

TLIF

An Alternative Approach

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Spinal Stenosis

- Narrowing of the spinal canal or foramina causing symptomatic neural dysfunction.
- First described in 1803 by Antoine Portal
- 1900 – Sachs & Fraenkel conclude that nerve root impingement causes sciatica
- 1921 – Siccard & Forrestier note disc disruption could cause leg pain
- 1927 – Putti; hypertrophied facet joints can cause nerve root entrapment

Spinal Stenosis

- 1934 – Mixter & Barr: disc prolapse causing leg pain from root impingement
- 1940's – Sarpemyer; Osseous compression can also cause nerve root impingement
- 1949 – Verbiest used the term “Stenosis of the vertebral canal”

Statistics – Spinal Stenosis

- Incidence 1.7% - 8%
- Increases from 5th decade
- When associated with degenerative spondylolisthesis – more common in women
- Part of the spectrum of ageing and degenerative disease of the spine

Subtypes

- Central
- Sub-articular
- Foraminal
- Extra-foraminal



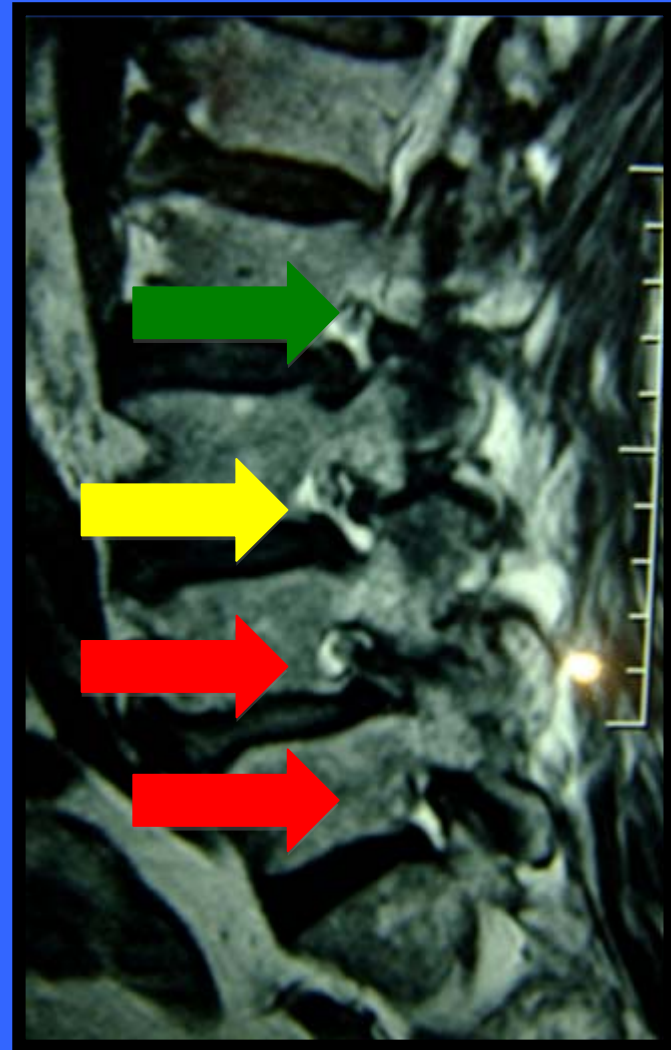
Subarticular Stenosis



Foraminal Stenosis



Foraminal Stenosis



Foraminal Stenosis



Symptoms

- Pain in the lower back (65%) and legs (80%)
- Intermittent Spinal Claudication
- Worsening with walking
- Decreased walking tolerance
- Relief with sitting or bending forwards
- Exacerbation with extension
- Urinary disturbances

Signs

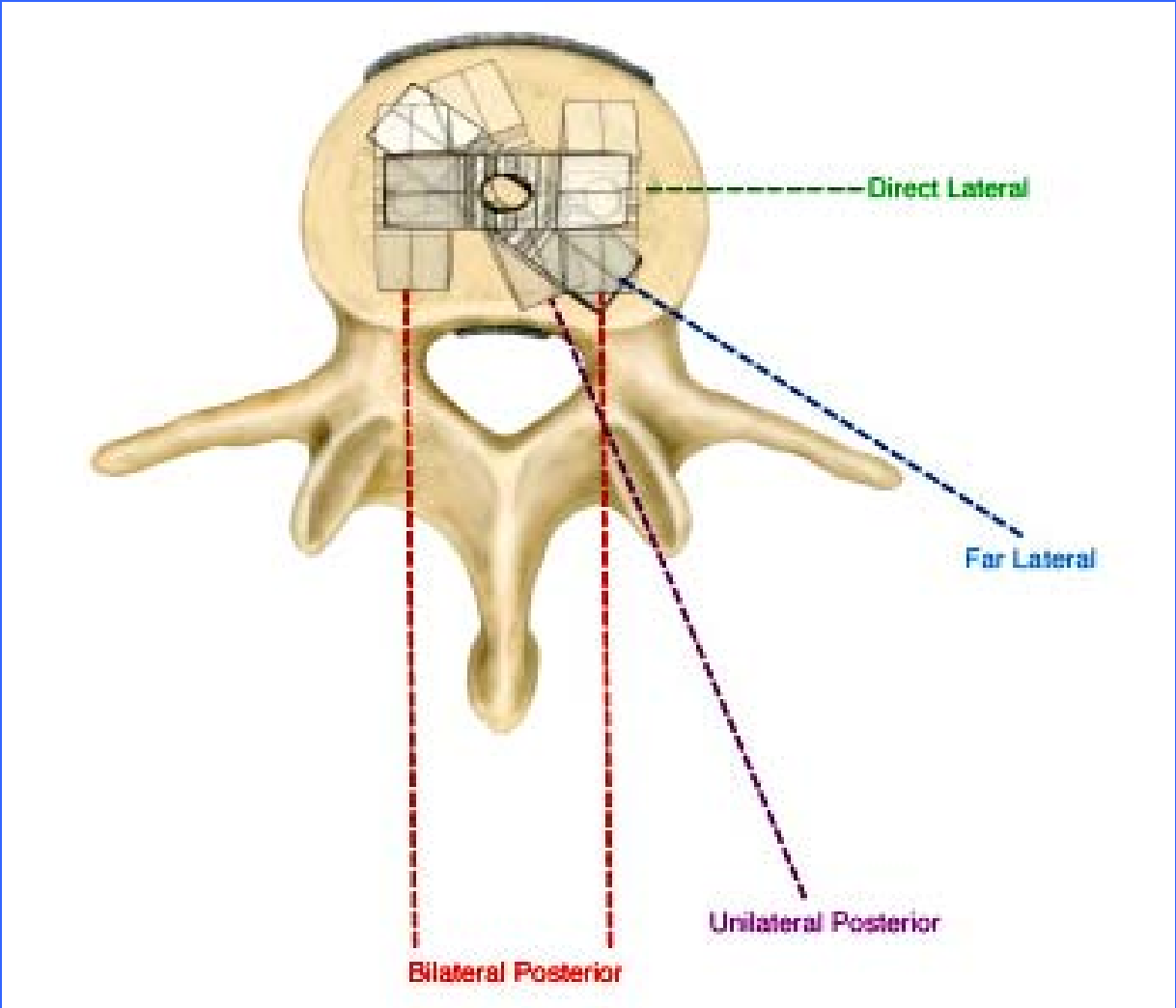
- Often have none
- May have a radiculopathy
- Relief when ambulating with a flexed posture
- Spondylolisthesis

Reasons for Surgery

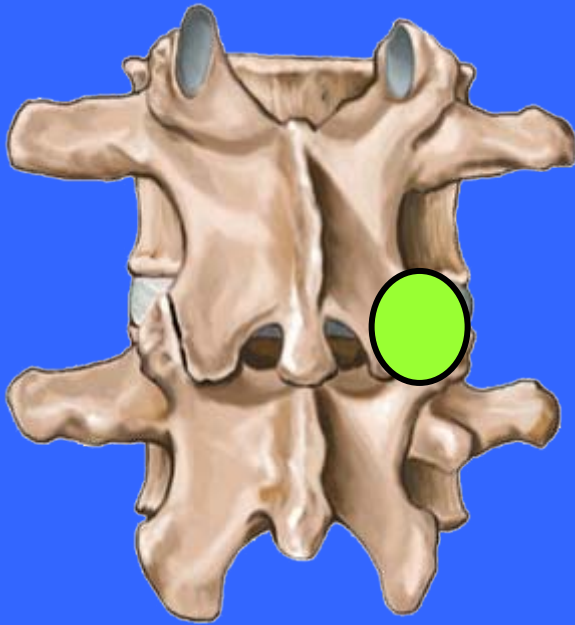
- Failed non-operative management
- Progressive disability
- Progressive neurology
- Unrelenting Pain
- Interference with patients desired lifestyle

TLIF

- Transforaminal Lumbar Interbody Fusion
- Posterior-lateral approach to allow removal of disc and anterior support
- Safe
- Excellent deformity correction
- Over 80% of patients report long-term satisfaction



Unilateral Surgical Technique

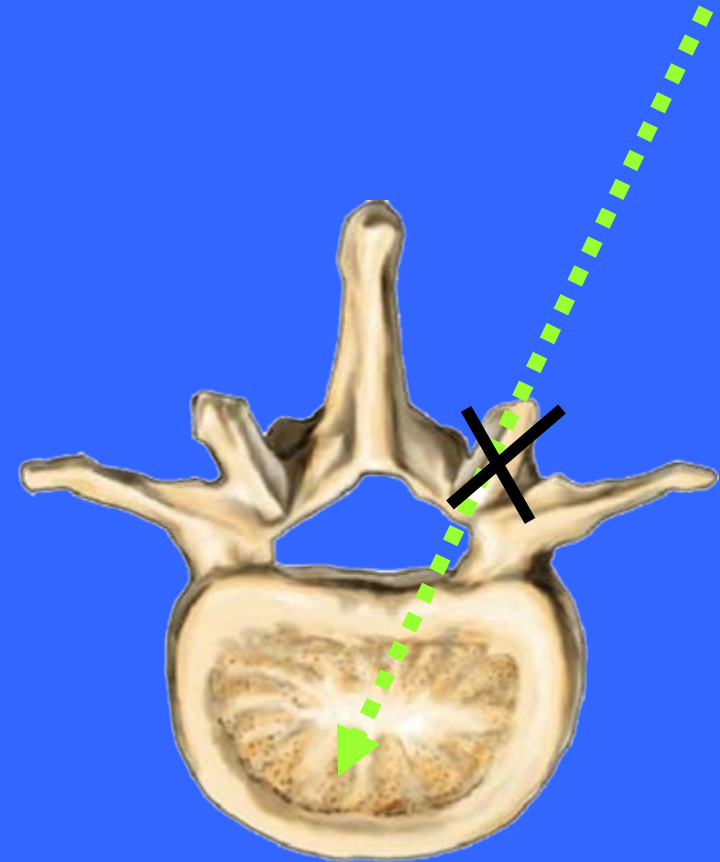


- Facet is removed on one side
- Reduced muscle retraction is needed to access the vertebral disc
- Minimizes the nerve root manipulation required to access the disc space
- Working under the dura, less retraction is needed

Unilateral Surgical Technique

Exposure of the Disc Space

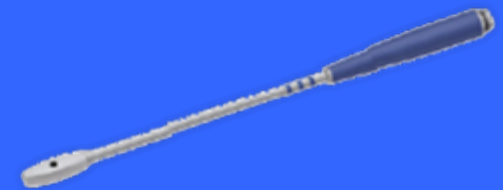
- The disc is accessed by removing the superior and inferior articular processes
- A partial facetectomy is carried out on the contralateral side
- A 1cm square annulotomy is made with a scalpel
- Discectomy is performed through the unilateral approach



Unilateral Surgical Technique

Disc Distraction

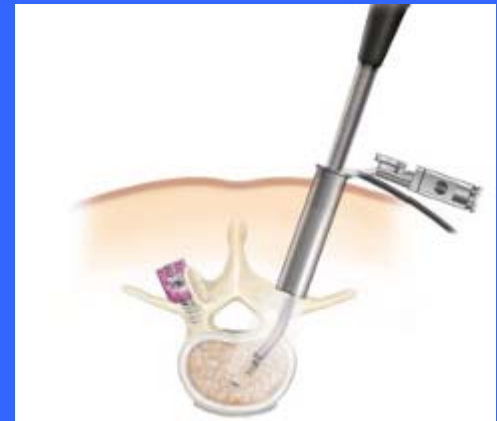
- Sequentially insert the Distractor until the desired height is obtained
- Use the TLIF distraction device during the disc space preparation
- Temporarily tighten the construct



Unilateral Surgical Technique

Endplate Preparation

- There are both straight and angled instruments to prepare the disc space
 - Currettes
 - Push and Pull Scraper
 - Rasp, Osteotomes



Unilateral Surgical Technique



Trial Insertion

- Insert Trial until the desired disc space height
- Use A/P and lateral fluoroscopy to confirm proper placement and trajectory



Unilateral Surgical Technique

Implant Insertion

- Before inserting the implants place bone graft anteriorly (This way the implant is submerged in bone when inserted)
- Gently impact until the cage is around 3mm below the posterior margin of the annulus
- Bone graft is placed in and around the implant
- Final compression of screws is carried out

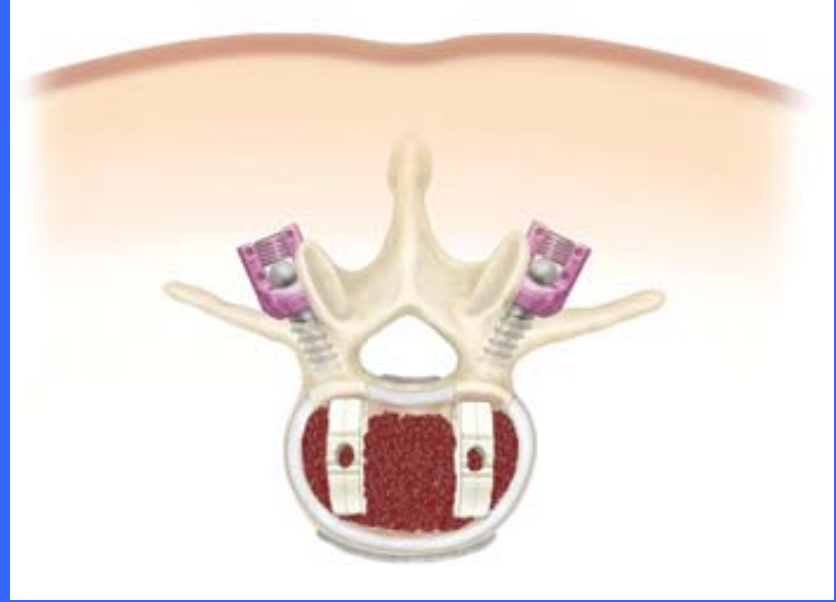


Unilateral Technique



Advantages

- Removal of entire facet joint
- Hence complete decompression of nerve root
- Allows wide exposure of disc
- Large amount of disc resection
- Allows resection of Annulus Fibrosis and hence further deformity correction
- Direct foraminal decompression



Disadvantages

- Exposure of epidural veins
- Working in Axilla of nerve root
- Resection of Pars Inter-articularis
- Learning Curve

Relevance

- Ideal for restoring disc height
- Directly addresses issues pertaining to spinal stenosis
- Allows powerful deformity correction
- Allows visualisation of nerve roots

Conclusions

- TLIF is a safe, effective and appropriate method of surgical intervention for spinal stenosis
- TLIF is the building block “surgically” for more complex osteotomies and surgical interventions throughout the spine.



Complete Multidimensional Surgical Imaging

O-arm[®]

 Medtronic





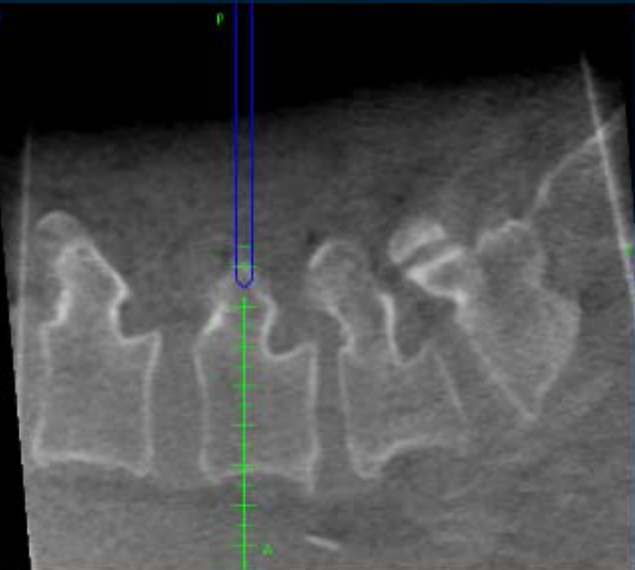




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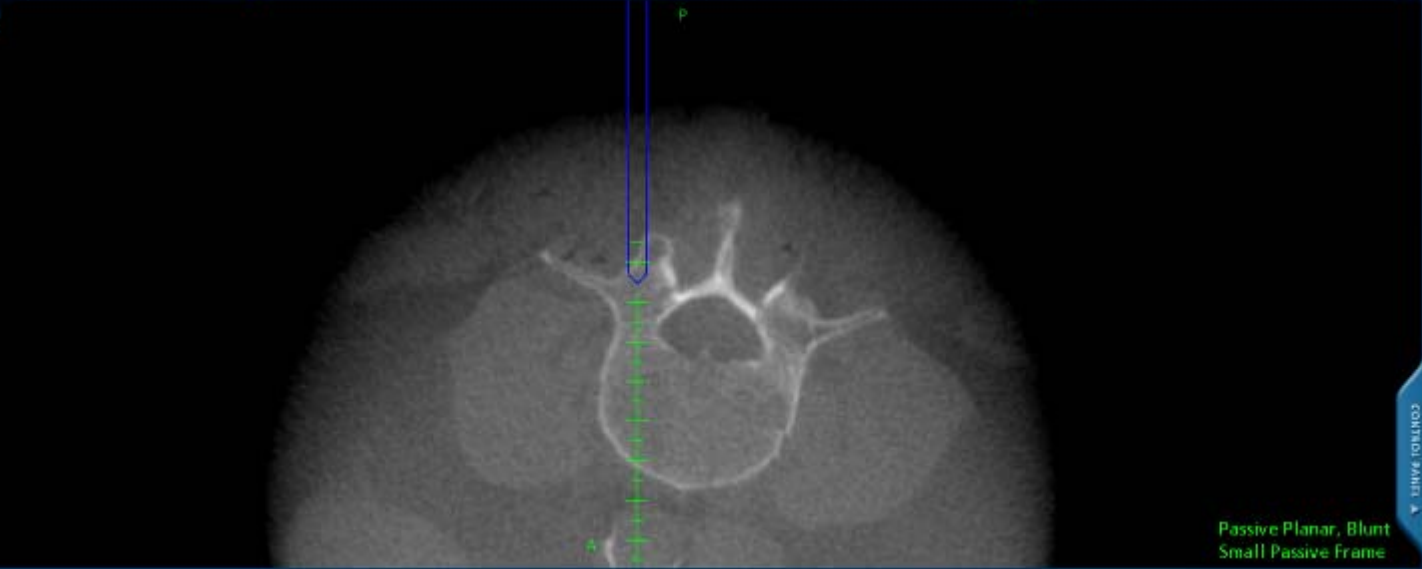
▶ Trajectory 2



▶ Probe's Eye



▶ Trajectory 1



Dr Davor Saravanja
 PROCEDURE:
 Open Thoracolumbar
 Fusion: O-arm(TM)
 PATIENT:
 Belling^Garry^John

-  Select Projection
-  Select Tip
-  Cycle Views
-  Select Plan

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-  Camera
-  Help
-  Admin
-  Exit

Passive Planar, Blunt
 Small Passive Frame

MOTION MONITOR

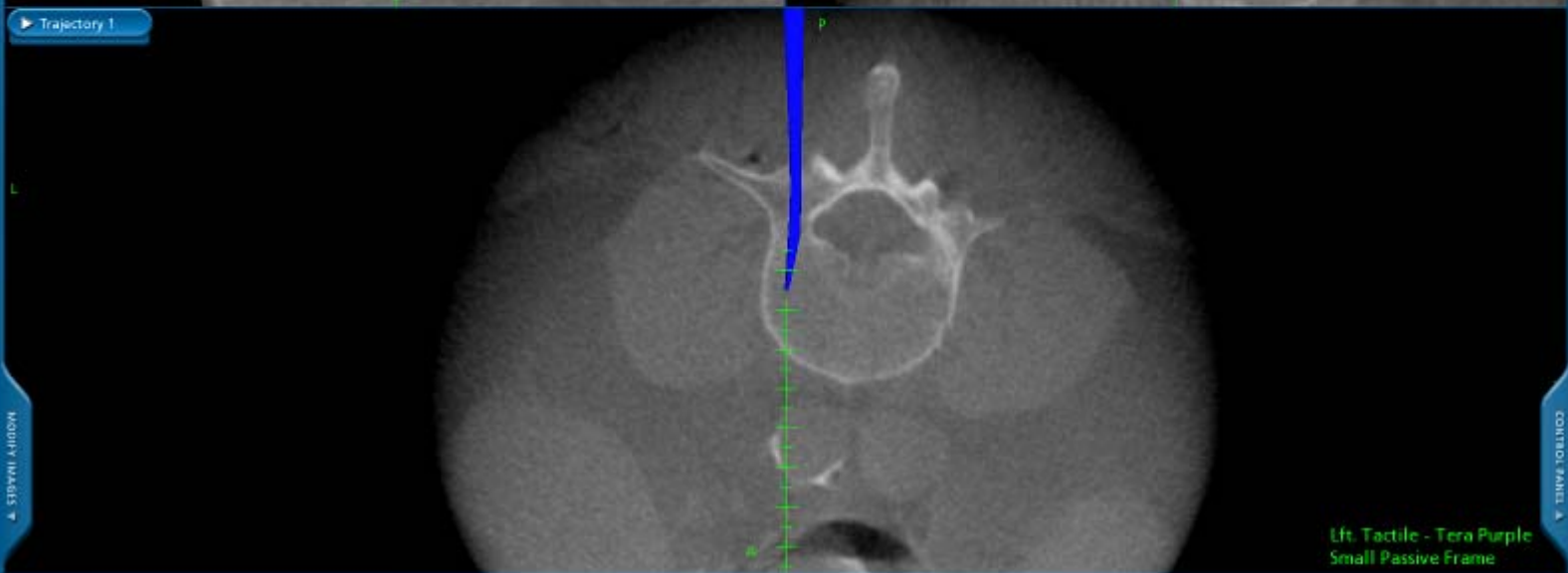
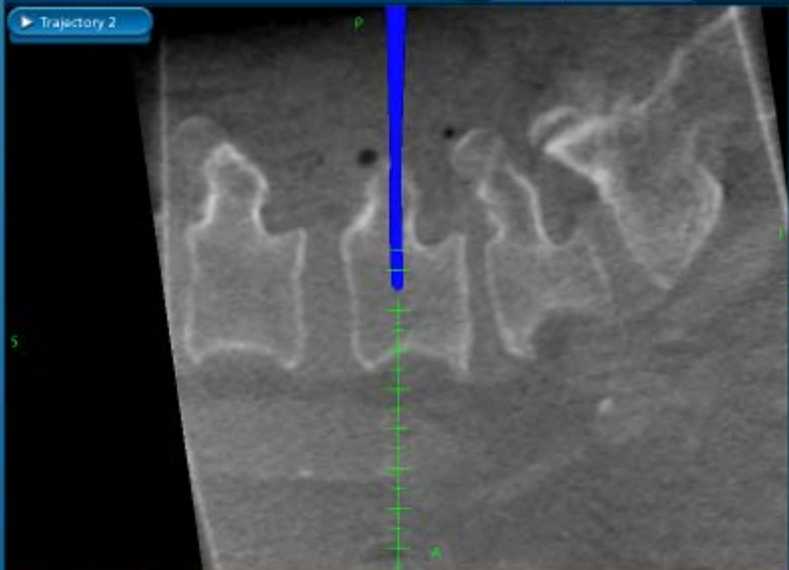
CONTROL PANEL



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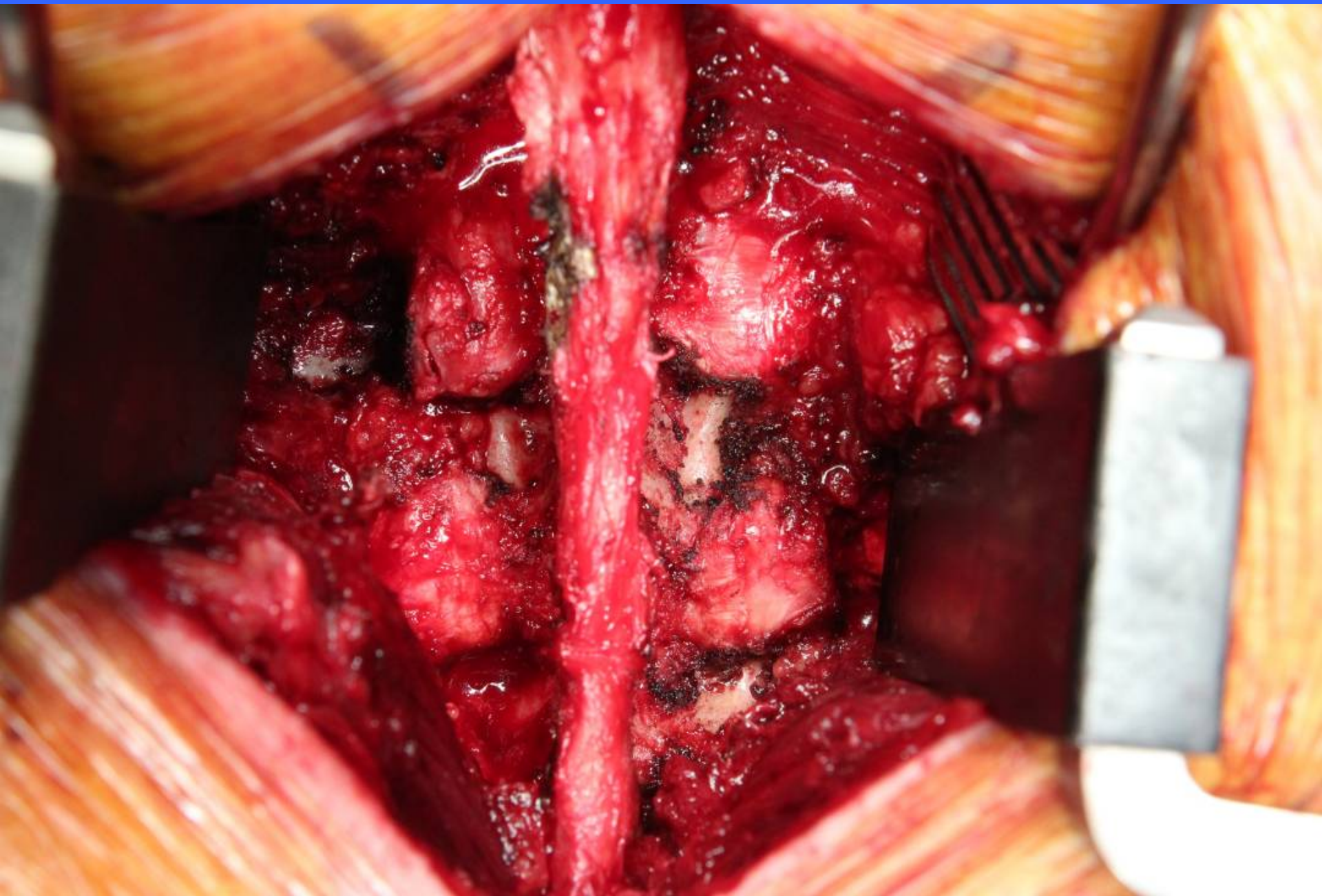
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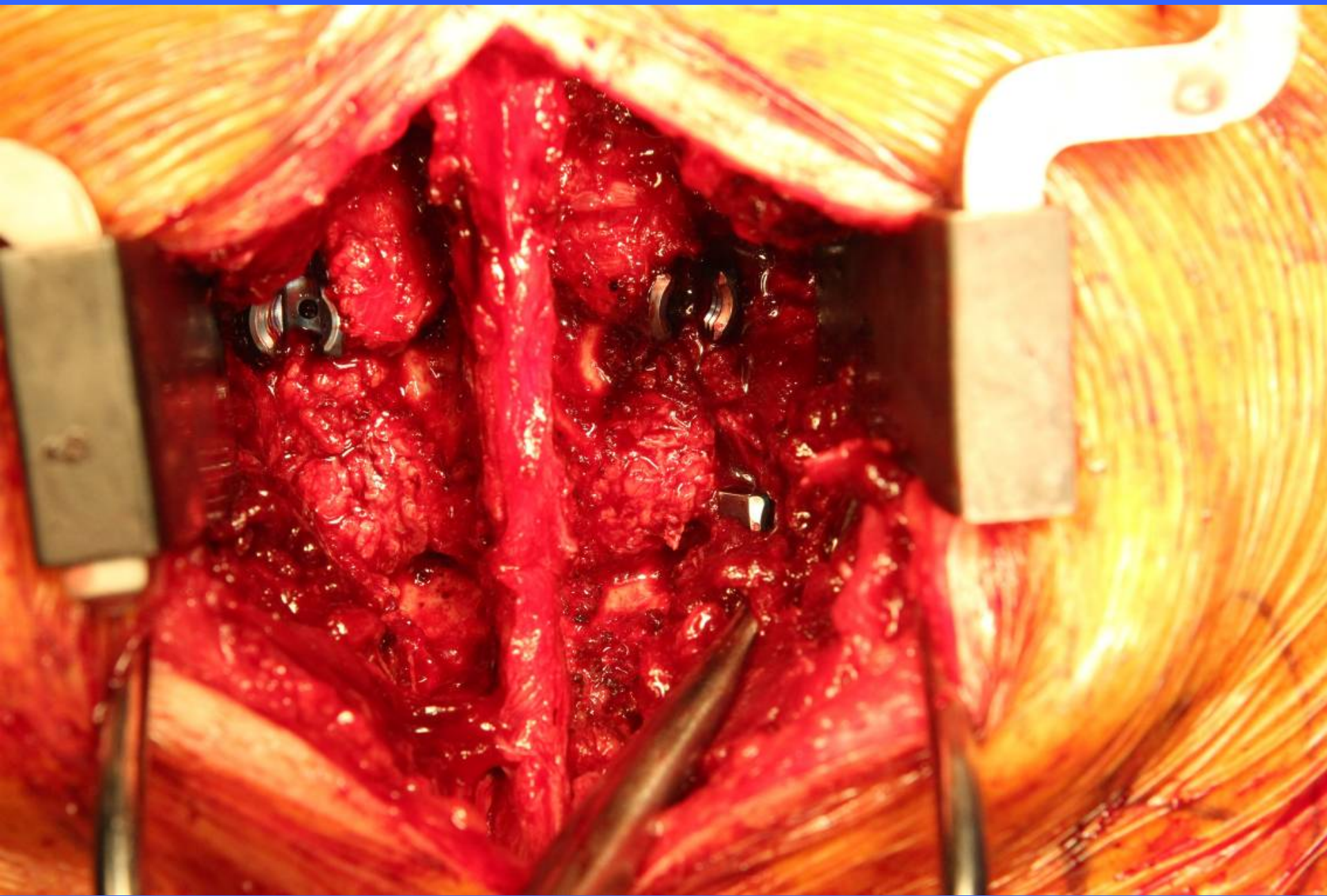
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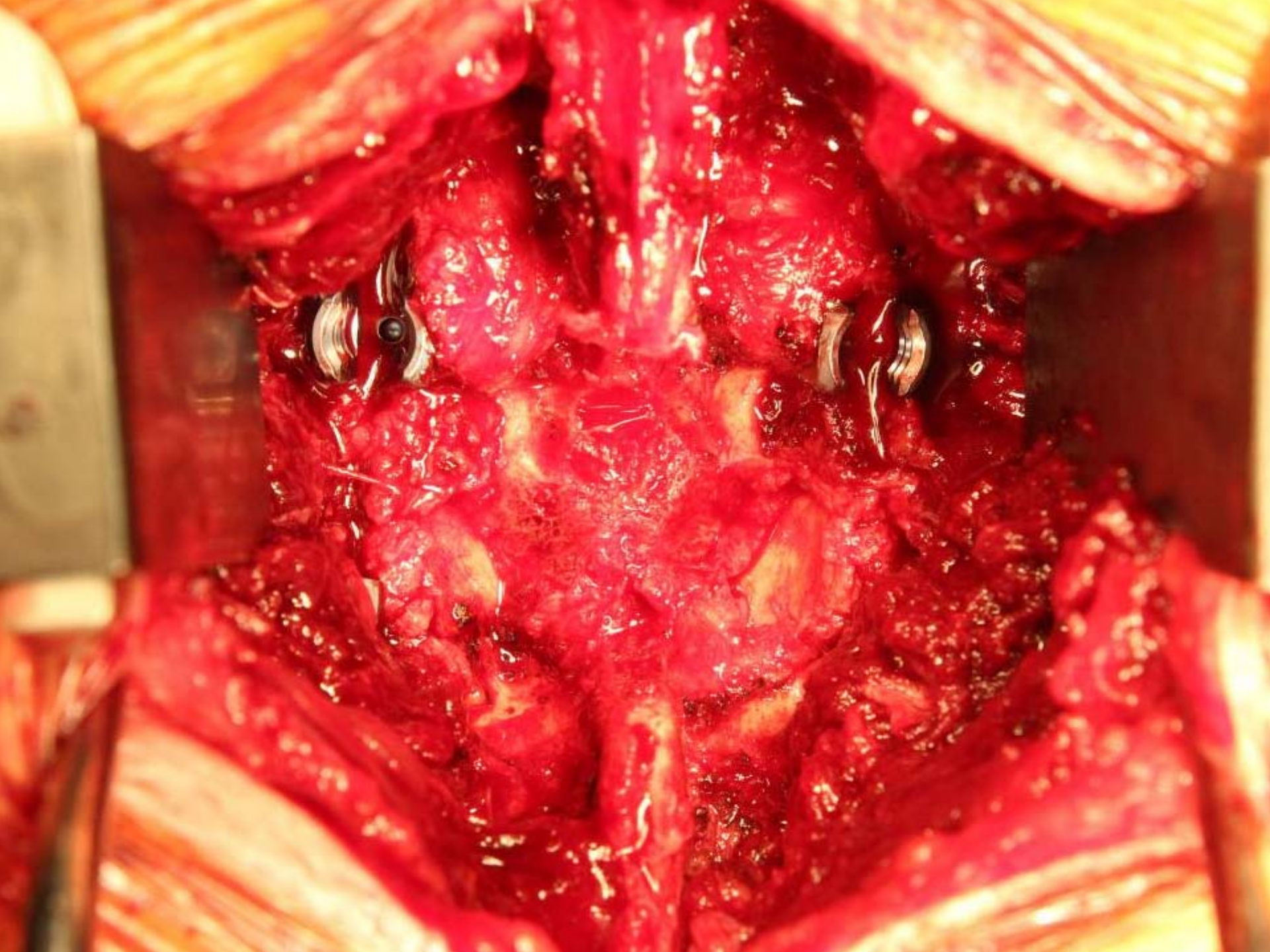
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Small Passive Frame

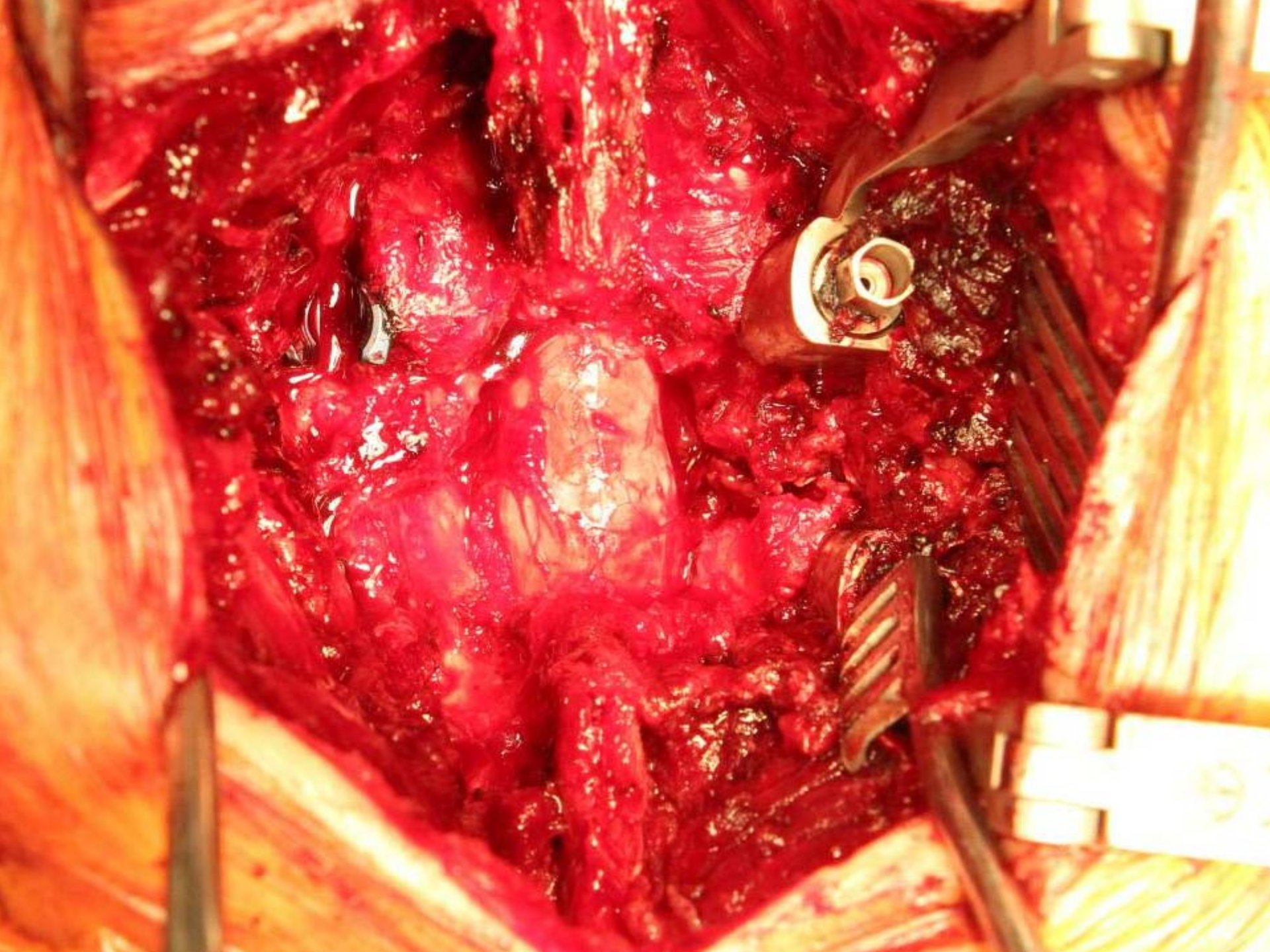


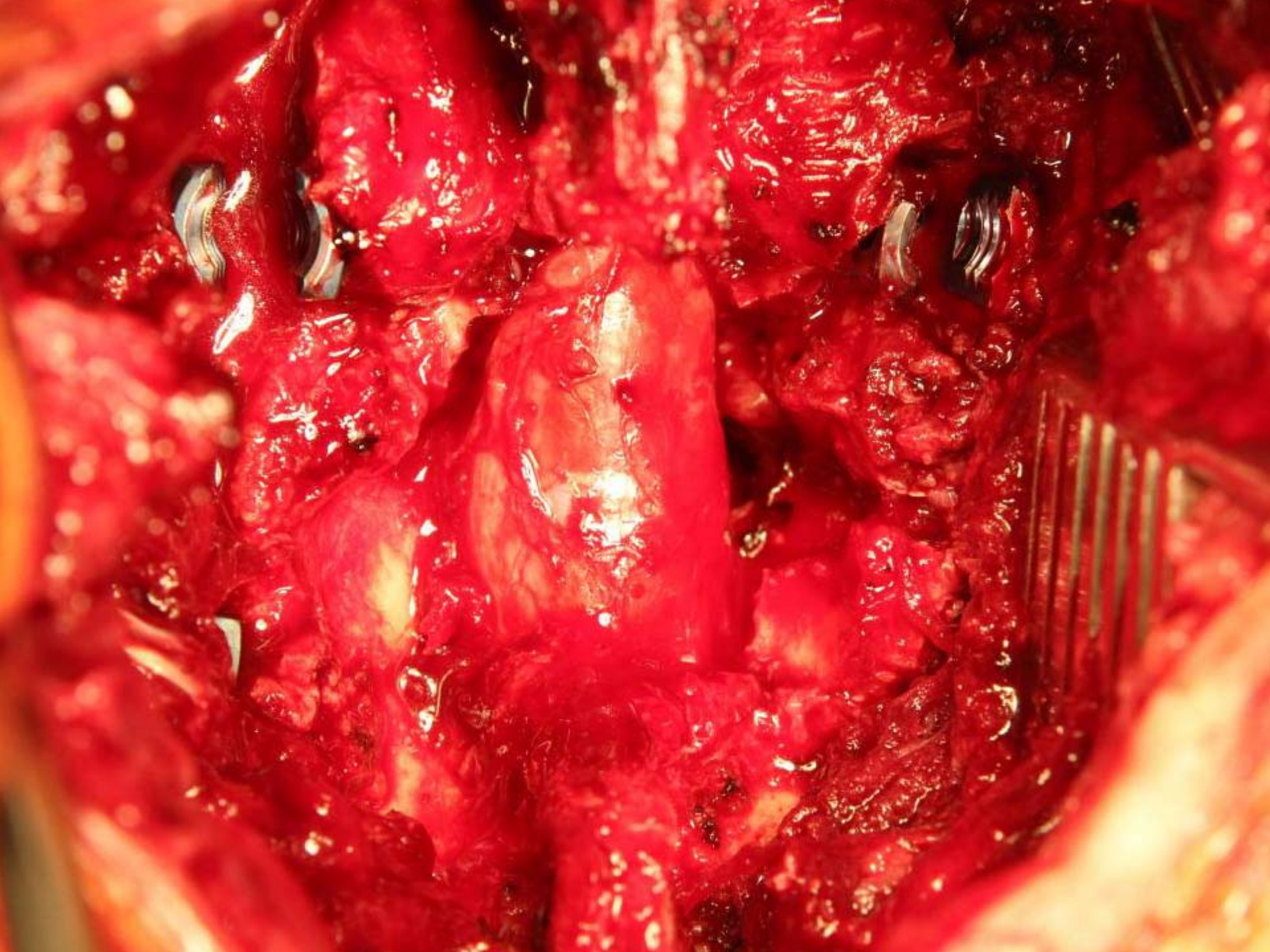


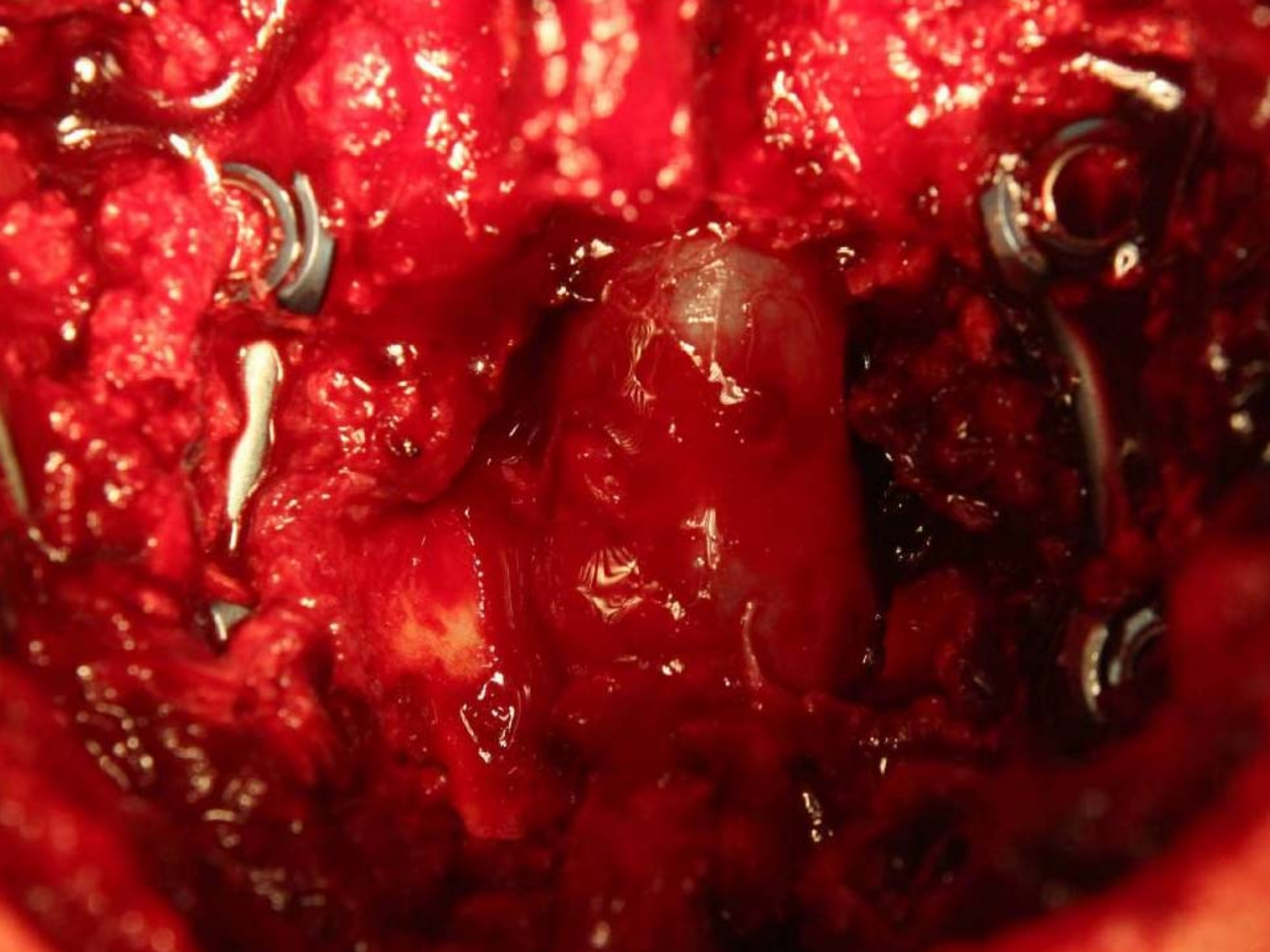


















Thank you