How Should We Investigate Children With Lower Urinary Tract Symptoms and a Sacral Dimple?

A neurosurgeon's view

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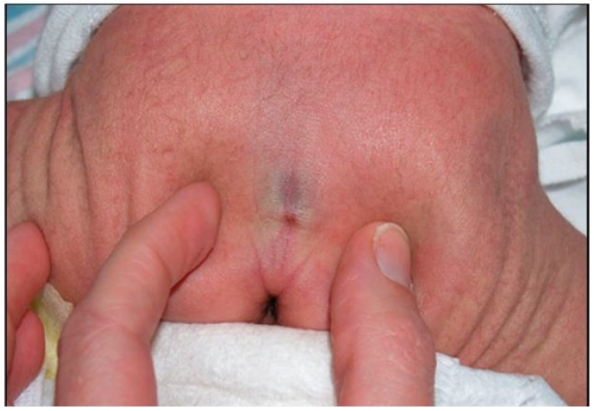
Question as posed...

- How Should We Investigate Children With
  - Lower Urinary Tract Symptoms and a
  - Sacral Dimple ?

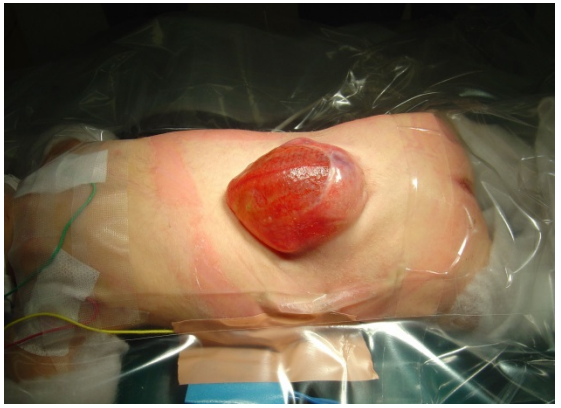
  Initial response...

  "Get an MRI scan and a Paediatric urology opinion"

Lumbosacral dysraphic abnormalities



Spectrum



Sacral Dimples/ Coccygeal pit

- Very common – 5-13% of newborns

- Most are within the intra-gluteal crease

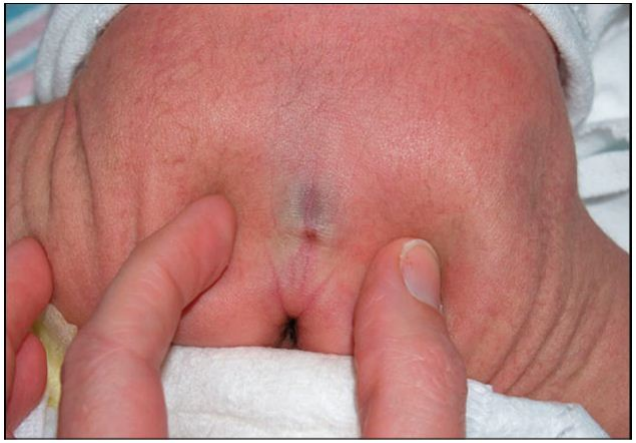


Figure 4. A prototypical benign sacral dimple that is located within the gluteal cleft (less than 2.5 cm above the anus) and solitary.

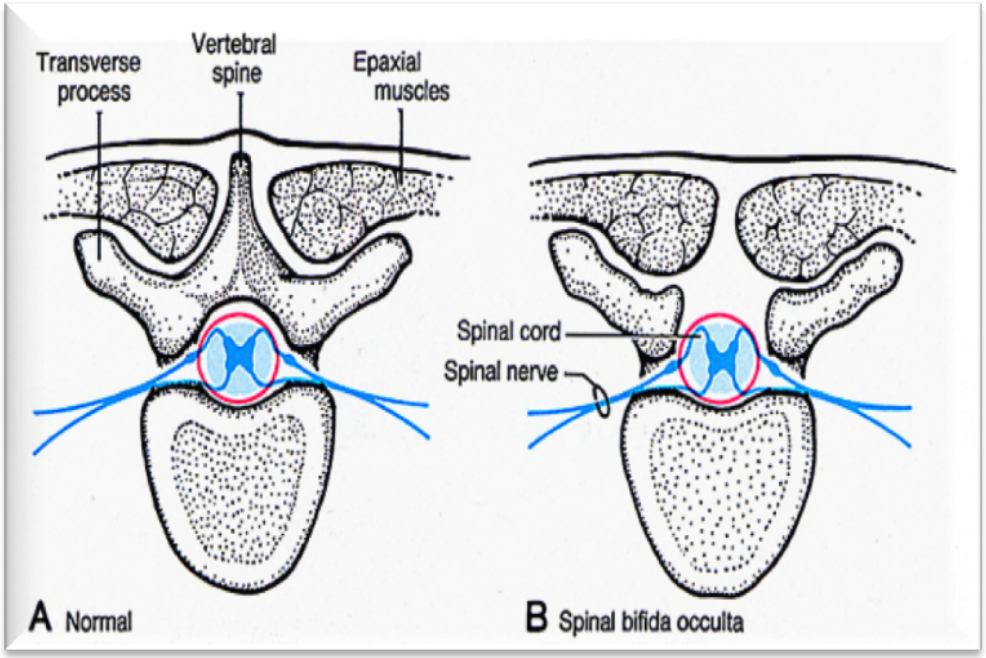
Sacral dimples

- More likely that something interesting underlying if...
  - More than 2.5cm from anus
  - A second associated factor
    - Hairy patch / tuft
    - Lipoma / soft tissue mass
    - Skin discoloration/ depigmentation
    - Neurological signs
    - Family history of dysraphism

McGOVERN 2013 Arch Dis Ch – 6 times more likely to find USS abnormality if have >1 indication

What are we actually worried about

- Spina Bifida Occulta?



- 22% of population
- Incomplete lamina
- One vertebral level
- No nerve or meningeal abnormality

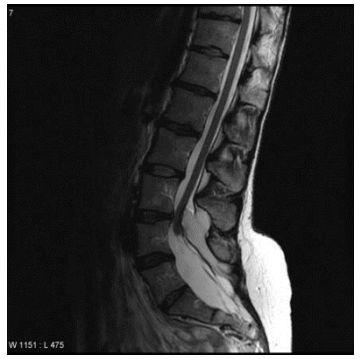
- Almost no significance

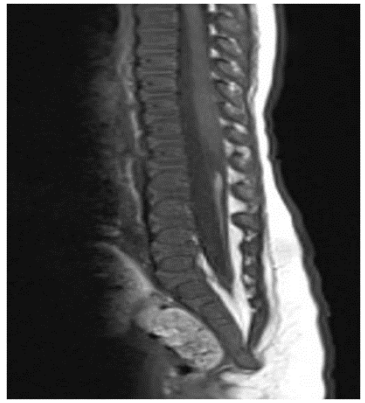
What are we actually worried about ?

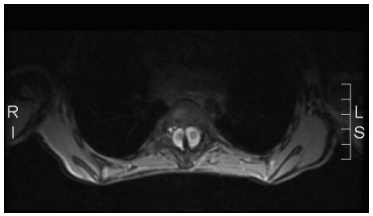
- Occult spinal dysraphism
  - Slightly more serious
  - Much less common 1 in 250 – 1 in 5000 of newborns
  - Usually more than one vertebral level
  - Meninges and nerves now involved
  - Overlapping spectrum....

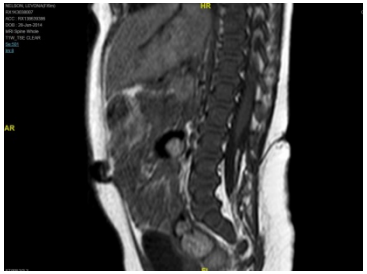
Occult spinal dysraphism

- Specific entities
  - Conus lipoma & Lipomyelomeningocoele
  - Lipoma of the filum terminale
    - Associated with low ending cord
    - (small lipoma totally incidental – 5% of population)
  - Diastematomyelia /split cord malformations
  - Dermal sinus tract









Overall numbers ...

- 5000 newborns
  - 1100 have incomplete lamina (“spina bifida occulta”)
  - 250 will have sacral dimples
  - 2 will have a dermal sinus
  - 1 will have spinal lipoma
  - 1 -2 will have other forms of dysraphism

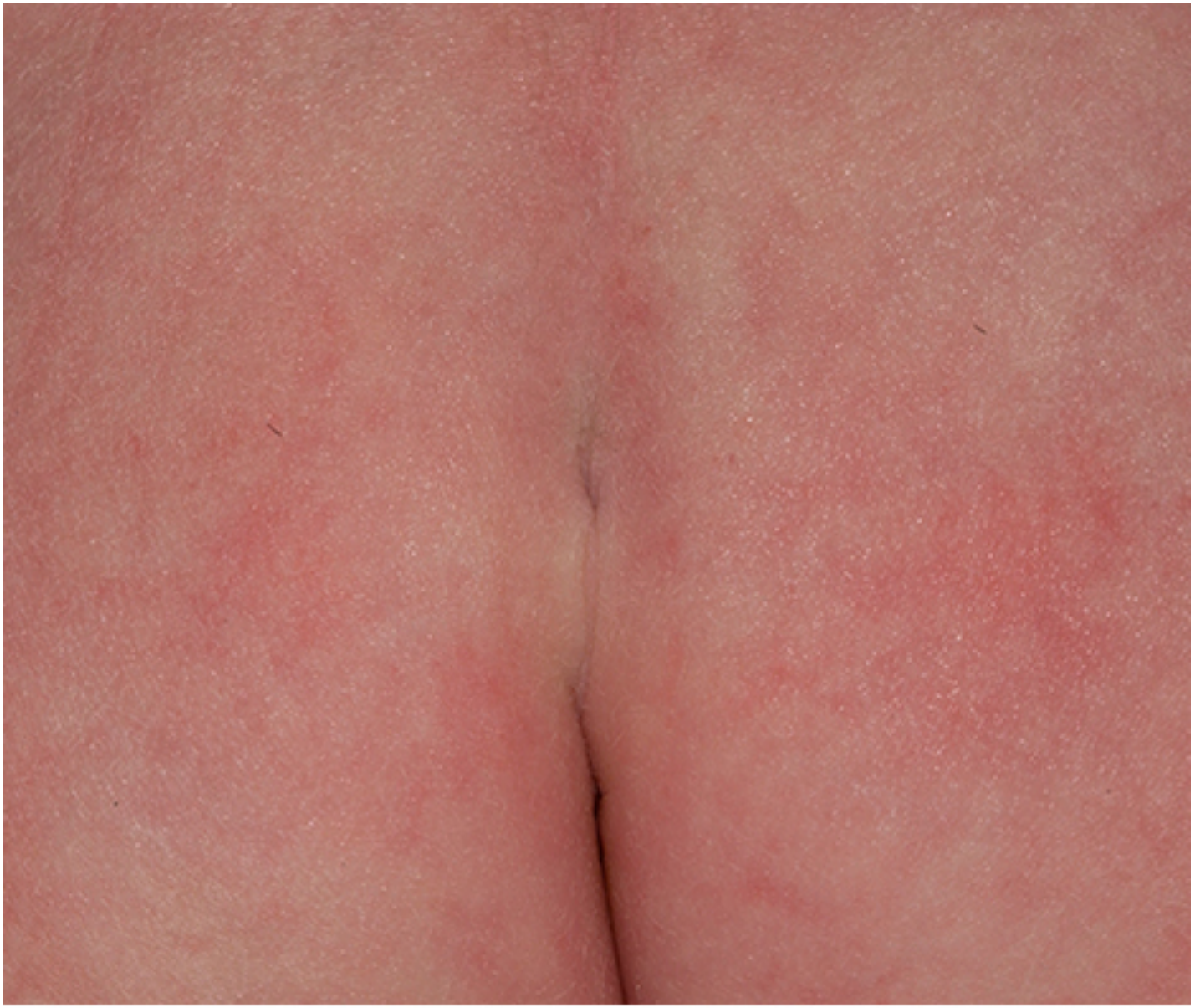
Two fundamental concerns

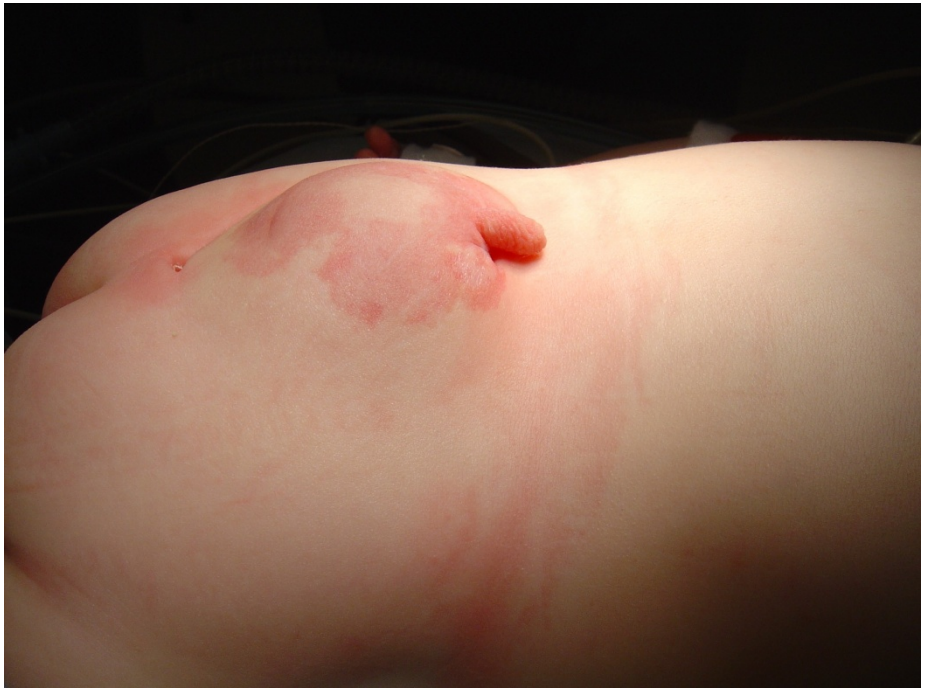
- Not just a dimple but actually the superficial end of a dermal sinus tract

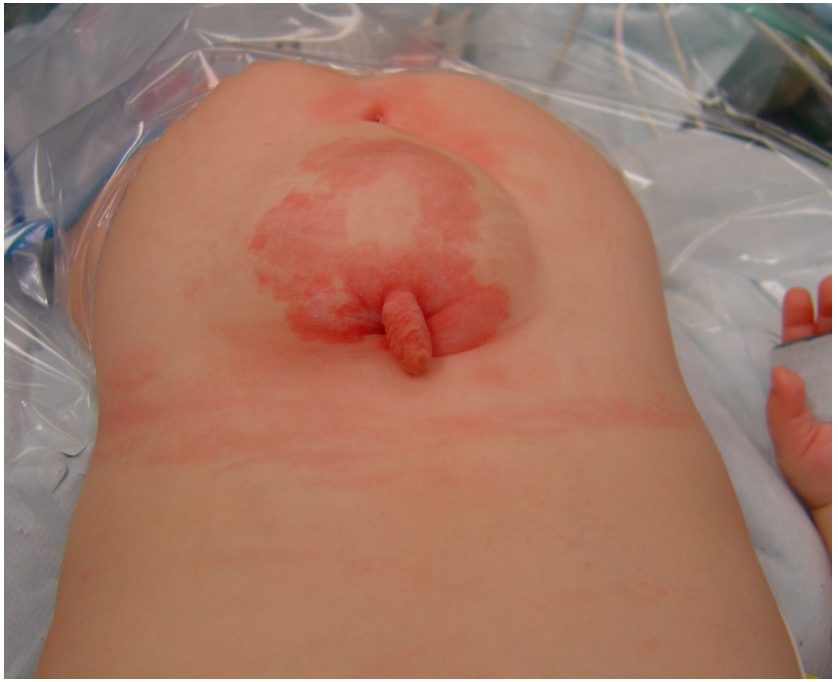
- Just a dimple but a marker that something more interesting lies beneath…

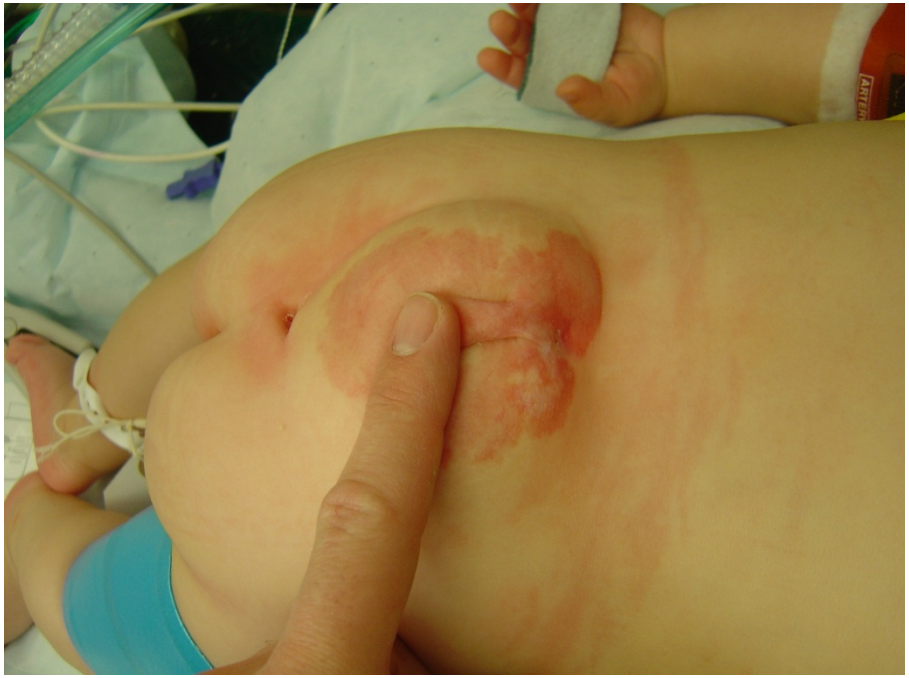
Could the dimple be the superficial end of a dermal sinus tract?

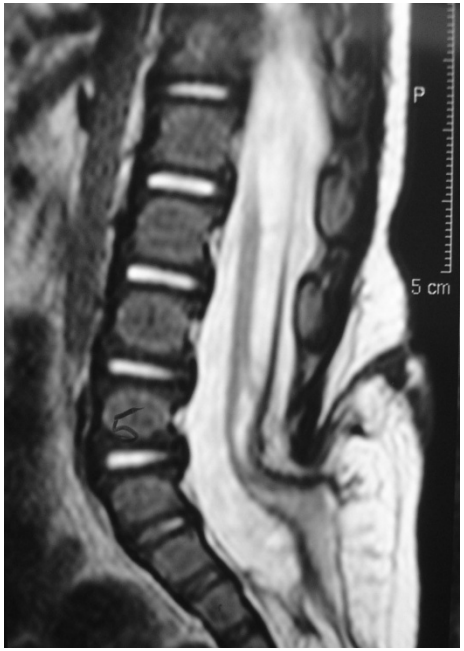
- Clues as to whether to be concerned
  - History – discharge / inflammation / meningitis!
  - Location – further than 2.5cm from anus
  - Location –off midline is more concerning
  - Size – larger than 5mm
  - Associated tags / pigmentation etc
  - Appears deep – can't see base to it



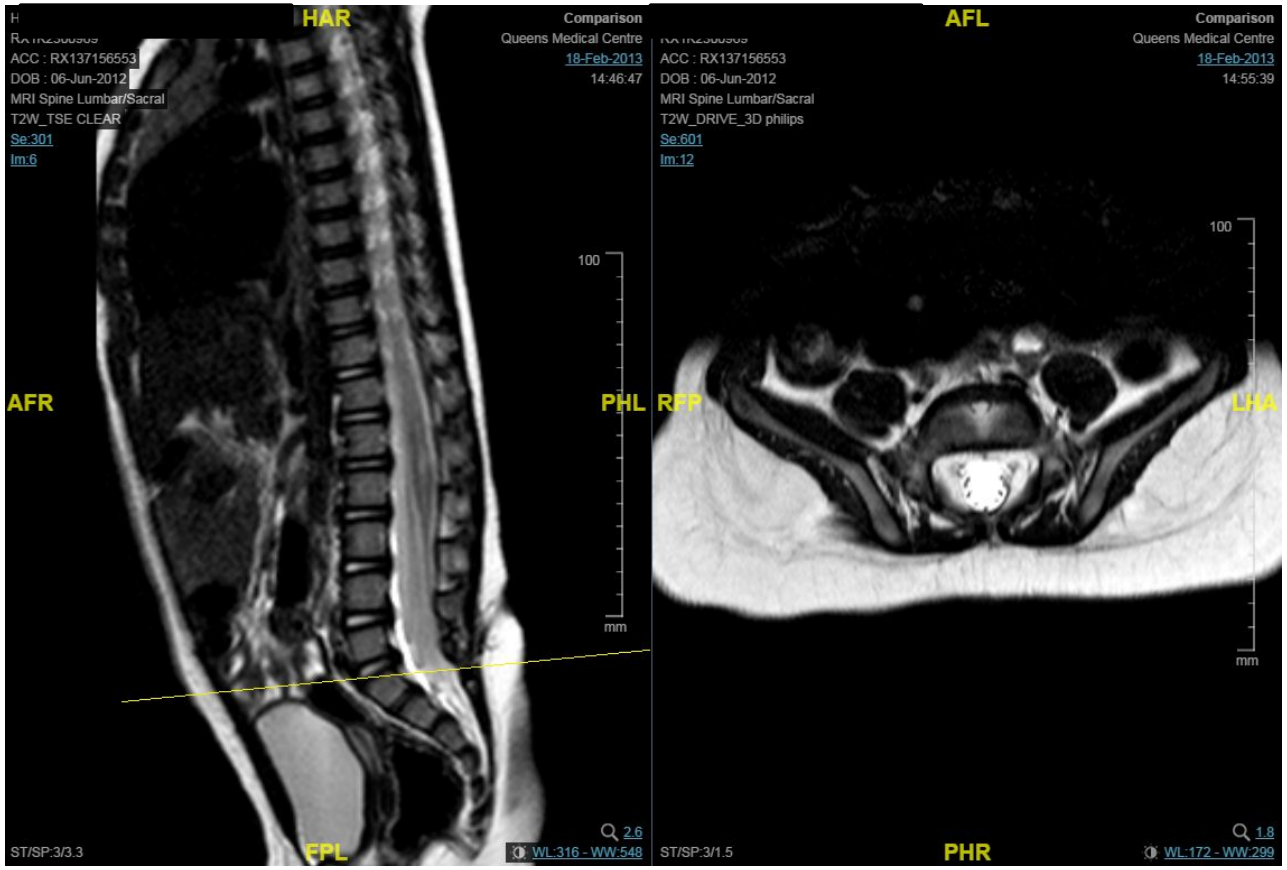






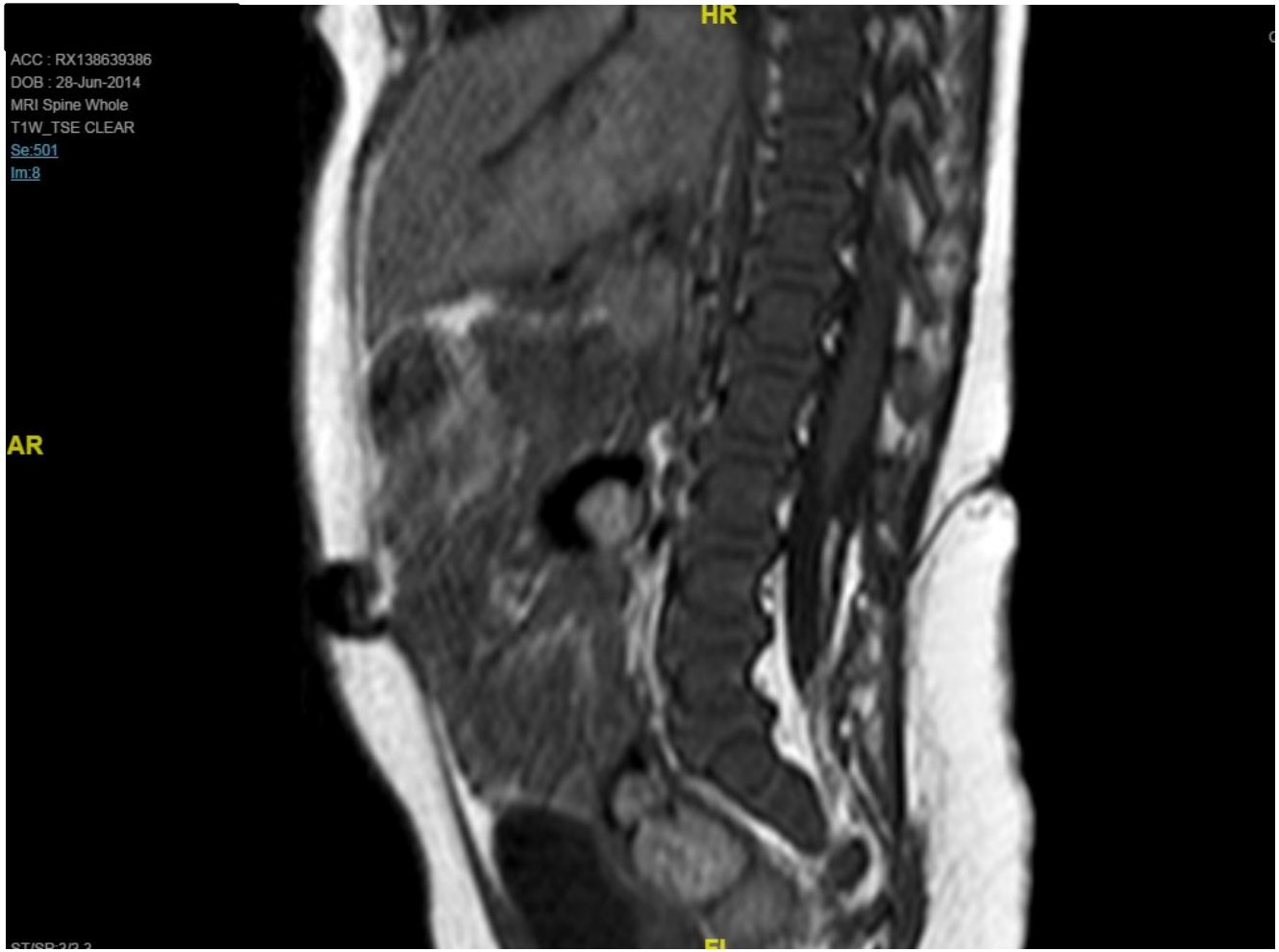

P
5 cm

1A Simple dermal sinus tract



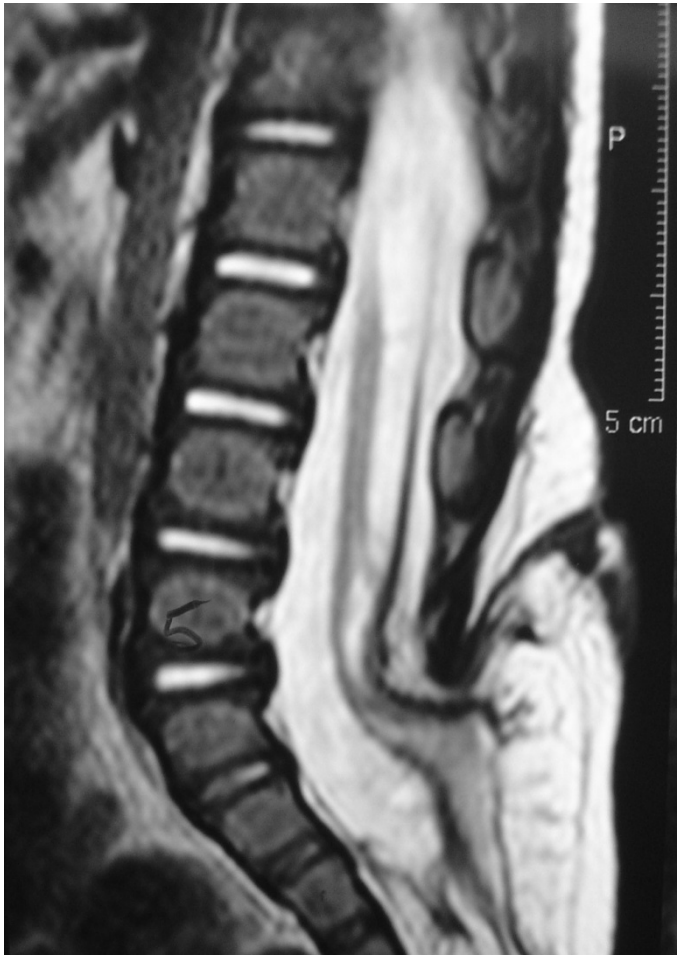
Surgical treatment – EXCISE TRACT to prevent future meningitis risk and explore for intradural extension (future risk of inclusion dermoid) and divide filum if cord low ending

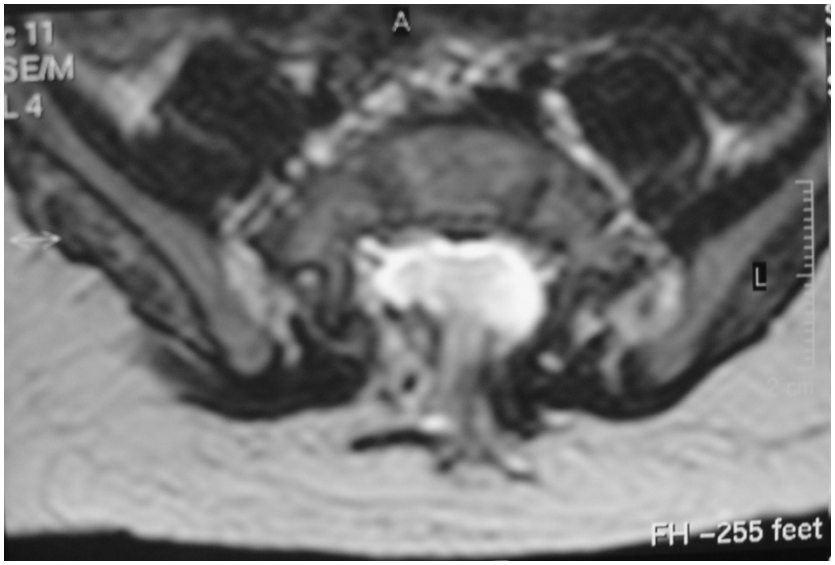
1B Dermal sinus tract with lipoma



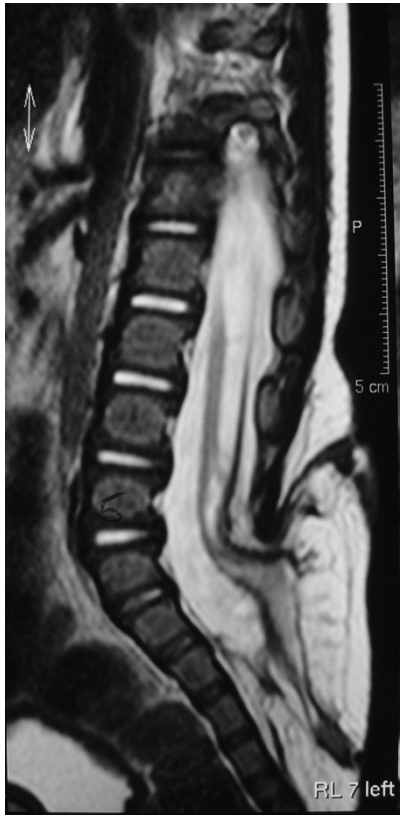
Surgical treatment – excise tract, explore dura , snip filum ,
? Remove any fat that comes easily

1C Dermal sinus tract with complex dysraphism

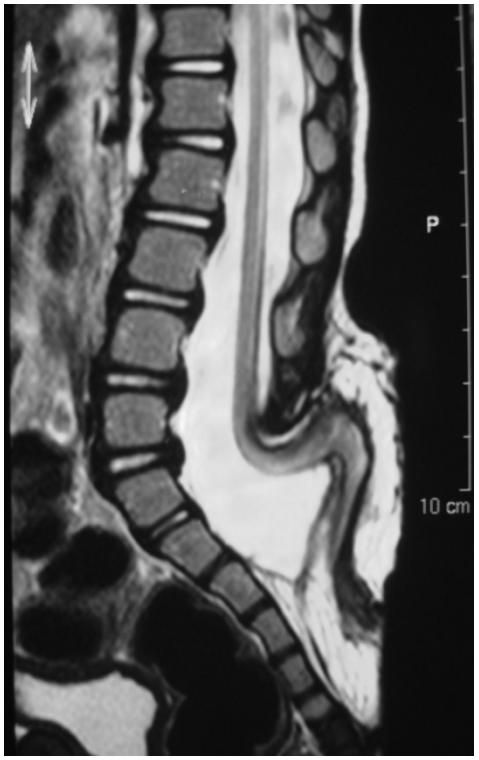


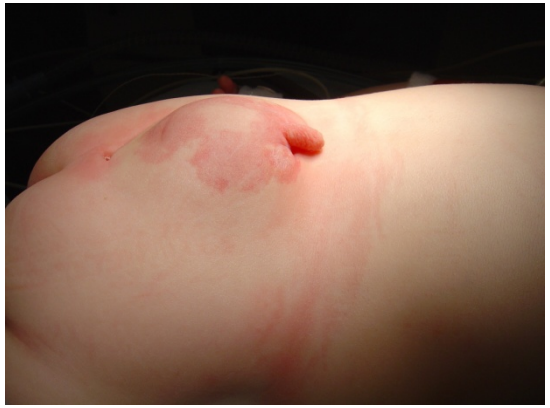


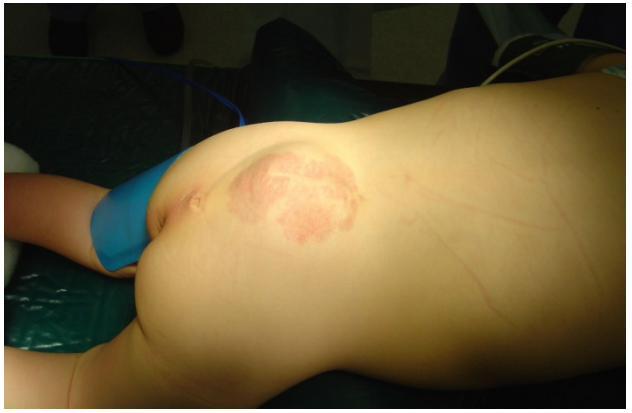
Excise tract and don’t get carried away....!



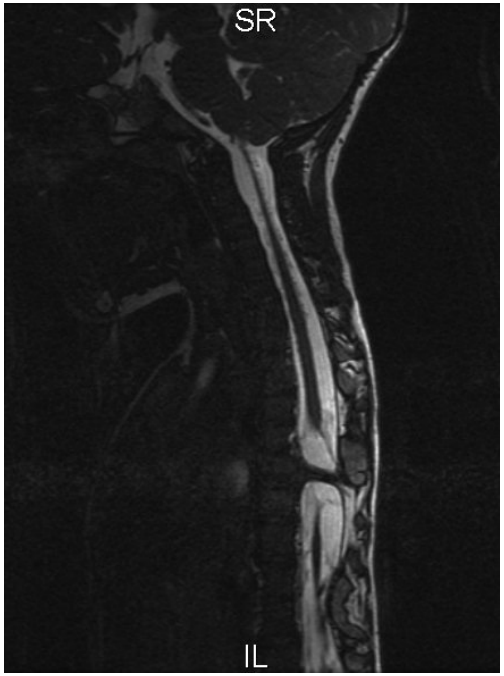
2yrs later
Deteriorating ankle function

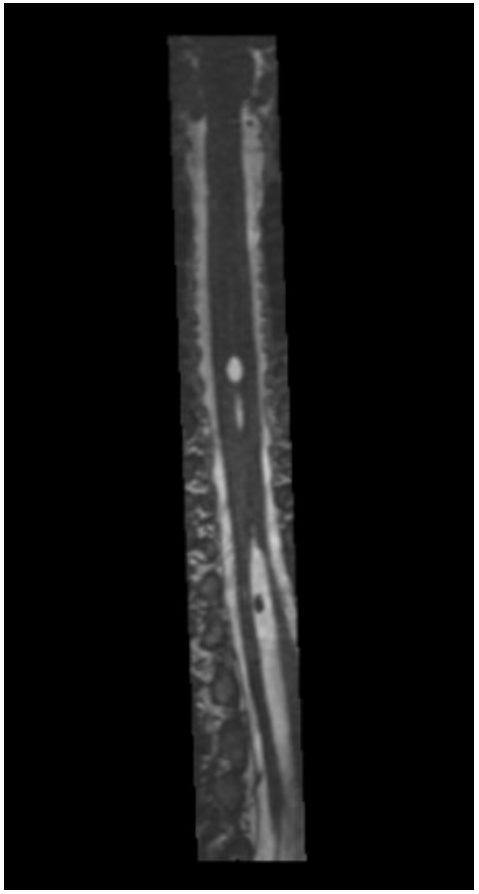


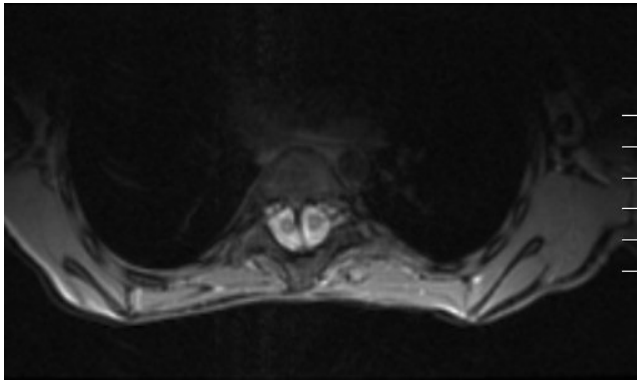




2 Genuine dimple (not a deeply extending dermal sinus) but maybe a marker of other deeper occult spinal dysraphism







Diastematomyelia

Managing occult dysraphism

- MRI – whole spine to craniocervical junction

(? MRI Neuraxis)

- UK management likely to be heavily based on presence of any neurological / urological deficit

- Key is to watch for and catch early any PROGRESSIVE deficit
  - Requires repeated careful monitoring and informed parents

Recent Opinions on Value of Investigation

Arch Pediatr. 2015 Dec;22(12):1298-301. doi: 10.1016/j.arcped.2015.09.001.

[Sacral dimple: What form of management is best?].

[Article in French]

Zanello M[1], Zerah M[1], Di Rocco F[2].

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Abstract

A sacral dimple measuring less than 5mm, within 25mm of the anus on the median line, with no other cutaneous anomaly, does not require any complementary examination. Parents can be reassured. However, any cutaneous depression in the sacrolumbar region not respecting these criteria must be considered as an occult dysraphism until proved otherwise. A medullary ultrasound examination and a consultation with a specialist (pediatric neurosurgeon) are necessary. The dermic sinus is the main differential diagnosis, with favorable outcome in case of early treatment before any infectious complication arises. Conversely, the risk of permanent sequelae is high if neglected or in case of late diagnosis.

ie **Don't investigate the majority at all**

Investigate if >5mm , >25mm from anus, off midline , any other cutaneous abnormality

Recent opinions on value of investigation

J Neurosurg Pediatr. 2014 Jul;14(1):81-6. doi: 10.3171/2014.4.PEDS13431. Epub 2014 May 16.

Intraspinal lesions associated with sacrococcygeal dimples.

Harada A[1], Nishiyama K, Yoshimura J, Sano M, Fujii Y.

Author information

[1]Department of Neurosurgery, Brain Research Institute, University of Niigata, Japan.

103 sacral dimples (83 of them low and gluteal,20 of them higher up or with associated fatty mass) had MRI with a filum terminale fibrolipoma found in 14 (17%) with 6 of those 14 also having a low conus

Argued for investigating all (but especially deeper appearing ones)

Recent opinions on value of investigation

Pediatr Radiol. 2015 Feb;45(2):211-6. doi: 10.1007/s00247-014-3110-1. Epub 2014 Jul 5.

The simple sacral dimple: diagnostic yield of ultrasound in neonates.

Kucera JN[1], Coley I, O'Hara S, Kosnik EJ, Coley BD.

Author information

[1]Department of Radiology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA, jennifer.kucera@hotmail.com.

3884 otherwise healthy infants having USS for sacral dimple over 12 year period

133 (3.4%) were felt to show an abnormality

- 52 subsequently felt to be normal of follow up imaging
- 49 had a low conus (no surgery)
- 18 had a fatty filum (no surgery)
- 2 had low conus and fatty filum (no surgery)

- 5 ended up having surgery for suspected tethered cord (0.13%)

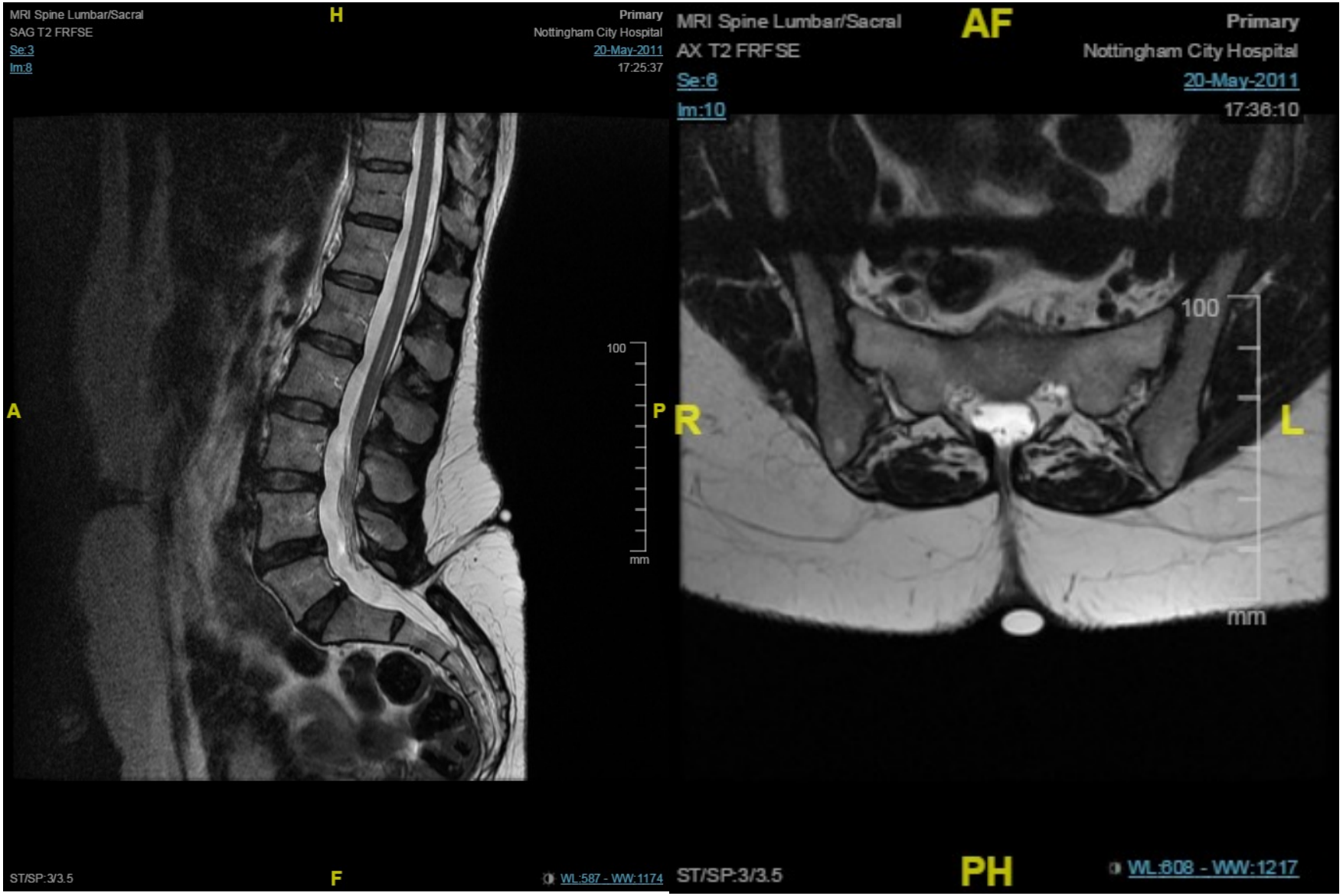
- ie **Risk of finding significant spinal abnormality in otherwise healthy infants with Isolated sacral dimple is extremely low.**

Verdict/ " the neurosurgeons view"

- Isolated sacral dimple - ? Nil

- Isolated sacral dimple that has been referred to and arrived at neurosurgical clinic -? Scan

- Sacral dimple and urinary tract symptoms – SCAN and discuss with urologists


MRI Spine Lumbar/Sacral
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20-May-2011
17:25:37
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ST/SP:3/3.5
WL:587 - WW:1174
MRI Spine Lumbar/Sacral
AX T2 FRFSE
Se:6
Im:10
AF
Primary
Nottingham City Hospital
20-May-2011
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PH
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