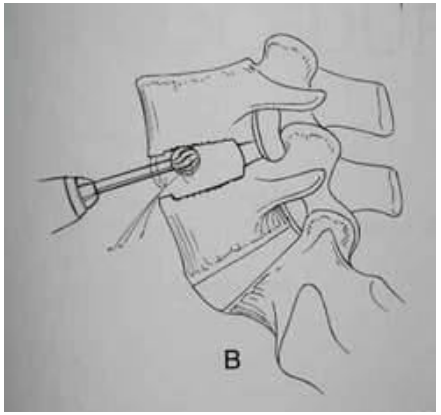


Technique: Disc preparation

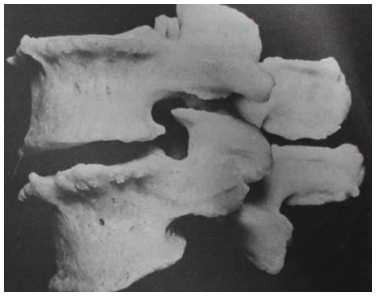


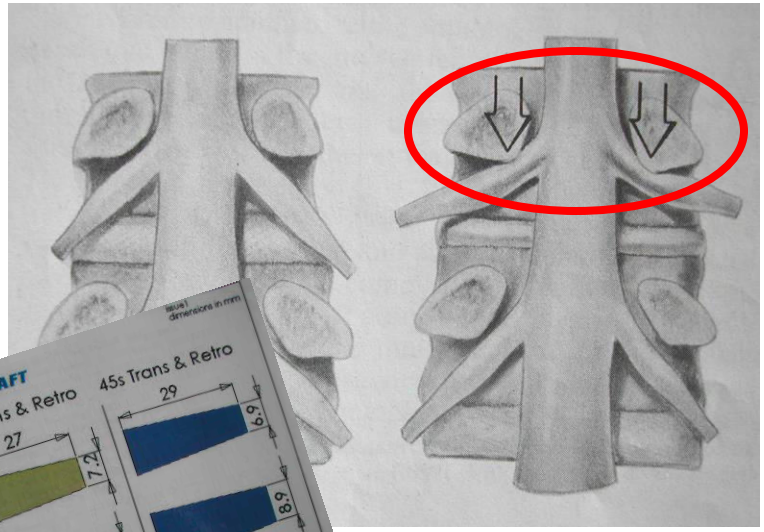


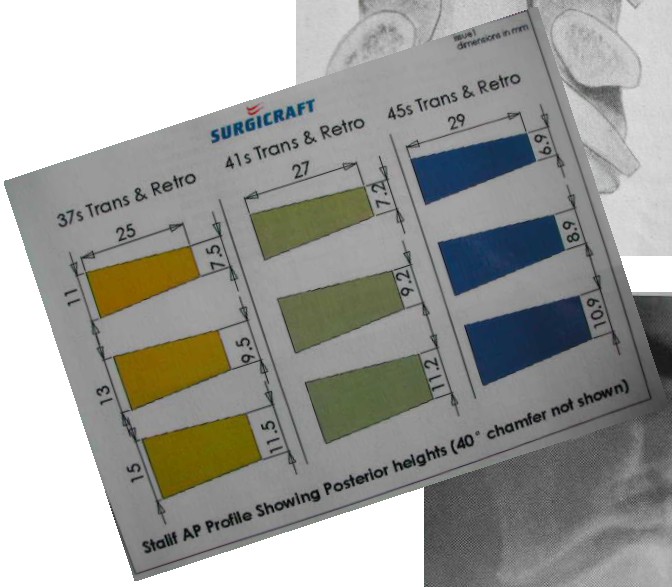


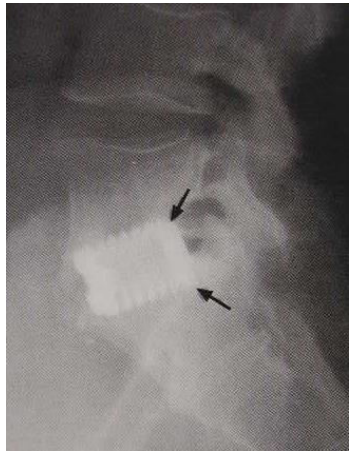


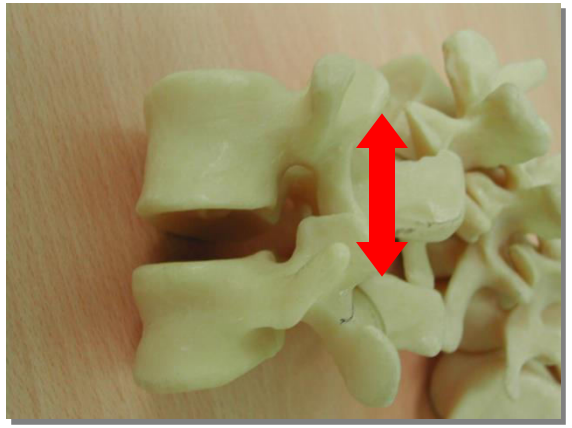
Technique:
Disc height restoration











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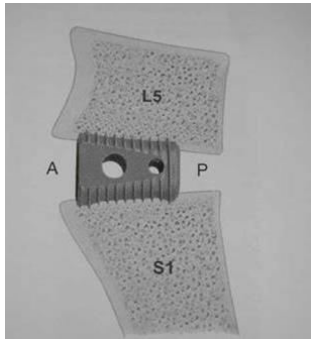
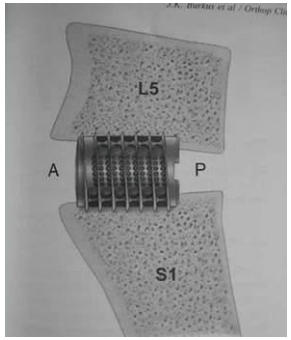
Cages / Grafts / Spacers



Tapered



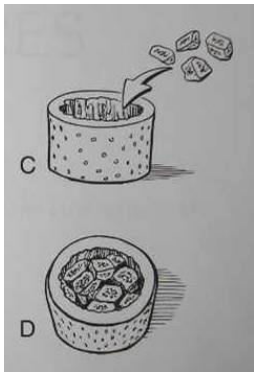
Cylindrical

Allograft

Autograft

PEEK

STALIF



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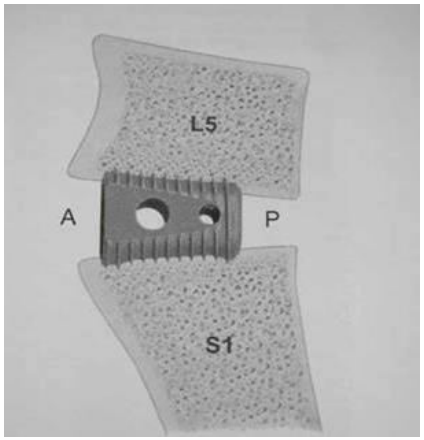
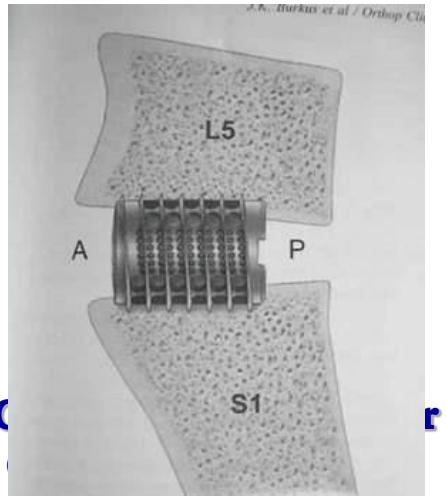
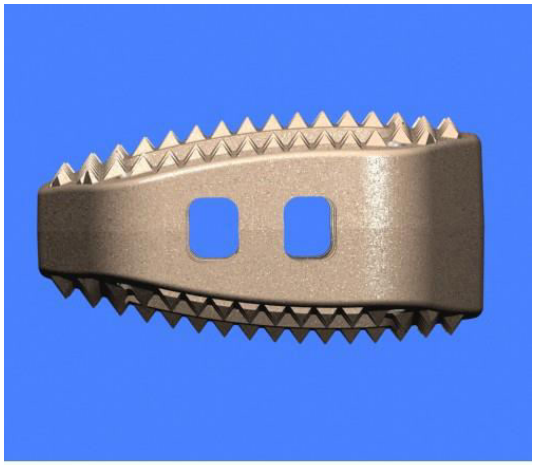
Stability of cages

Annular tension; threads





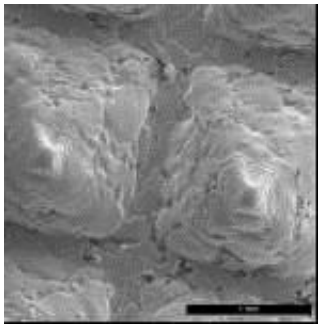
AC **r**



Anchorage: **teeth**

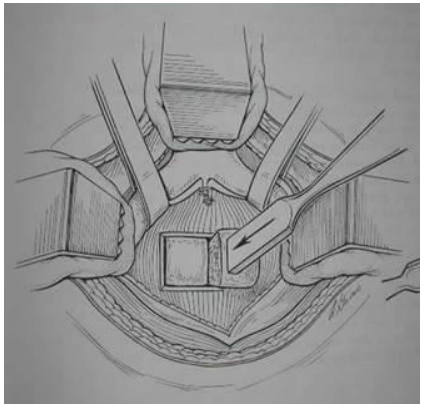
Shape: **bi-convex**

Anchorage: **screws**



Bio-integration

Stability of spacers

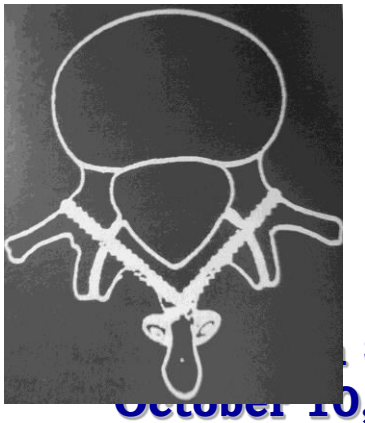


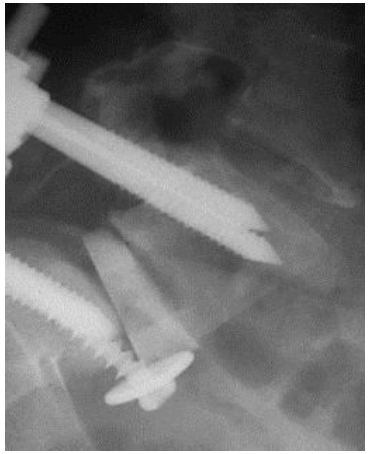
Distract

Impact

Additional fixation

Trans-laminar screws

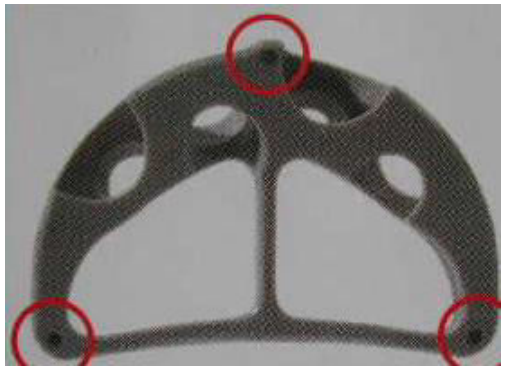


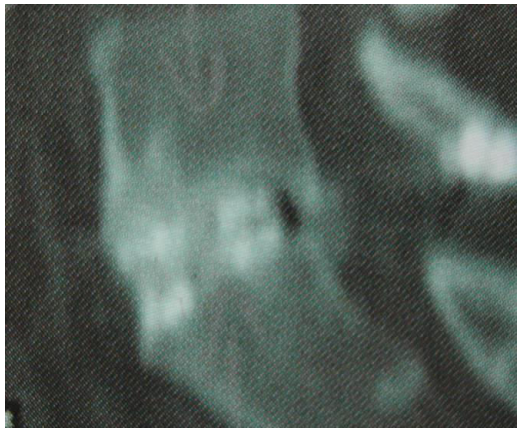


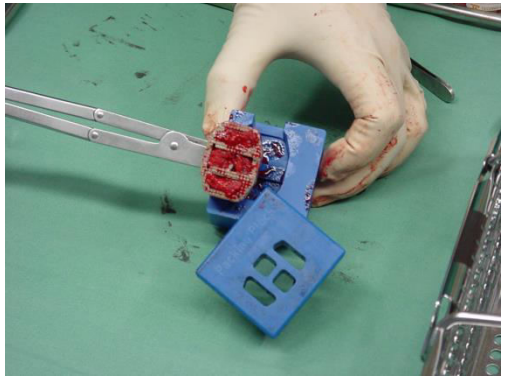
‘Anti-glide’ screw

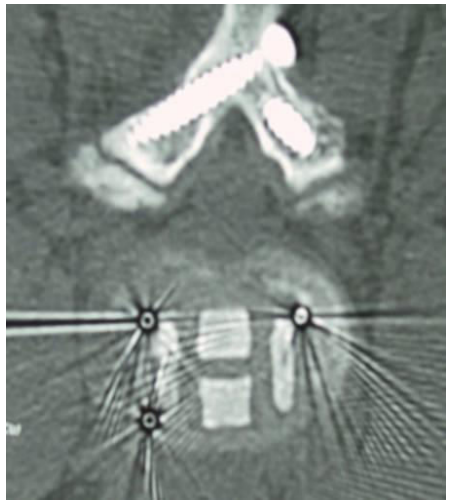
PL + ALIF

Fusion ‘through’ the cage

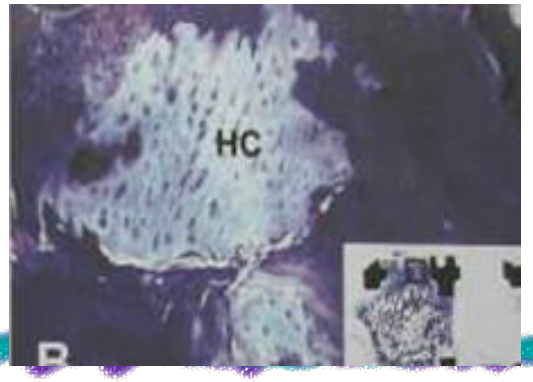








Failure of cages



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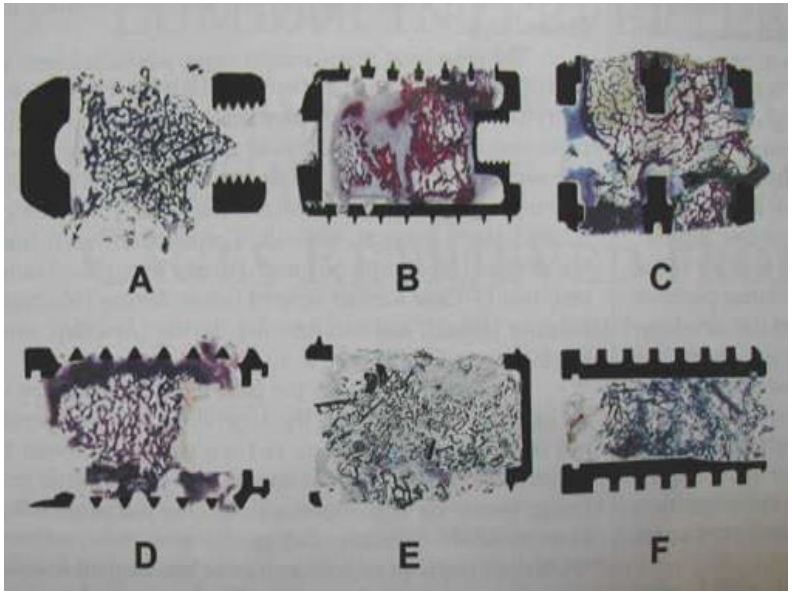

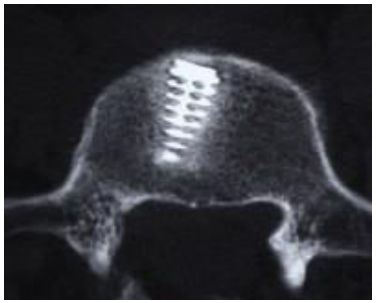

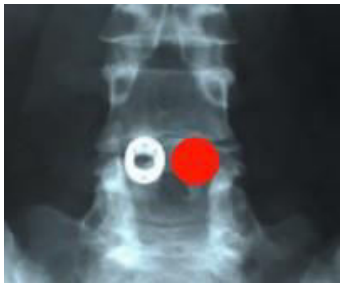

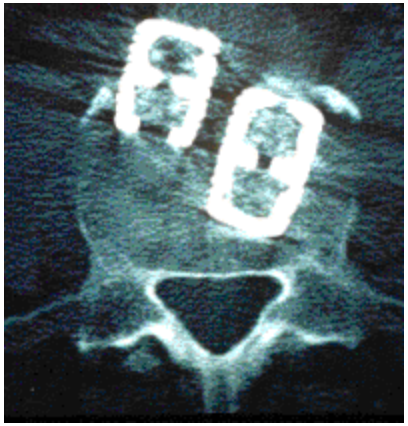

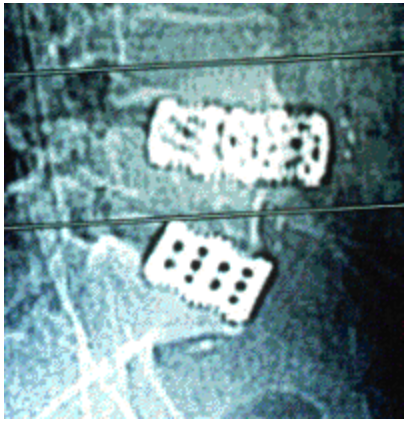

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Complications

- Nerve injuries 2.7 %
- Retrograde ejaculation
  Cold opposite foot
- Vascular injury 1 %
- Implant migration
- Infection / DVT

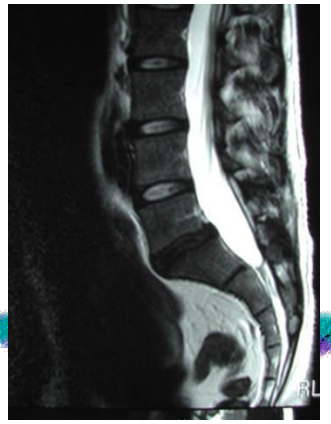
Sympathetic plexus / chain

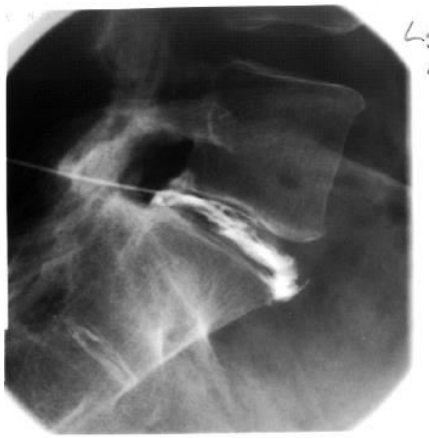
Cauda equina

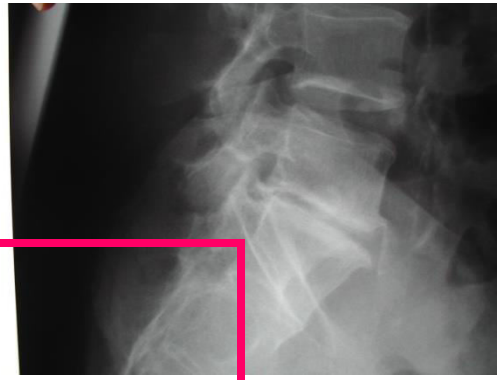
Superior hypogastric plexus

Lumbo-sacral plexus

Clinical scenario







44 / M

Severe axial back pain

No leg pain

N neurology

Failed non op programme

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Clinical scenario

- 4 yr follow up
- No back pain
- Back to full time work / golf

Final words .....

Have a clear goal.....need for fusion

Know the route !

Discuss complications

Cages are not just for Monkeys !

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