

# The Neonatal Spine: Ultrasound technique and pathology

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## Overview

This presents a systematic approach to examining the spine in a neonatal patient, describing common clinical indications, recommended technique and encountered pathology at the quaternary centre using examples.

Spinal ultrasound is utilised as a first line investigation for most suspected neonatal spinal abnormalities within the initial hours/days of life.

It is an effective, non-invasive technique with high sensitivity and specificity, requiring no radiation or sedation. It is highly operator dependent and requires a sound knowledge, systematic approach and confidence in the usage of equipment.

## Typical Indications

Myelomeningocele, sacral dimpling, discolouration of the lower spinal region, hair tuft, uneven buttock crease, bladder abnormalities, congenital abnormalities with spine association (anorectal malformation).

## Positioning, technique & systematic approach

Prone with a pillow under the abdomen (for support & enhanced kyphosis), head turned (+/- dummy), generous amount of warm gel (to allow free movement of the probe along the spine curvature)



de Bruyn R. Paediatric Ultrasound: How, Why and When. Churchill Livingstone / Elsevier Limited. 2005

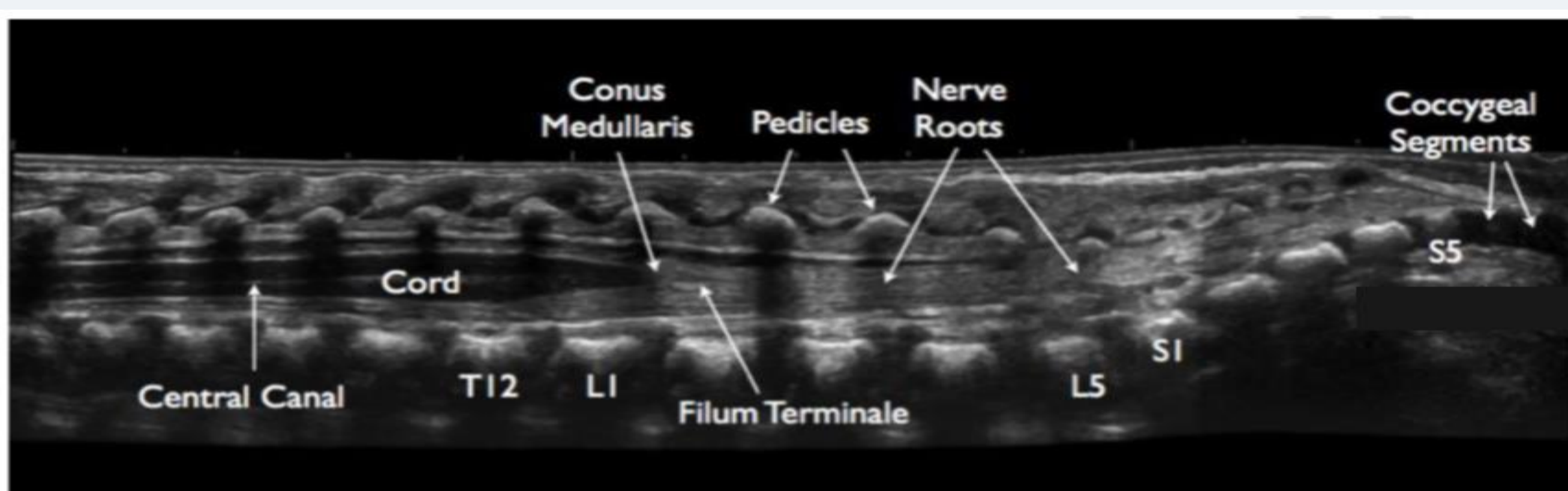
**Preset-** MSK General (with panoramic function)

**Probe-** 6-15 Linear (High Frequency)

## Scan Evaluation

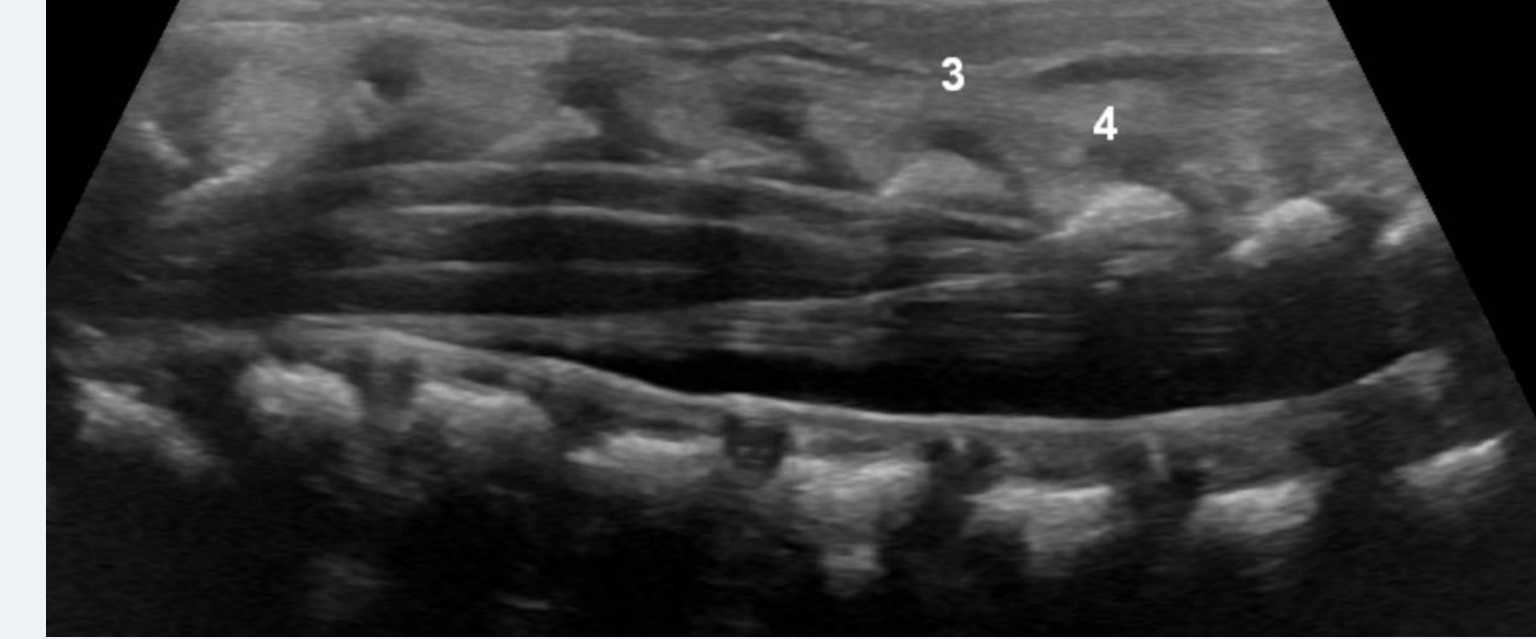
- Number of lumbar/sacral vertebral bodies
- Detection of segmental anomalies
- Position of cord in canal
- Number of spinal cords
- Level of Conus Medullaris (L1-L2)
- Root mobility
- Thickness of filum (<2-3mm)
- Presence of any lesions (lipoma/cystic masses)
- Visible skin sinus

## Normal Anatomy

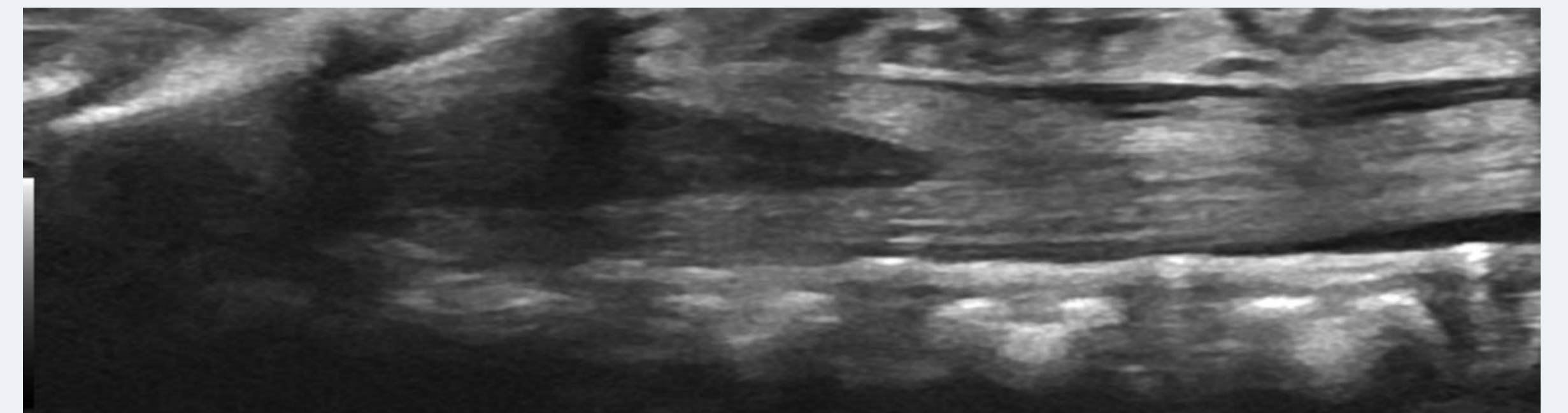


## Pathology

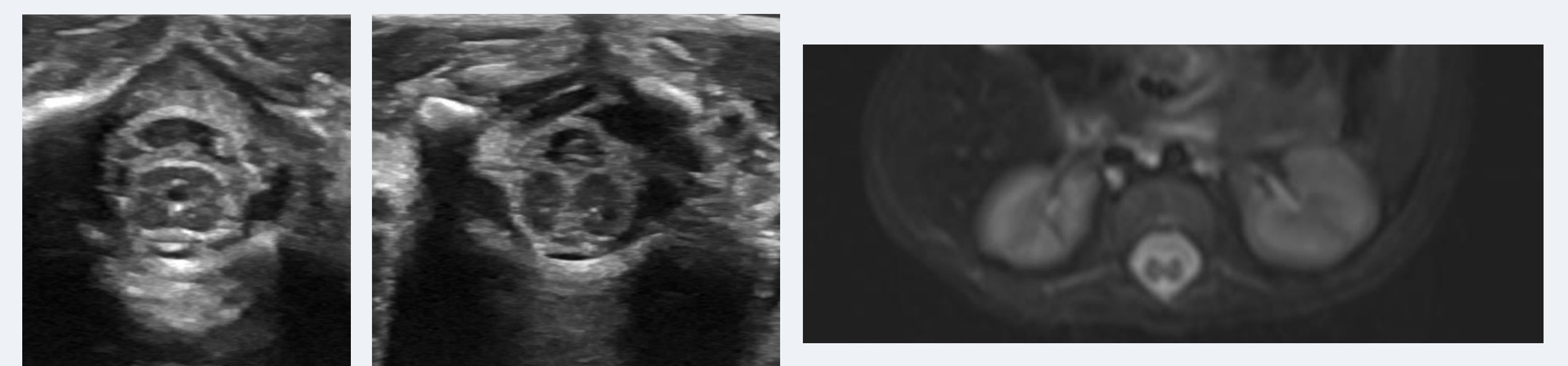
### ➤ Tethered Cord



### ➤ Tethered cord, high termination. ? Caudal regression



### ➤ Diastematomyelia

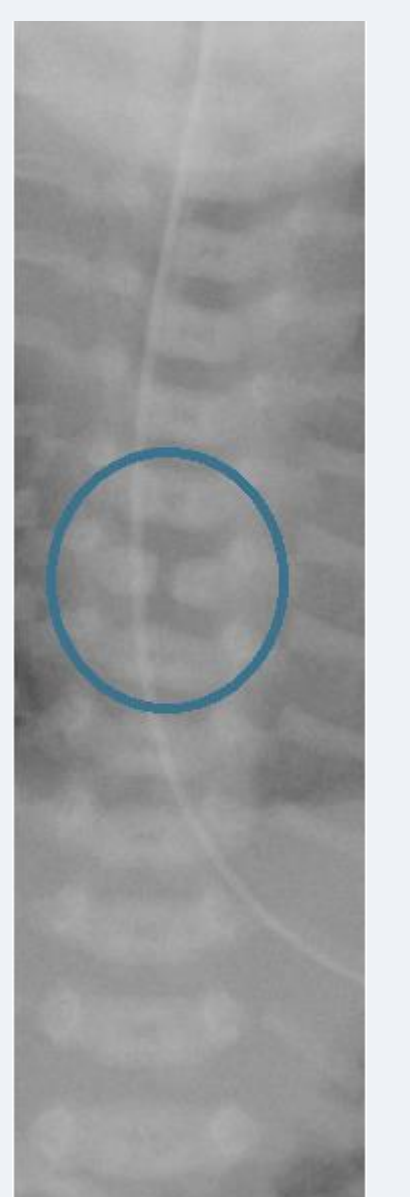
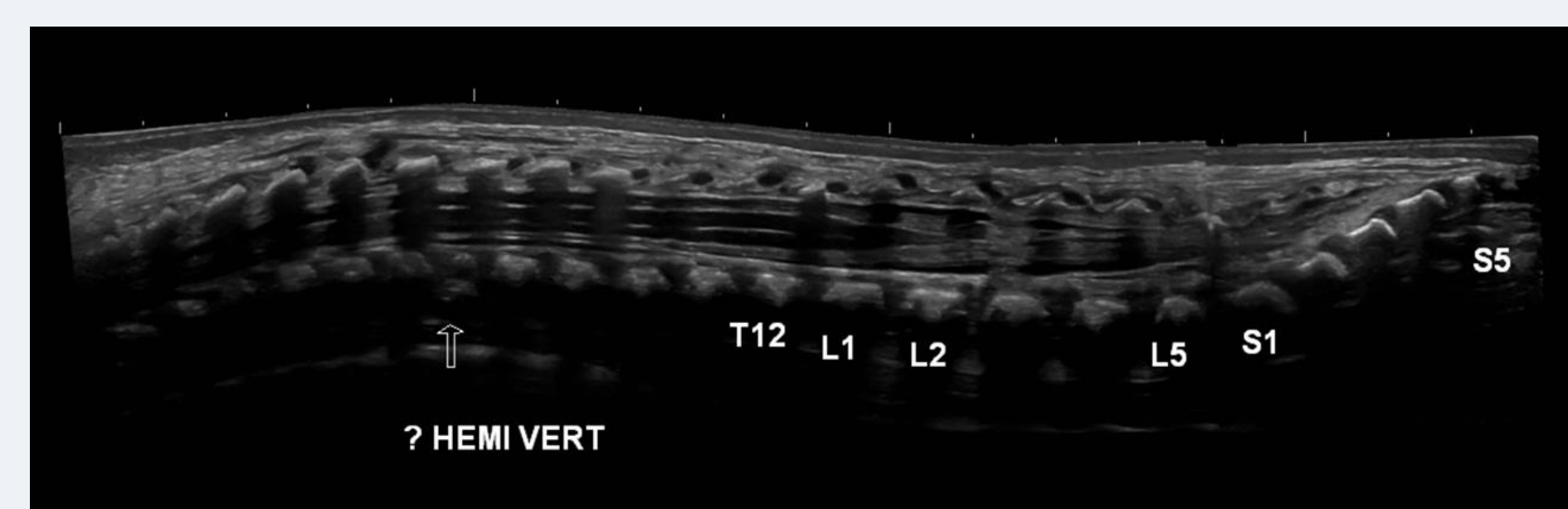


Normal

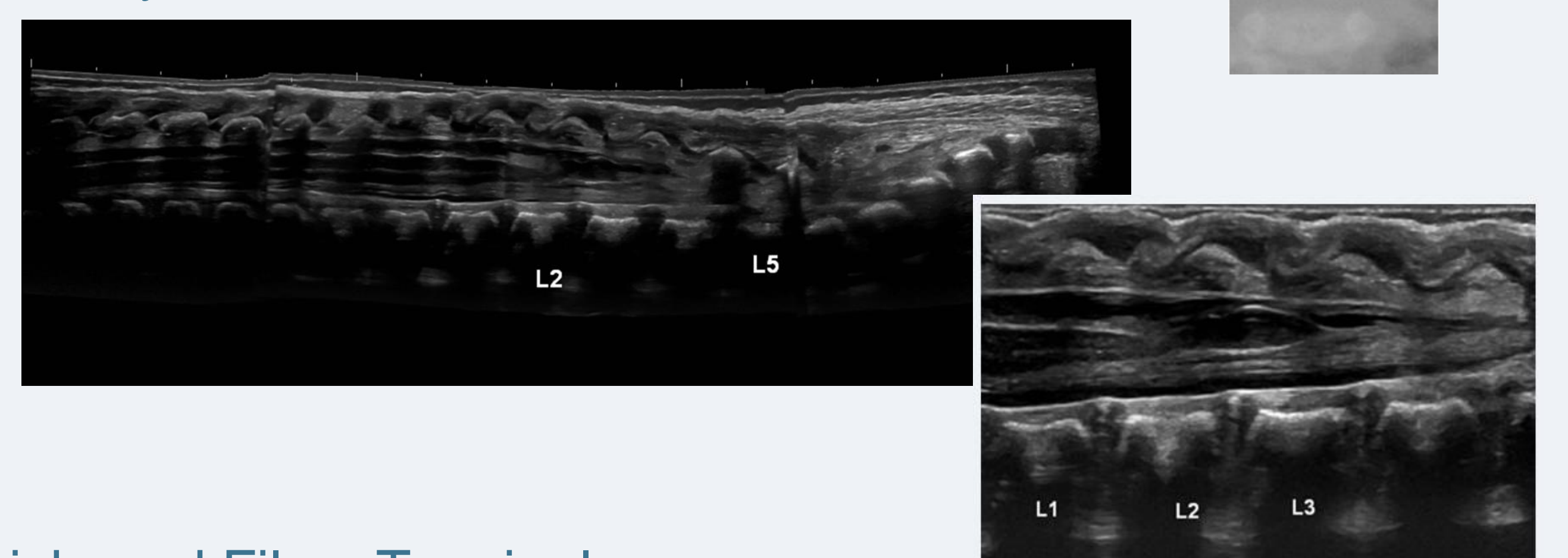
Abnormal

MRI

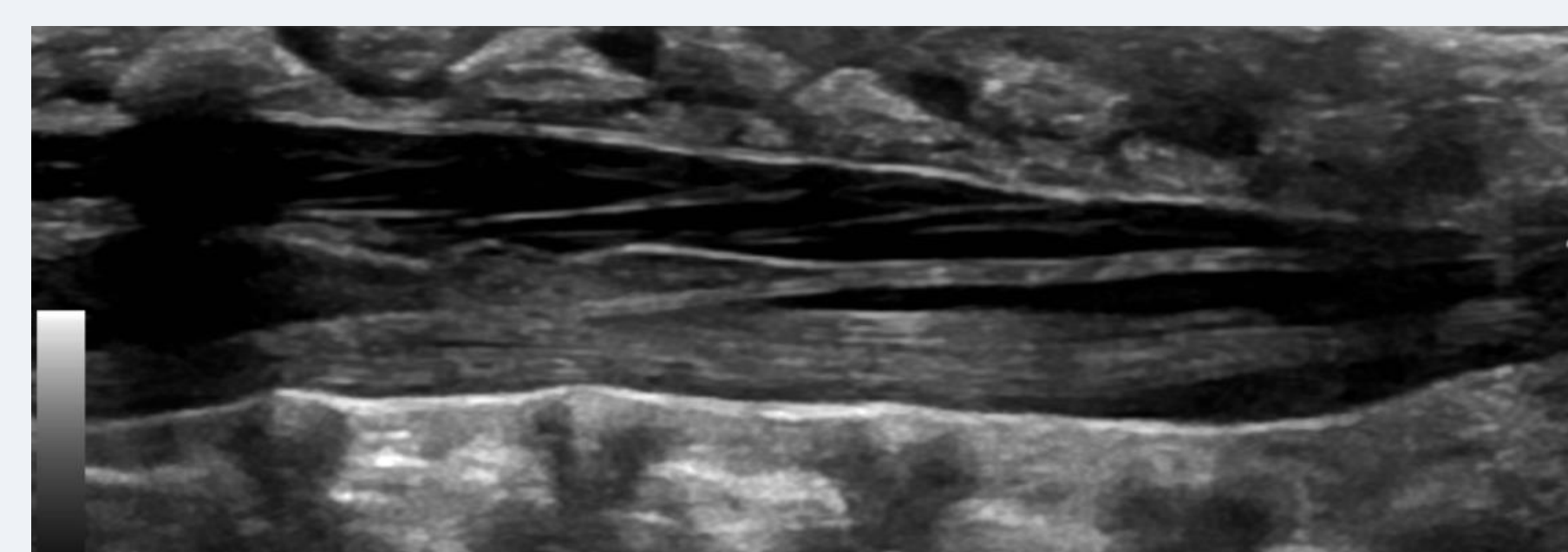
### ➤ Hemi-vertebrae/segmentation anomaly



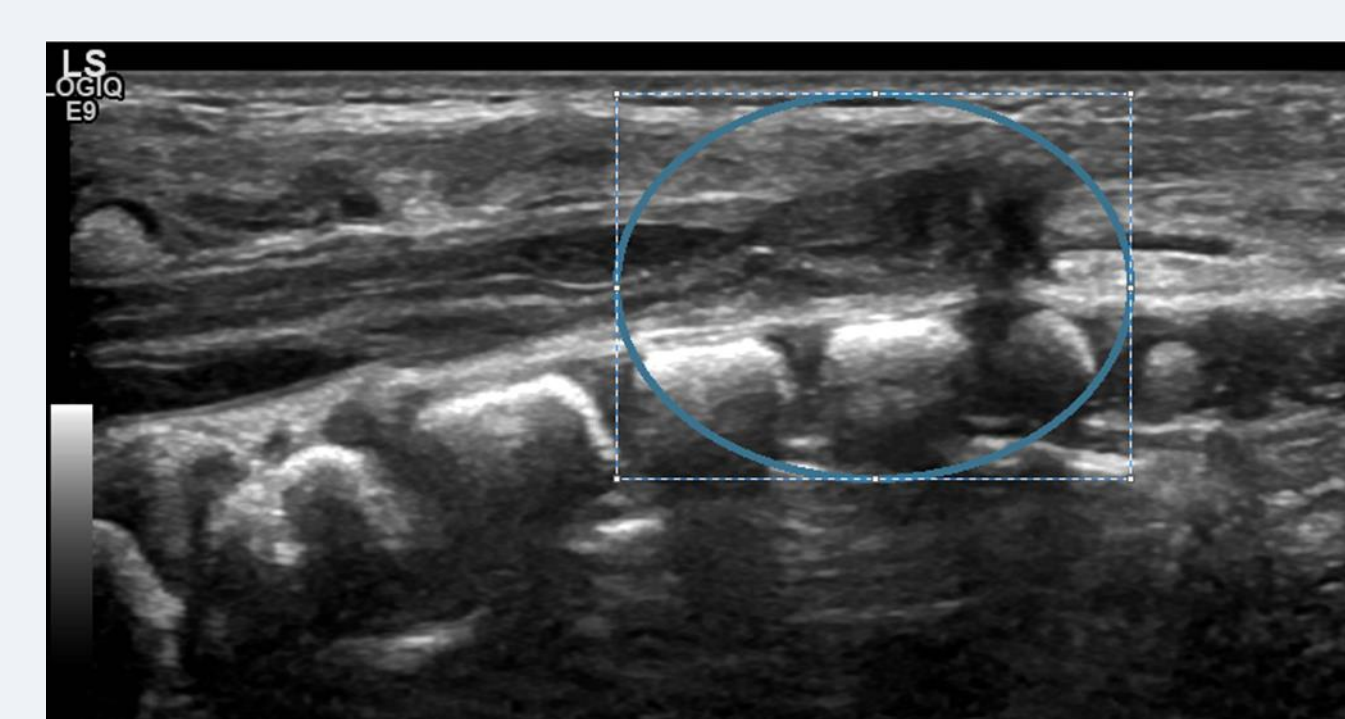
### ➤ Filum Cyst



### ➤ Thickened Filum Terminale



### ➤ Sacral mass



## Summary

Spinal ultrasound is a commonly encountered study which can induce a degree of trepidation. We have demonstrated our institutional technique with examples of normal anatomy, and encountered pathology. We hope this will increase confidence when scanning these patients.