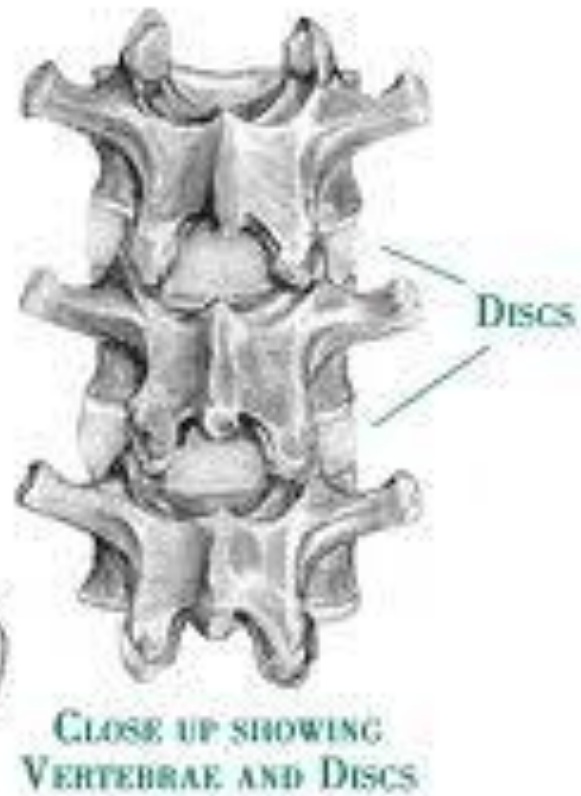
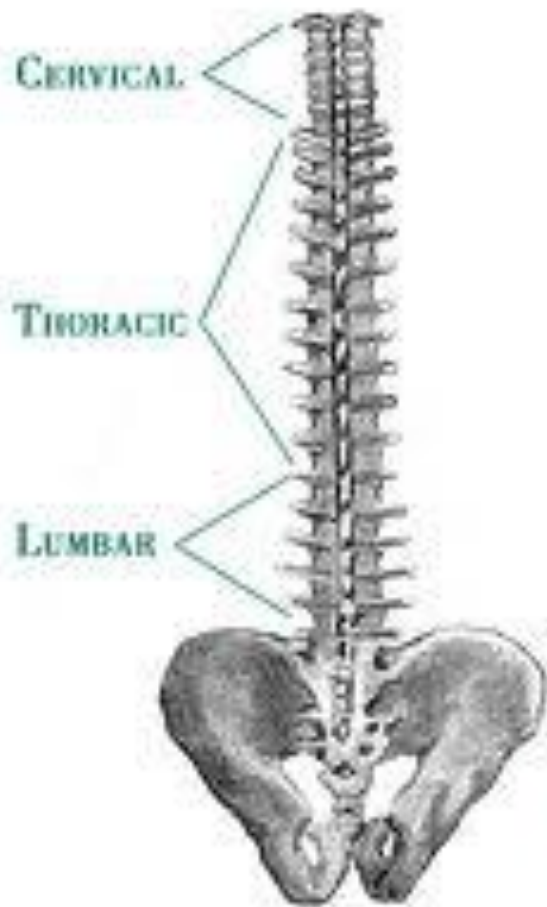


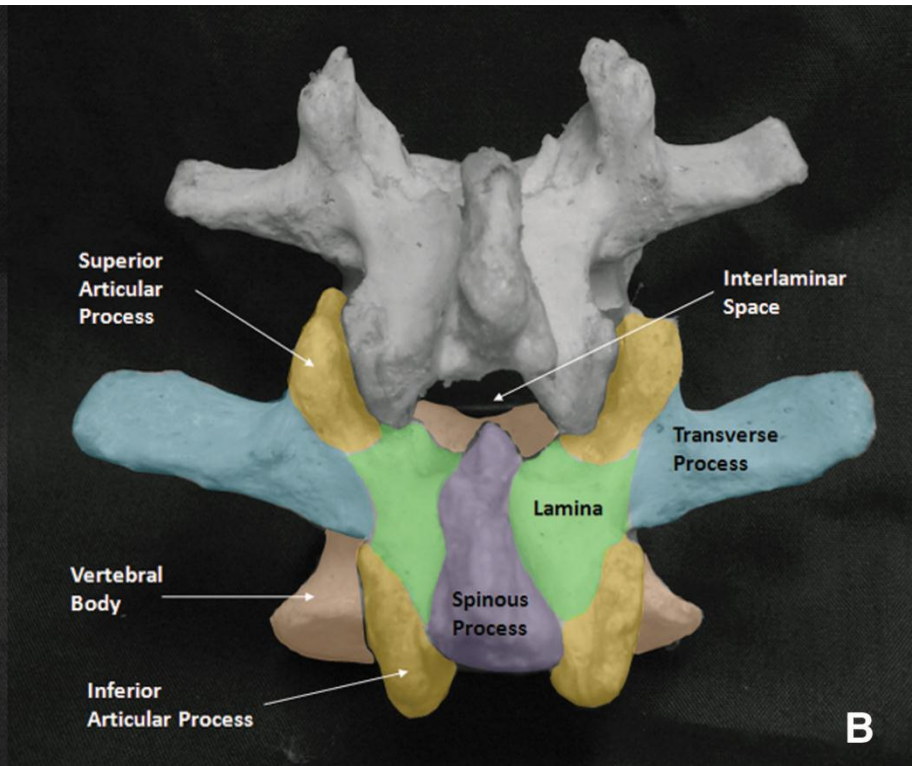
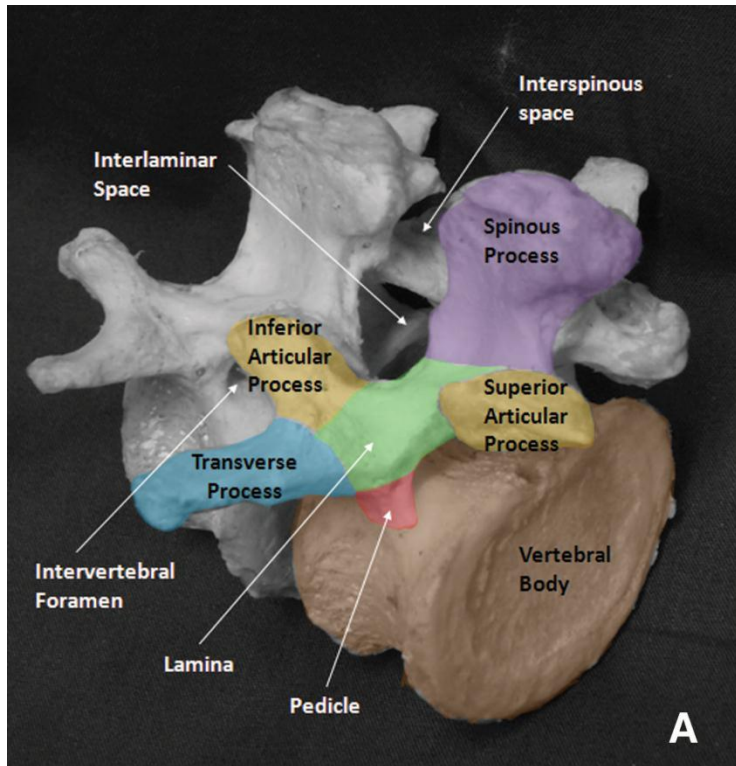


# Introduction to ultrasound of the lumbar spine – a systematic approach

Dr Anja U. Mitchell  
Copenhagen University Hospital Herlev  
Helsinki 22.11.12

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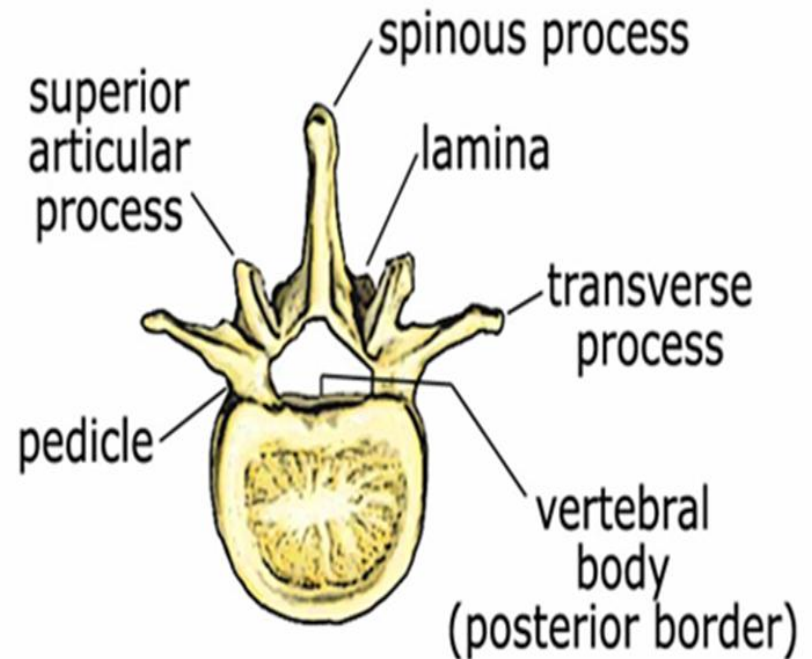


# Applications

- Identify vertebral level
- Midline identification
- Distance to posterior complex
- Angle
- Marking
- Obstetric, orthopedic
  - obese patients

# Anatomi

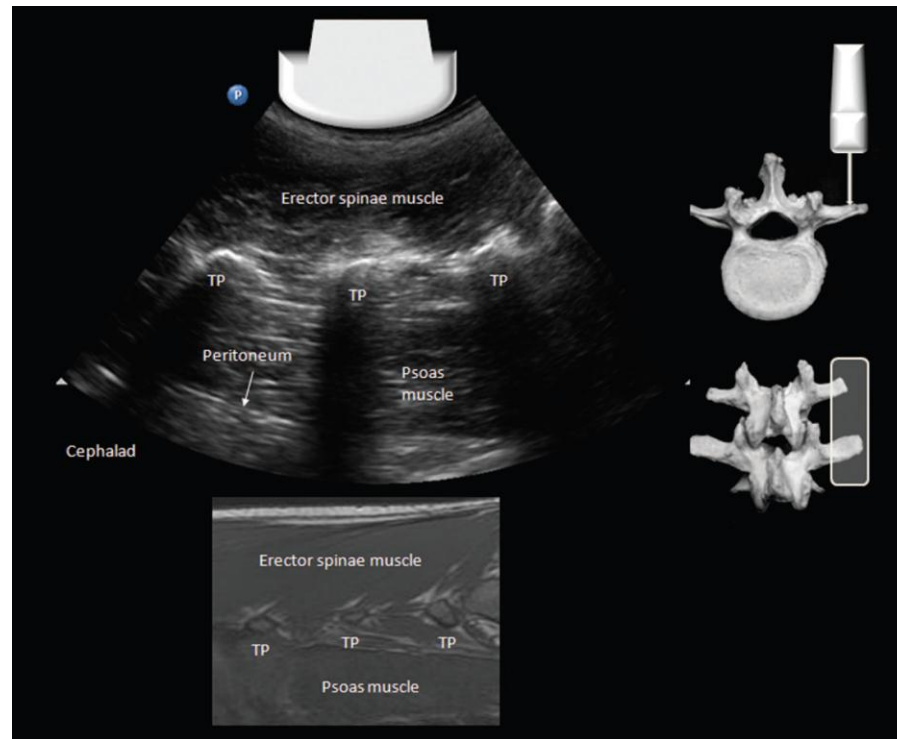
- Spinous processes
- Transverse processes
- Facet joints
- Posterior complex: Lig flavum, epidural space and posterior dura
- Anterior complex: anterior dura, posterior longitudinal lig. and posterior part of corpora



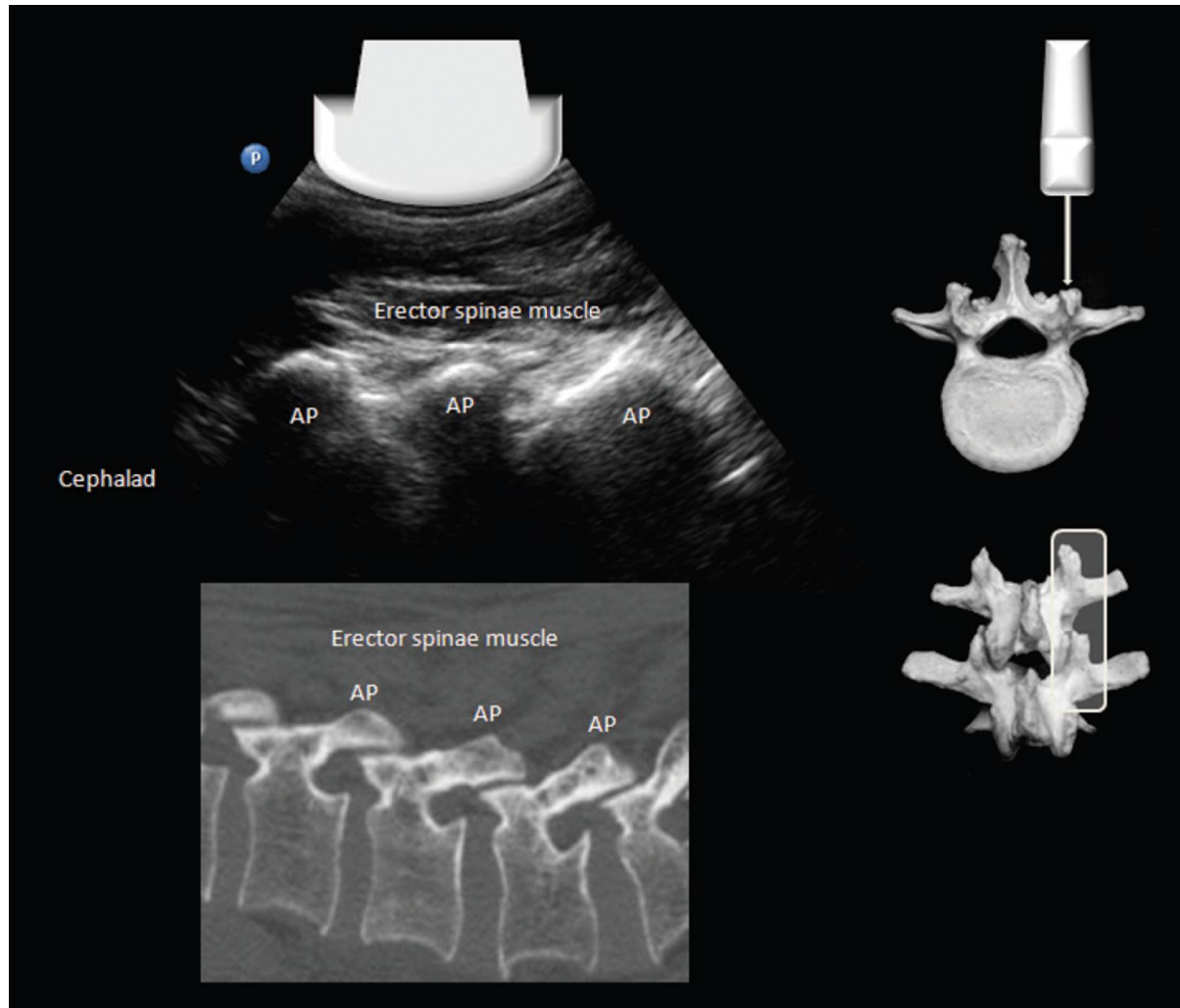
# Views

- Paramedian sagittal (trident, humps)
- Paramedian sagittal oblique (sawteeth)
- Transverse interlaminar (Bat)  
(No shadow)
- Patient positioning

# Paramedian sagittal transverse process view (trident)

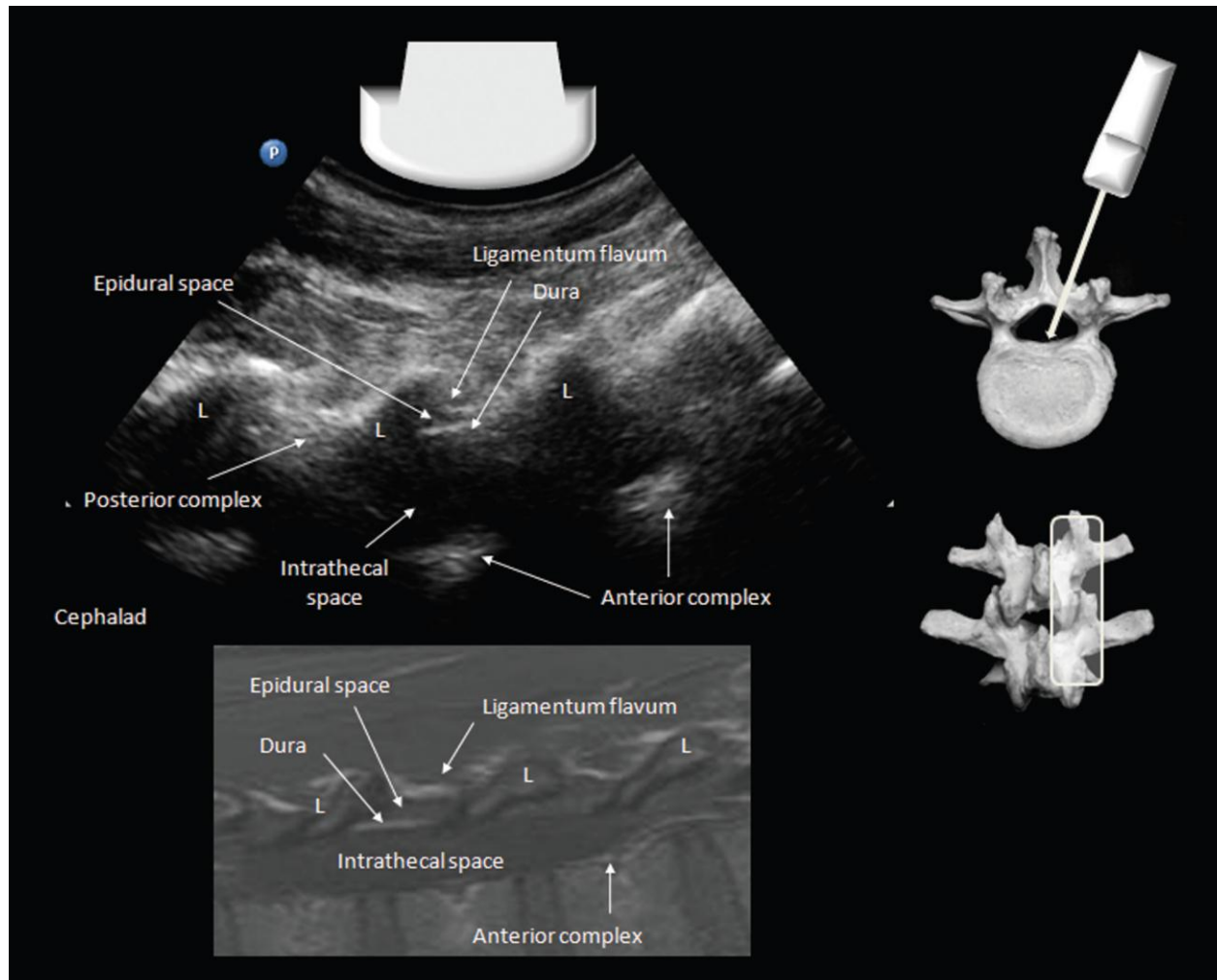


# Paramedian sagittal articular process view (facet joints)



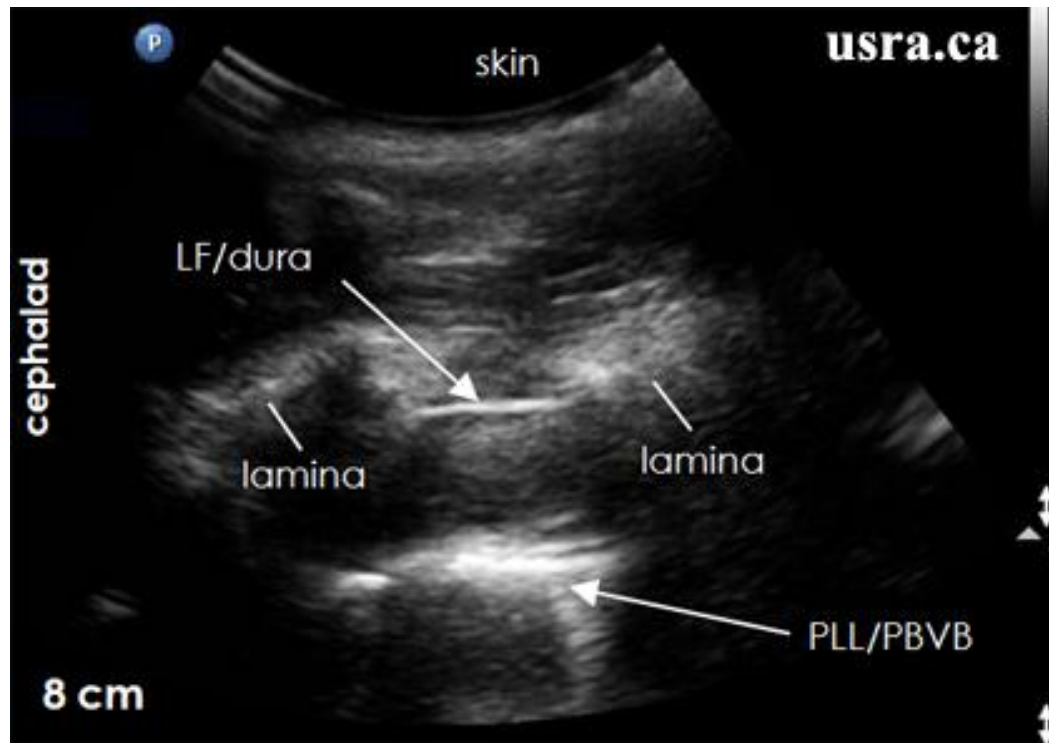


# Paramedian sagittal oblique view

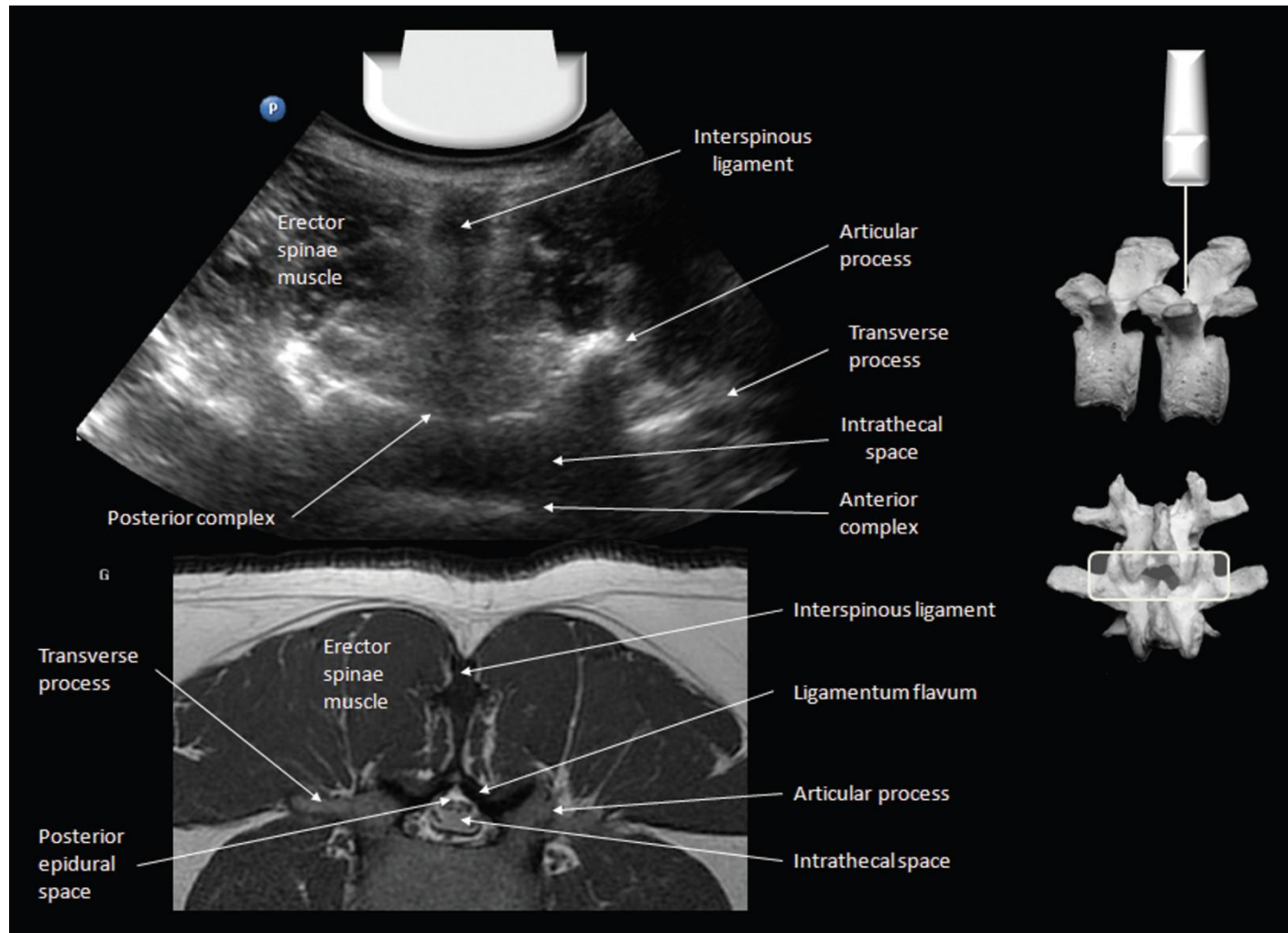


# Paramedian sagittal oblique

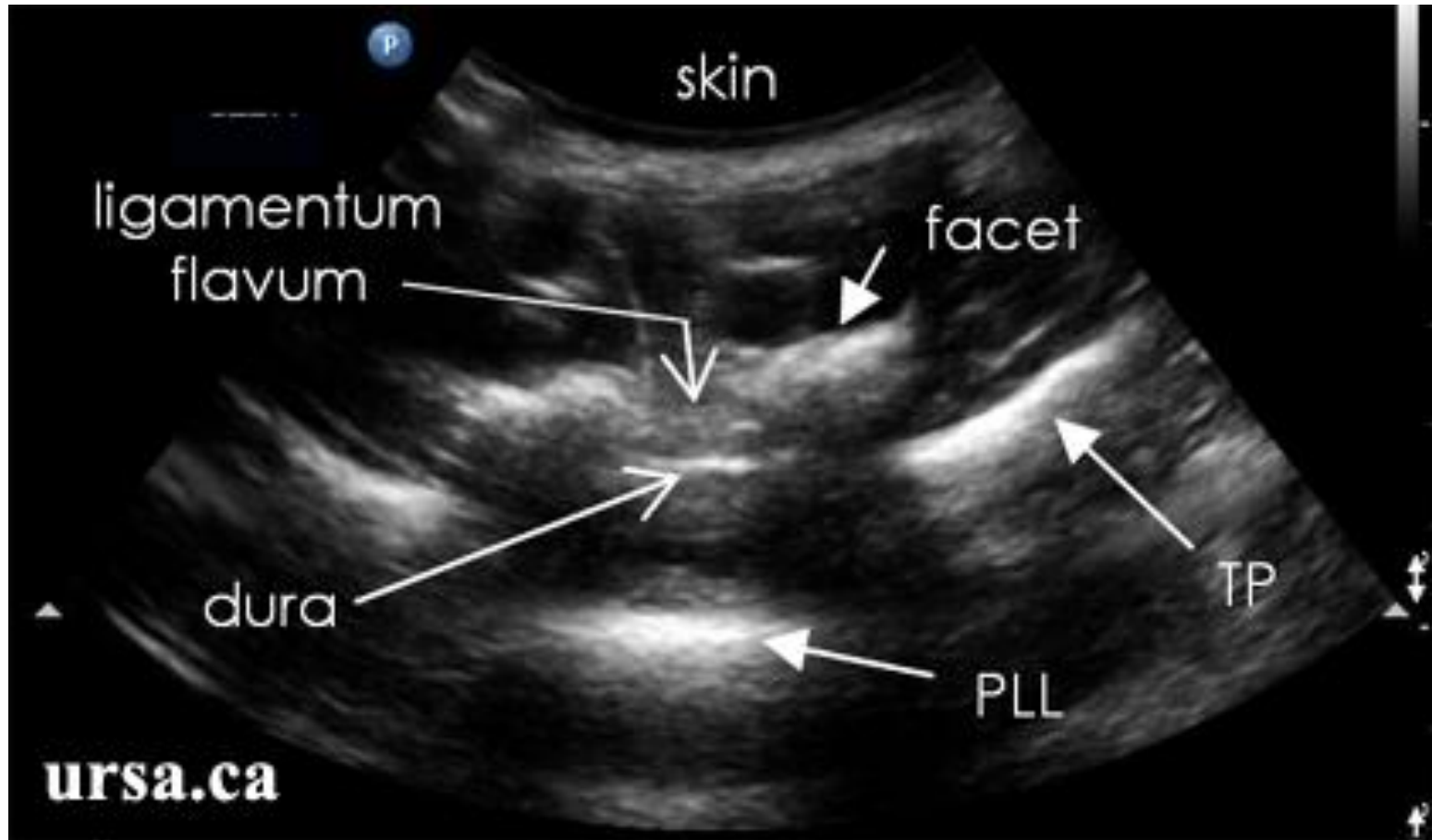
- identify L5 – S1

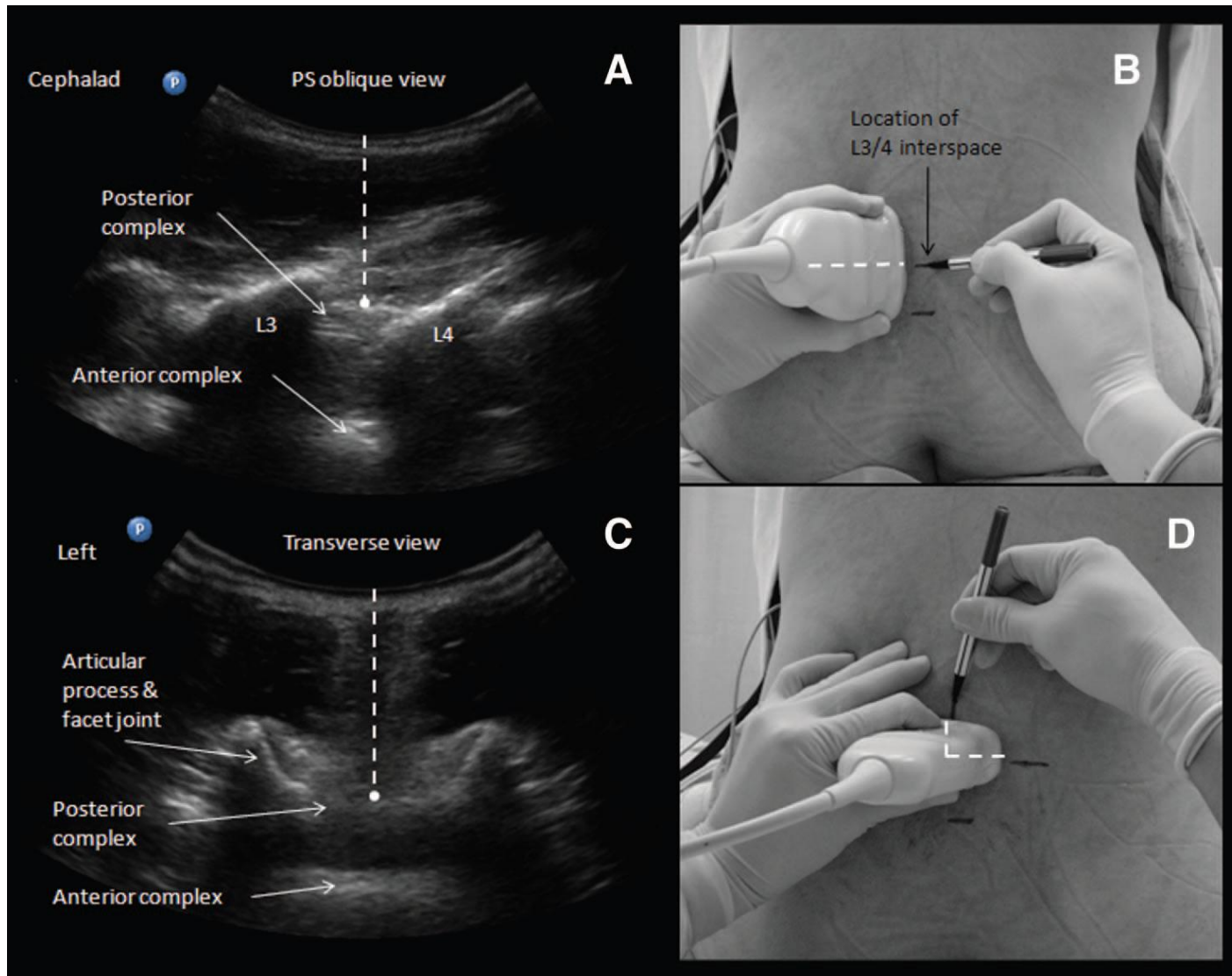


# Transverse interlaminar view of the lumbar spine - depth



## Transverse interlaminar





# Ultrasonography of the Adult Thoracic and Lumbar Spine for Central Neuraxial Blockade

- Ki Jinn Chin, Manoj Kumar Karmakar, Philip Peng
- Anesthesiology 2011; 114:1459 – 85

# Articles

[Anesthesiol Clin.](#) 2008 Mar;26(1):145-58, vii-viii.

## **Ultrasound-facilitated epidurals and spinals in obstetrics.**

[Carvalho JC.](#)

### ● **Source**

Department of Anesthesia and Pain Management, Mount Sinai Hospital, Toronto, Ontario, Canada. jose.carvalho@uhn.on.ca

### ● **Abstract**

Regional anesthesia is currently the gold standard of practice for pain control in obstetrics. Failures and complications of regional anesthesia can be related to many causes, one of the most important being the blind nature of such techniques. The practice of epidurals and spinals relies primarily on the palpation of anatomic landmarks that are not always easy to find. Ultrasound has recently been introduced into clinical anesthesia to facilitate lumbar spinals and epidurals. The use of preprocedure ultrasound imaging or, eventually, real-time ultrasound guidance should improve not only clinical practice, but also teaching. This article describes the techniques, challenges, and benefits related to the use of ultrasound in guiding lumbar spinals and epidurals.

[Int J Obstet Anesth.](#) 2011 Oct;20(4):318-20. Epub 2010 Dec 18.

## **Lumbar ultrasound: useful gadget or time-consuming gimmick?**

[Gambling DR.](#)

- [Int J Obstet Anesth.](#) 2011 Oct;20(4):318-20. Epub 2010 Dec 18.

- **Lumbar ultrasound: useful gadget or time-consuming gimmick?**

- [Gambling DR.](#)

- **Source**

- Department of Anesthesiology, Sharp Mary Birch Hospital for Women and Newborns, San Diego, CA, USA. david.gambling@gmail.com

- **Abstract**

- Despite widespread enthusiasm for using lumbar ultrasound in obstetrics, there are some who believe it is expensive and time-consuming, with undetermined risks and uncertain benefits. For decades, anesthesiologists have striven to perfect the identification and cannulation of the epidural space using skills learned during training and early clinical practice. These skills include knowledge of the relevant anatomy and detection of subtle tactile clues that aid successful placement of an epidural catheter. Indeed, obstetric anesthesiologists have managed to do this with great success without using imaging techniques. There is a long learning curve associated with lumbar ultrasound and it is unclear from the literature if the success rates associated with its use are superior to clinical skill alone. Is it only a matter of time before regulators insist that lumbar ultrasound is used before inserting an epidural? Indeed, this has already happened for central vein catheters. The United States spent \$2.2 trillion on health care in 2007, nearly twice the average of other developed nations. If rapid health cost growth persists, one out of every four dollars in the US national economy will be tied up in the health system by 2025. Do obstetric anesthesiologists want to add to these costs by using unnecessary and expensive equipment? Although many feel that diagnostic ultrasound in obstetrics is safe, some argue that we have yet to perform an appropriate risk analysis for lumbar ultrasound during pregnancy. The issue of ultrasound bio-safety needs to be considered before we all jump on the ultrasound bandwagon.