



NIHR | Great Ormond Street
Hospital Biomedical
Research Centre



Human fetal Micro CT – how to report

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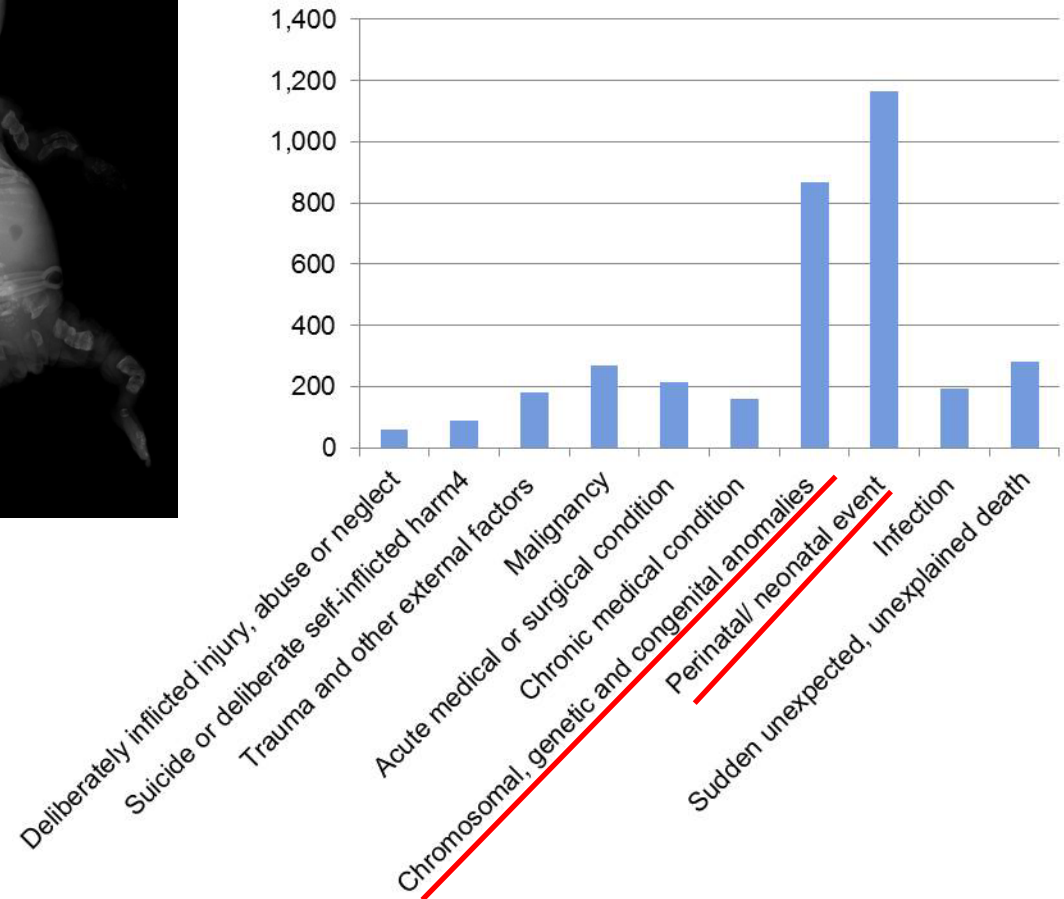
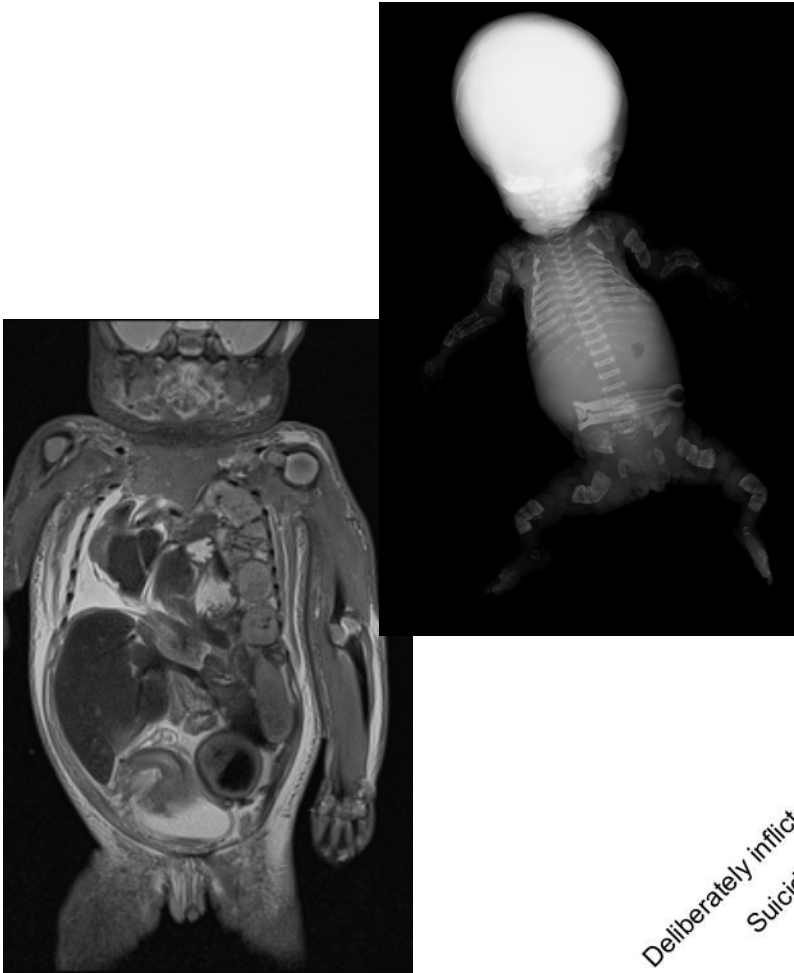
UCL

INSTITUTE OF CHILD HEALTH

Human fetal Micro CT

- How to report
- Assess the quality of imaging:
 - Preparation, image quality, artefact, maceration
- Template reporting
 - Systematic evaluation brain, body, limbs etc.
 - Imaging diagnosis
- Clinical context
 - Gestation, delivery, condition, other imaging (XR)
- Likely overall diagnosis

Common causes death?

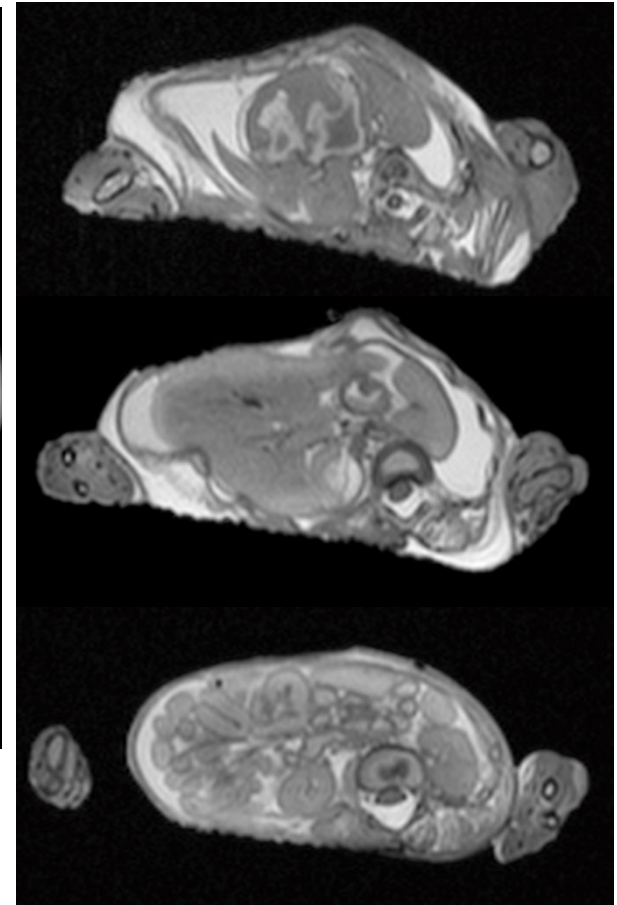
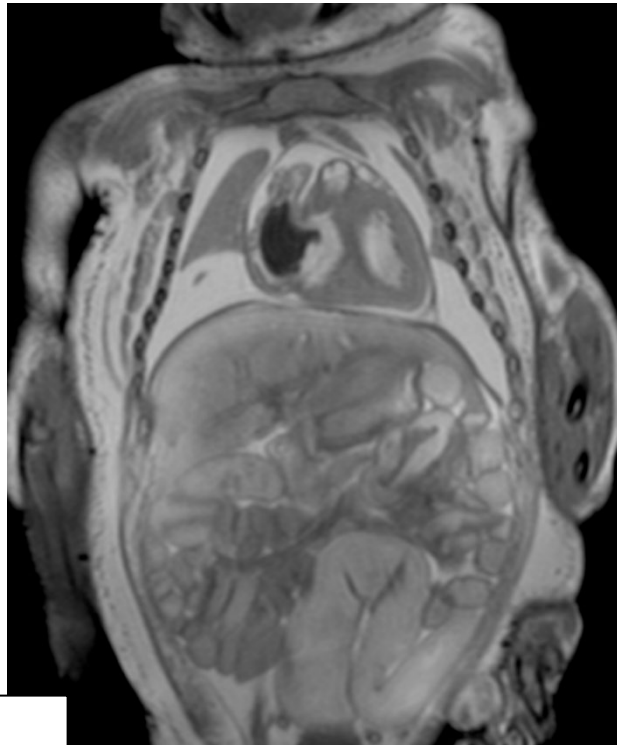


How do I know what to report?

- How do I know what to expect on PM imaging ?
- Familiarity with post mortem change
- (time since death?)

Understanding PM change

- Several artefacts
- Pericardial effn
- Pericardial air
- Pleural effusion
- Subcut oedema
- Ascites
- Slumping



Pediatr Radiol (2015) 45:527–535
DOI 10.1007/s00247-014-3166-y

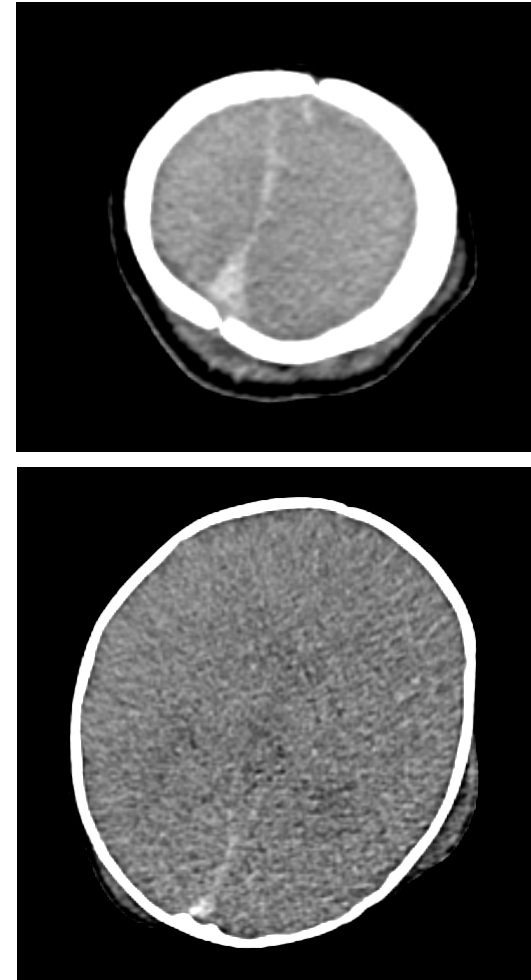
MINISYMPOSIUM

Normal perinatal and paediatric postmortem magnetic resonance imaging appearances

Owen J. Arthurs • Joy L. Barber • Andrew M. Taylor •
Neil J. Sebire

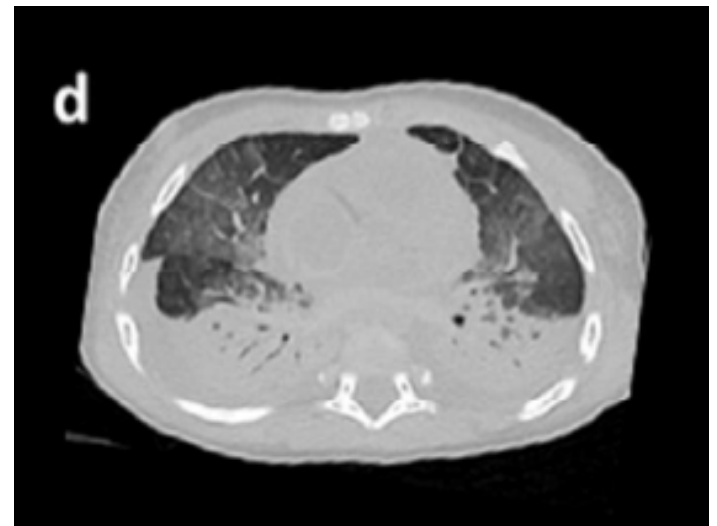
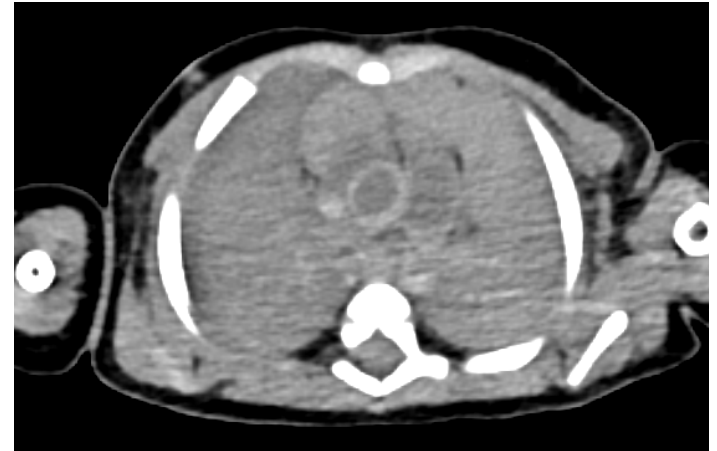
How do I know what to report?

- How do I know what to expect ?
- Familiarity with post mortem change
- (time since death?)
- 4 Key Questions
- Is it physiological / normal ?
- Is it iatrogenic?
- Is it artefactual ?
- ... or pathological ?



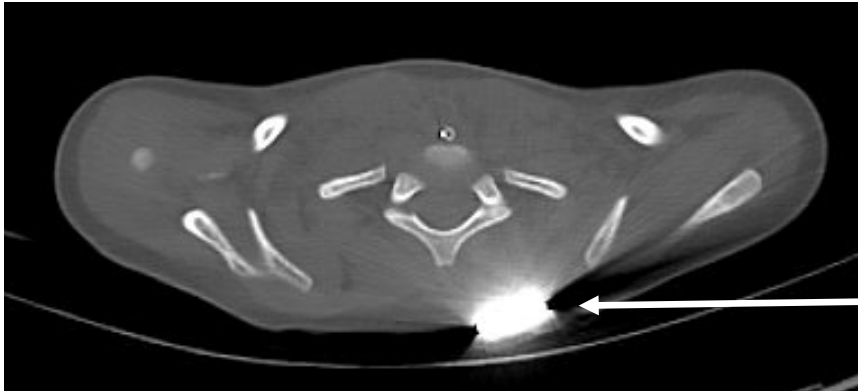
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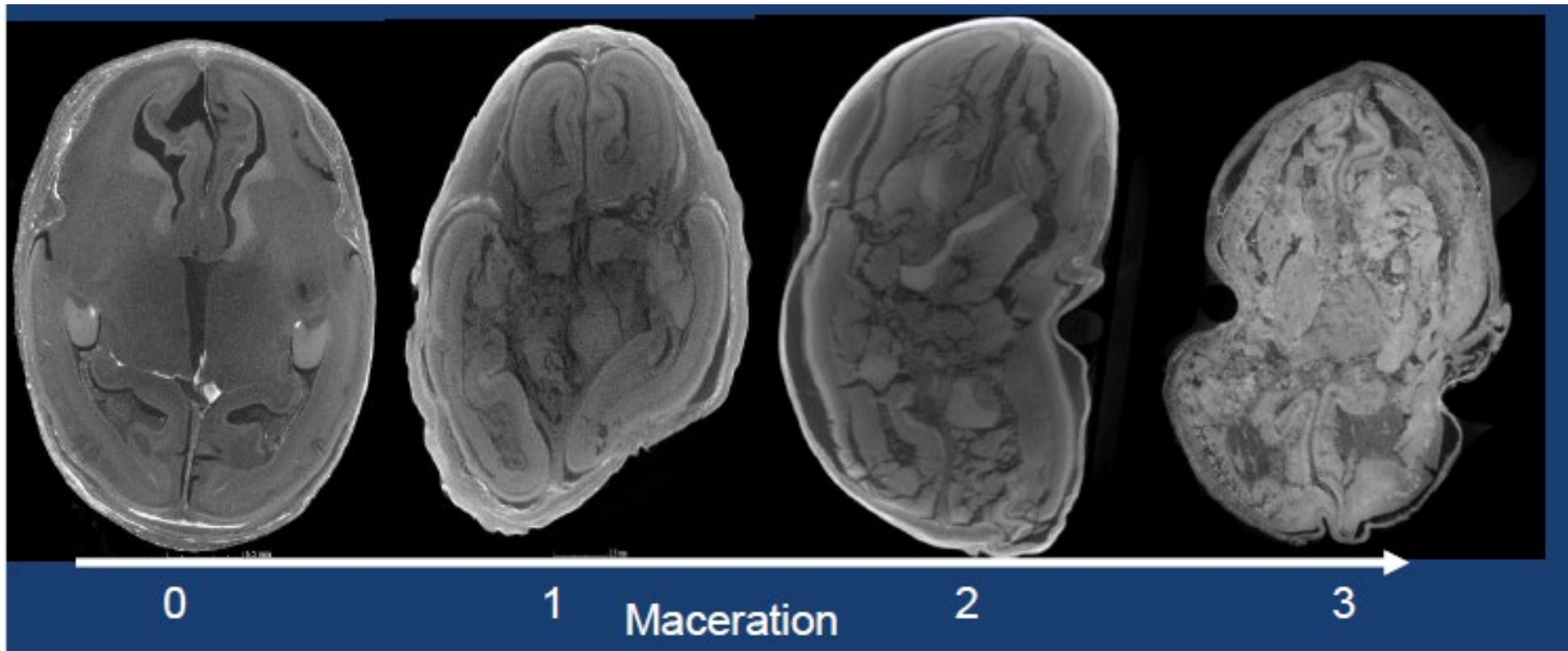
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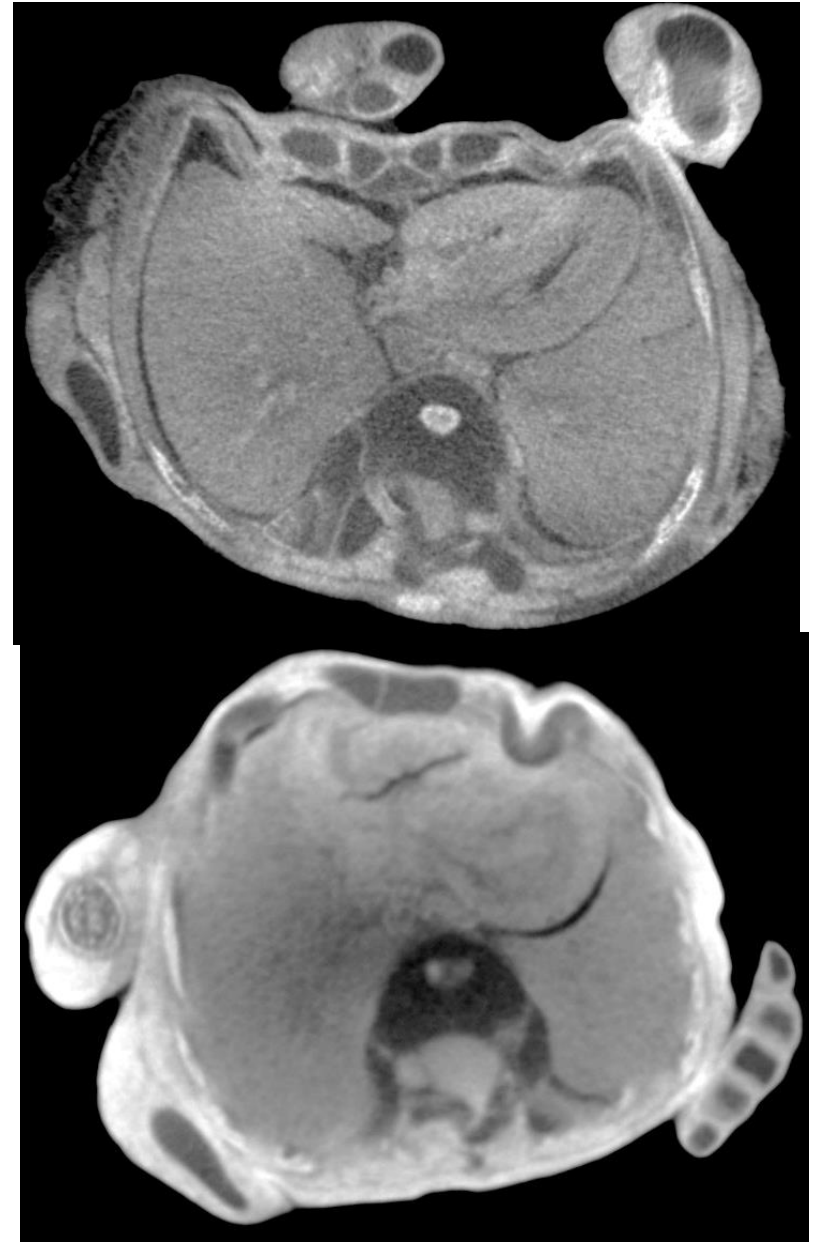


Micro CT

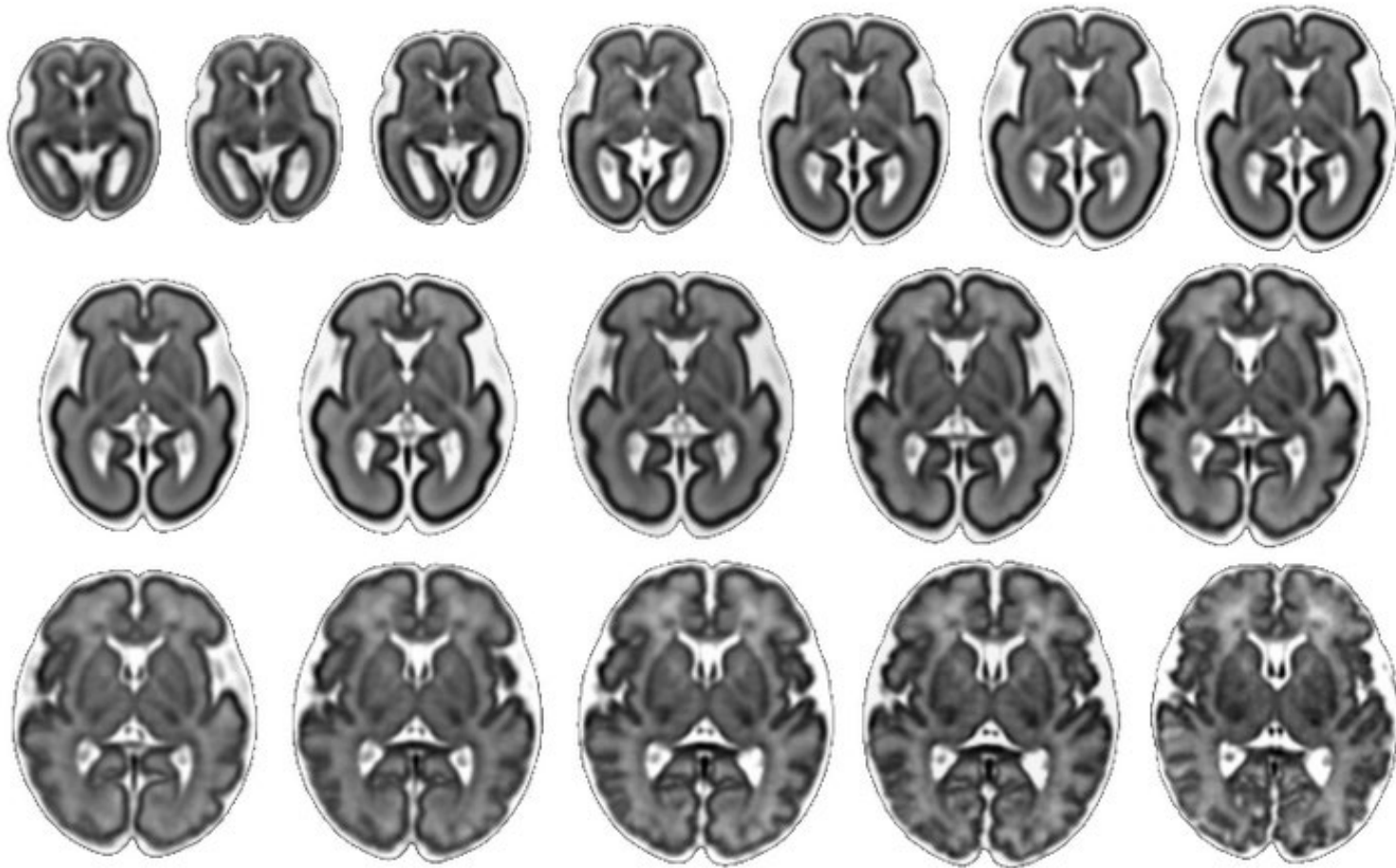
- “Physiological” - maceration



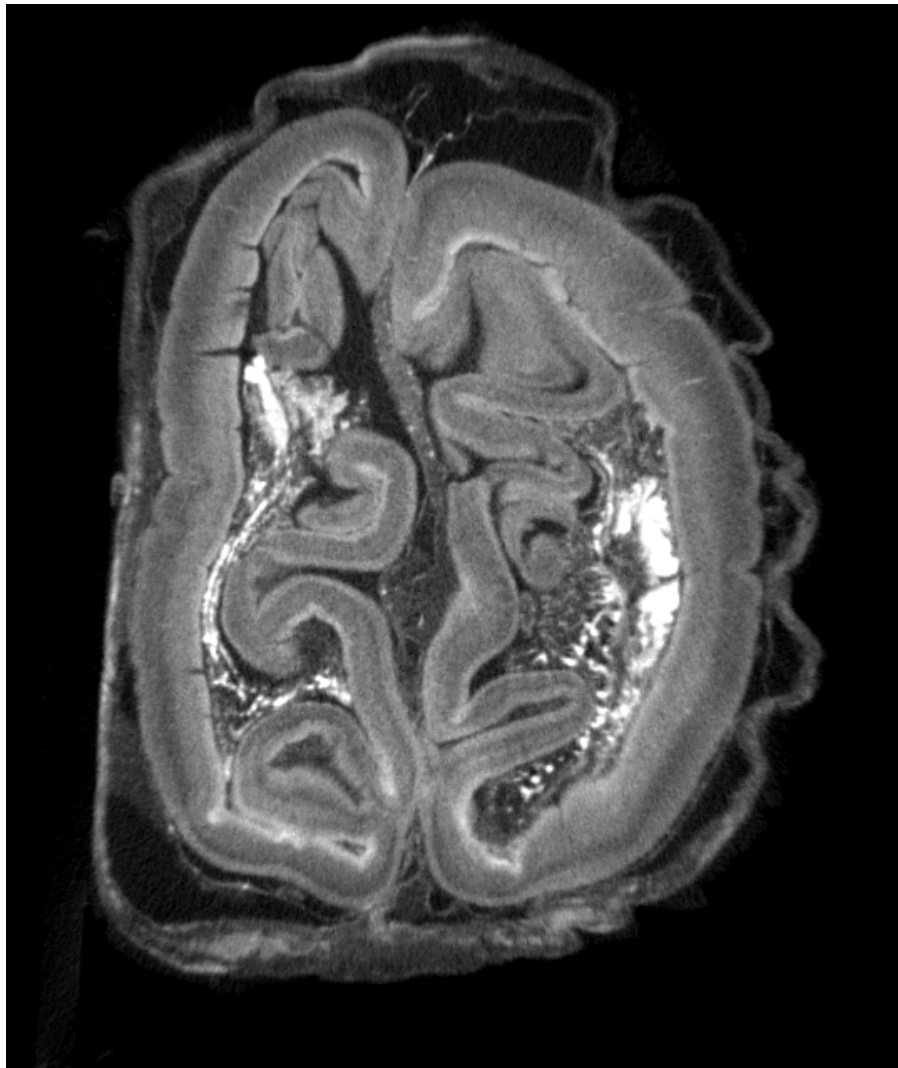
- Maceration



Normal development



Fetal Brain Atlas weeks 21 through 37





Normal development

- Bones

Weeks of gestation	Chest wall	Spine	Pelvis	Extremities	Long bones	Skull
8	Clavicles					
9					Long bone diaphyses	Mandible, maxilla, basi-occiput
10				Distal phalanges		
11	Ribs, scapulae	Neural arch C1 to L3 (cranio-caudal)	Iliac bones	Metacarpals and metatarsals, proximal phalanges		
12		Vertebral bodies T1 to L5 (from thoracolumbar junction)				
13		Neural arch C1 to S1				
14						
15		Vertebral bodies C6-S2				
16		Neural arch C1 to S4	Ischium	Middle phalanges (radial to ulnar)		Lesser wing sphenoid
17						
18		Vertebral bodies C2-S4				Superior semicircular canals
19						Crown of upper incisors
20						Crown of lower incisors
21						
22	Manubrium	Odontoid	Pubis	Calcaneum		
23						
24						
25						
26						
27				Talus		
28						
29						
30						
31						
32						
33					Lower femoral epiphysis	
34					Upper tibial epiphysis	
35						
36						
37						
38				Cuboid	Proximal humeral epiphysis (may appear up to 7 weeks after birth)	
39						
40						

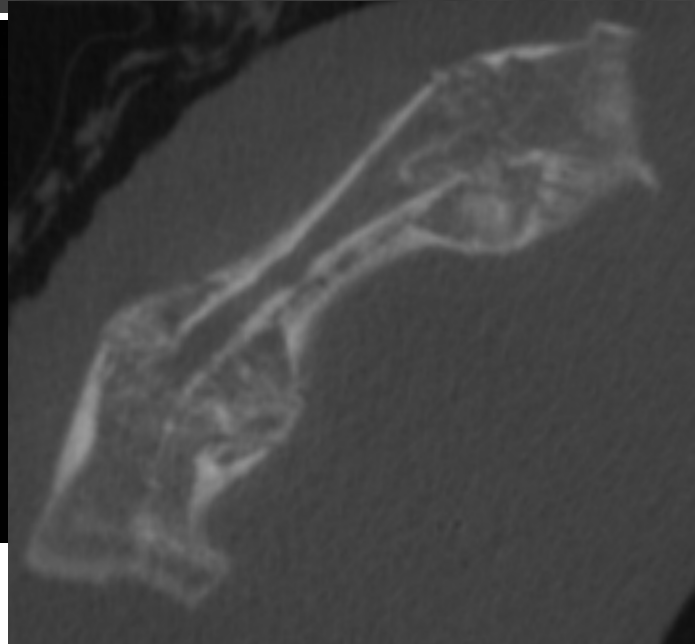
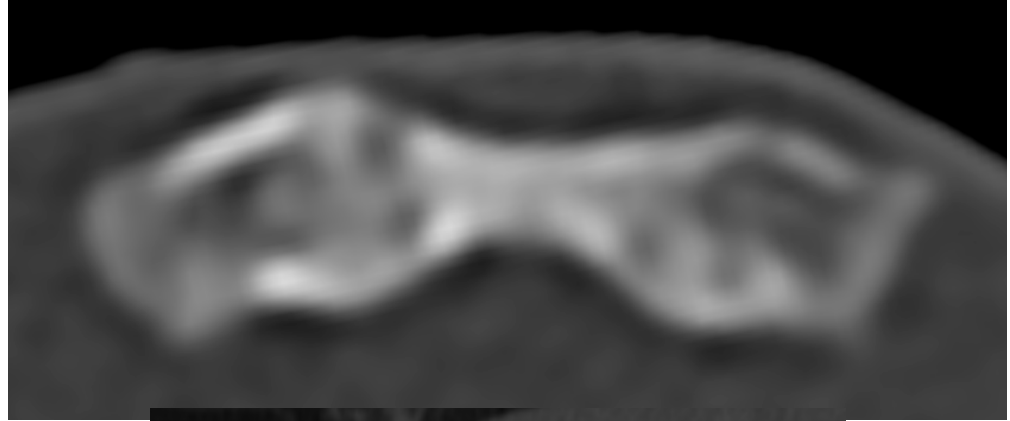
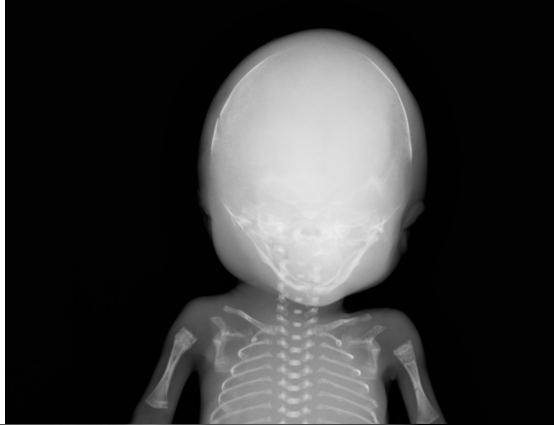
DOI 10.1007/s00247-014-3130-x

PICTORIAL ESSAY

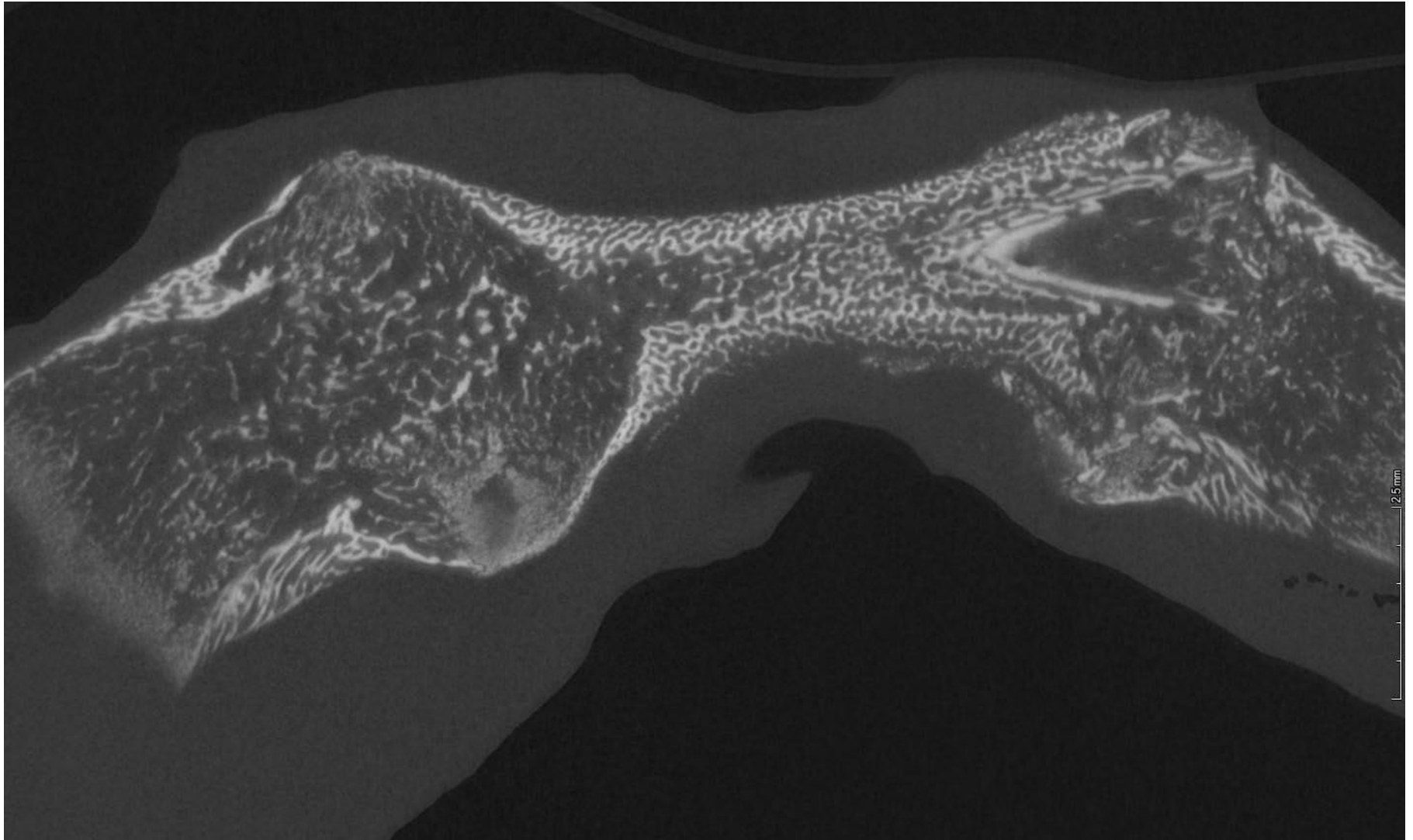
Foetal radiography for suspected skeletal dysplasia: technique, normal appearances, diagnostic approach

Alistair D. Calder • Amaka C. Offiah

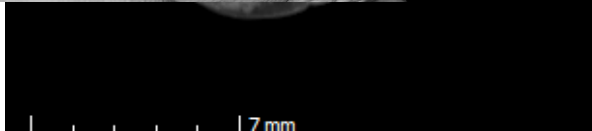
Bone development



Bone development



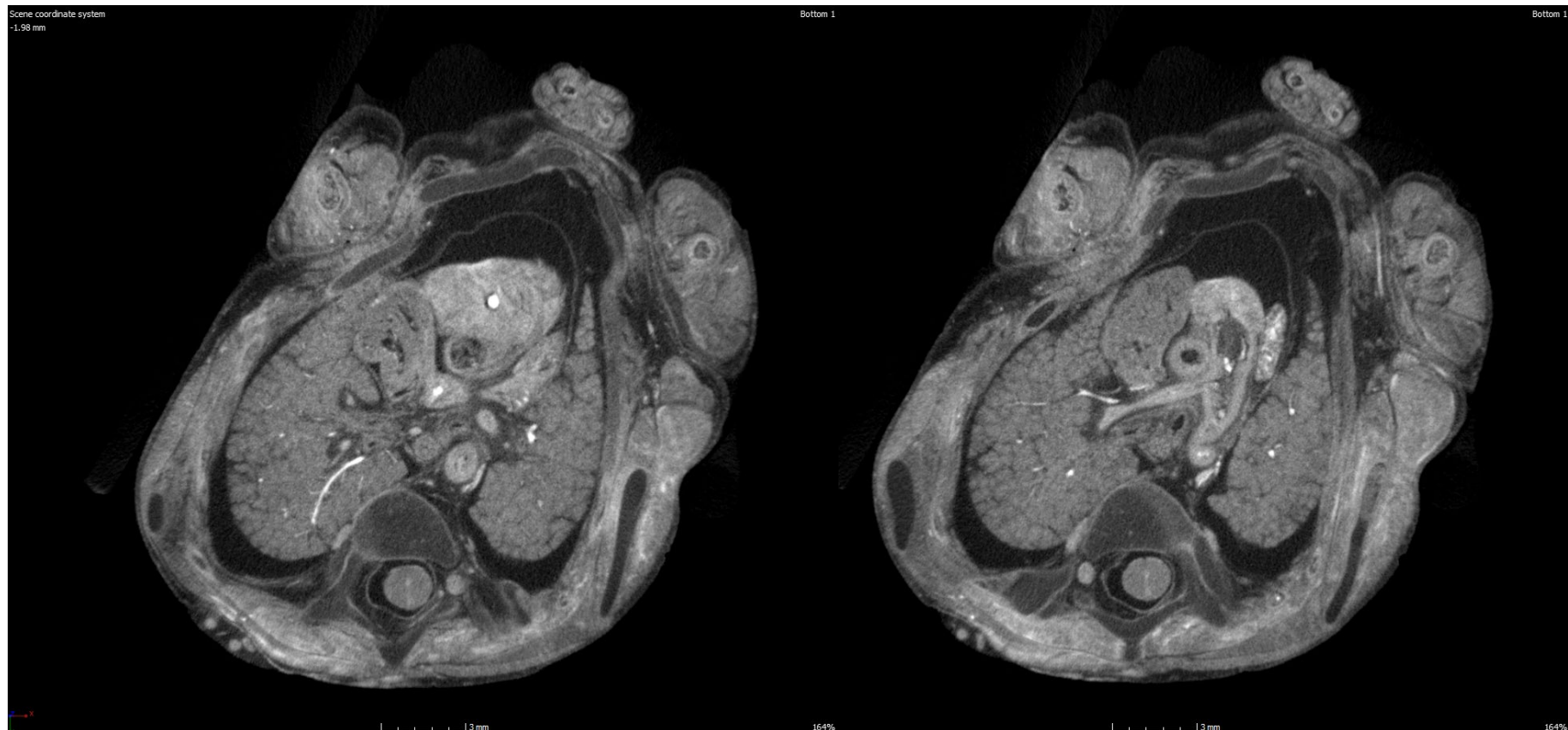




Scene coordinate system
-1.98 mm

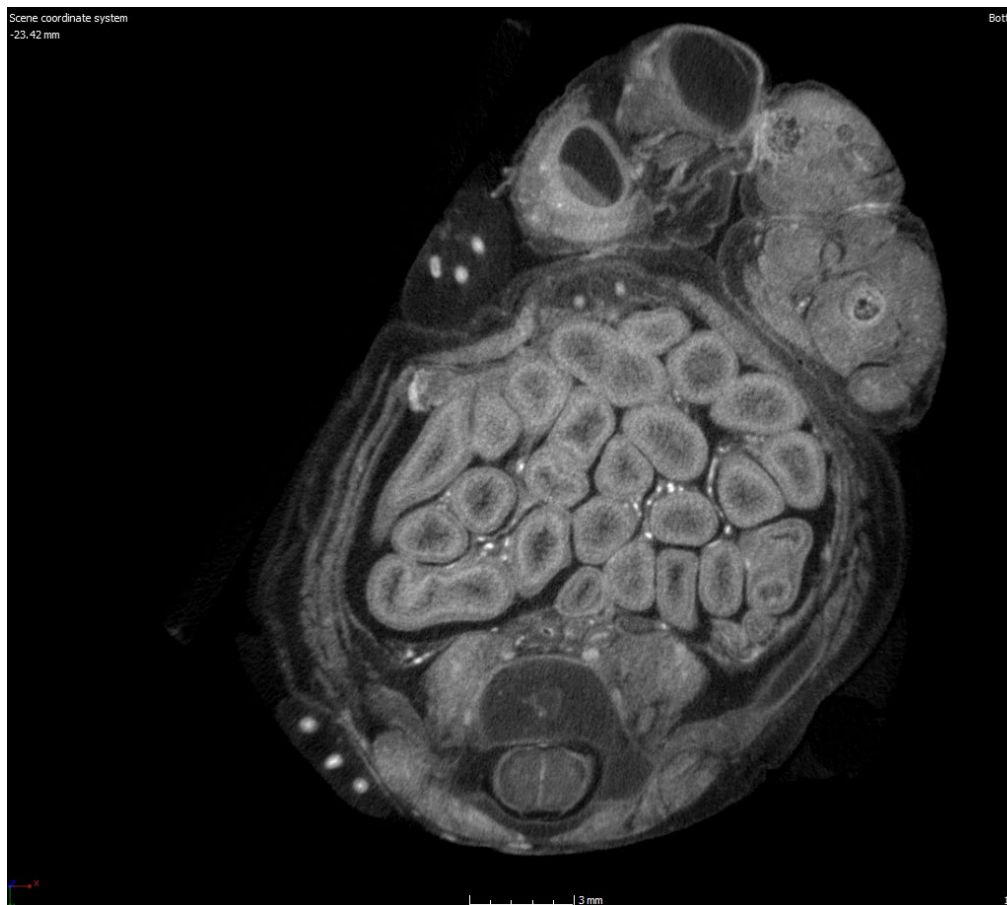
Bottom 1

Bottom 1





Scene coordinate system
-23.42 mm



Botto

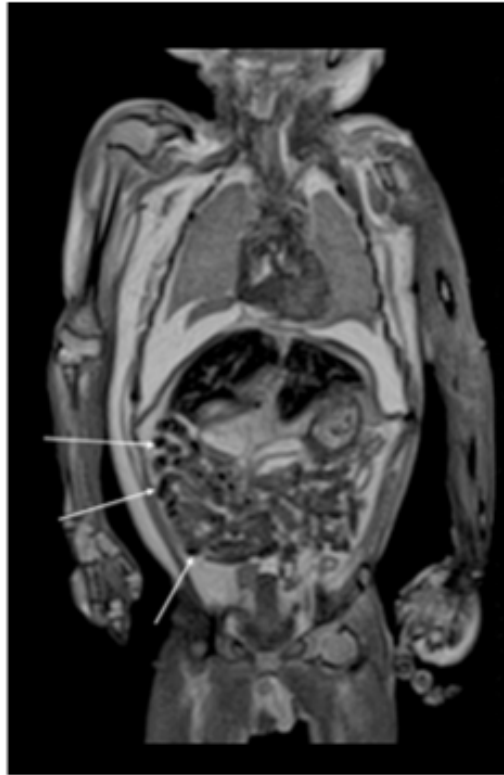


16

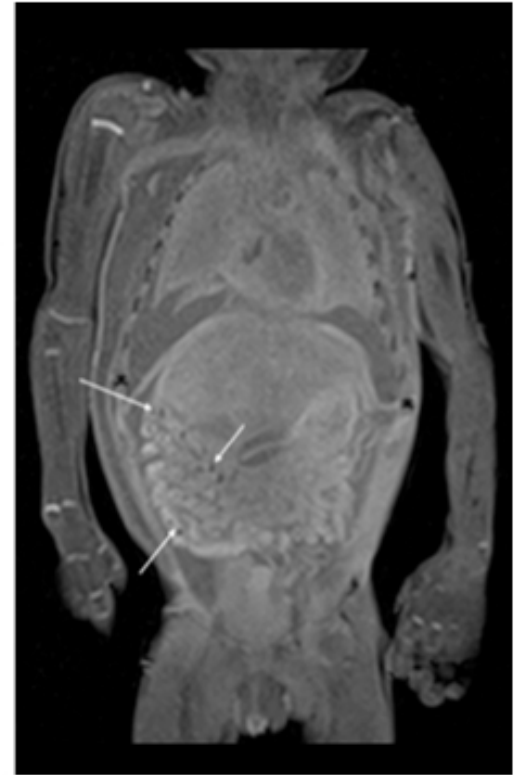
Incidental calcification



(a)



(b)



(c)

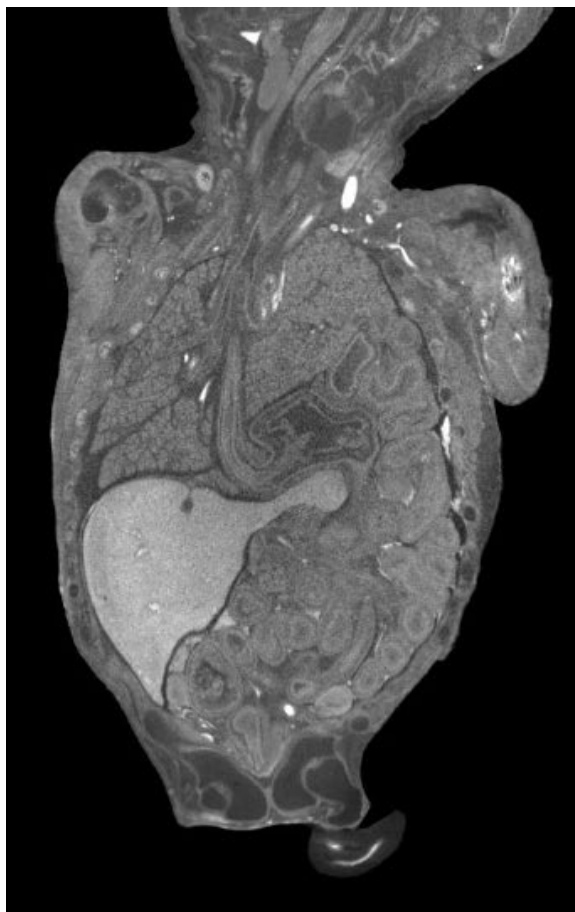








Figure 1. Micro CT of a phenotypically normal fetus (case 12) at 11 gestational weeks (A) Axial (B) and Coronal (C) analysis of the heart reveals the aorta (star) and pulmonary trunk (hexagon).



b)



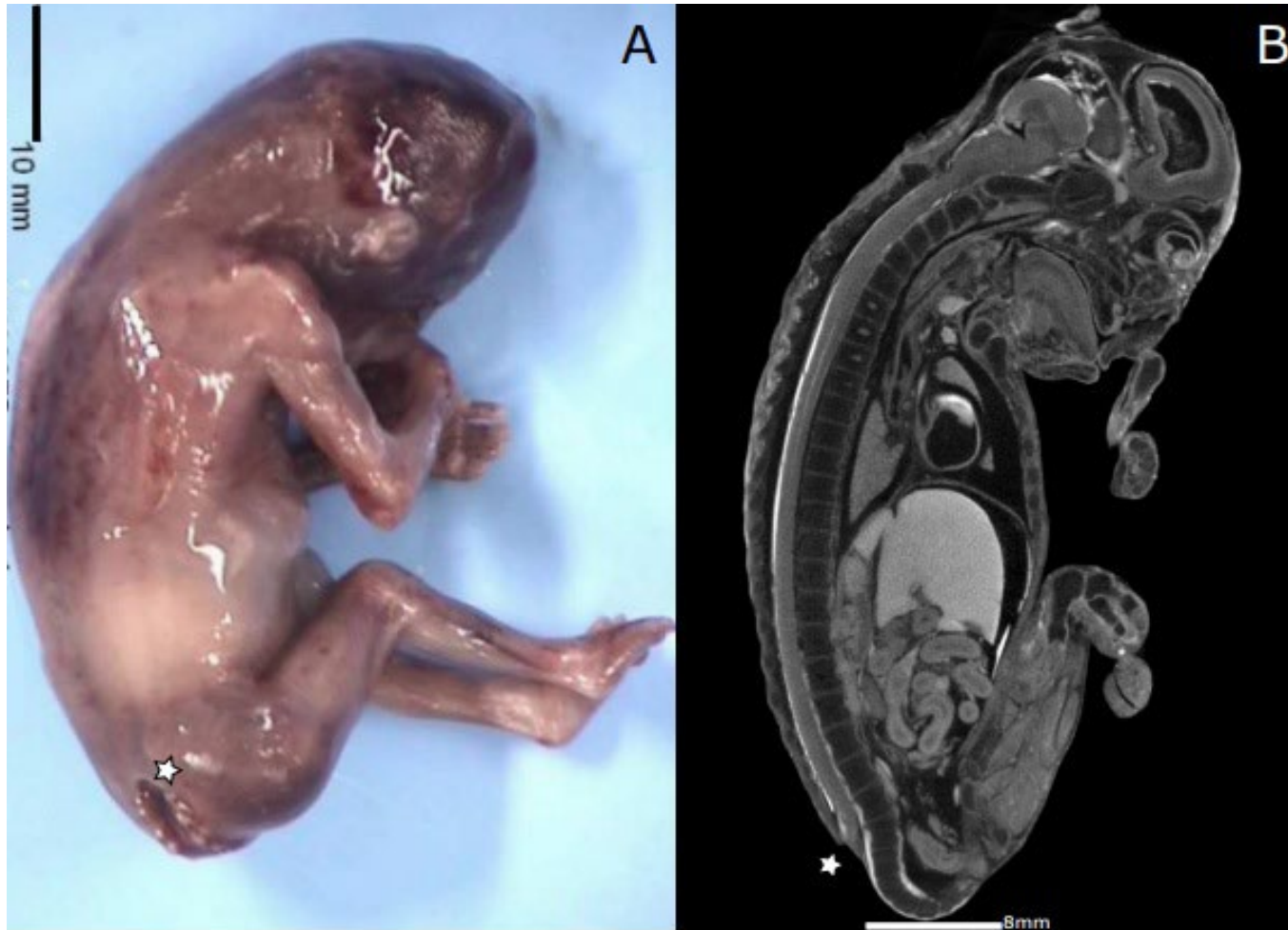


Figure 3. Micro CT examination of sacral NTD, external examination (star), initially overlooked on the micro CT data (B).

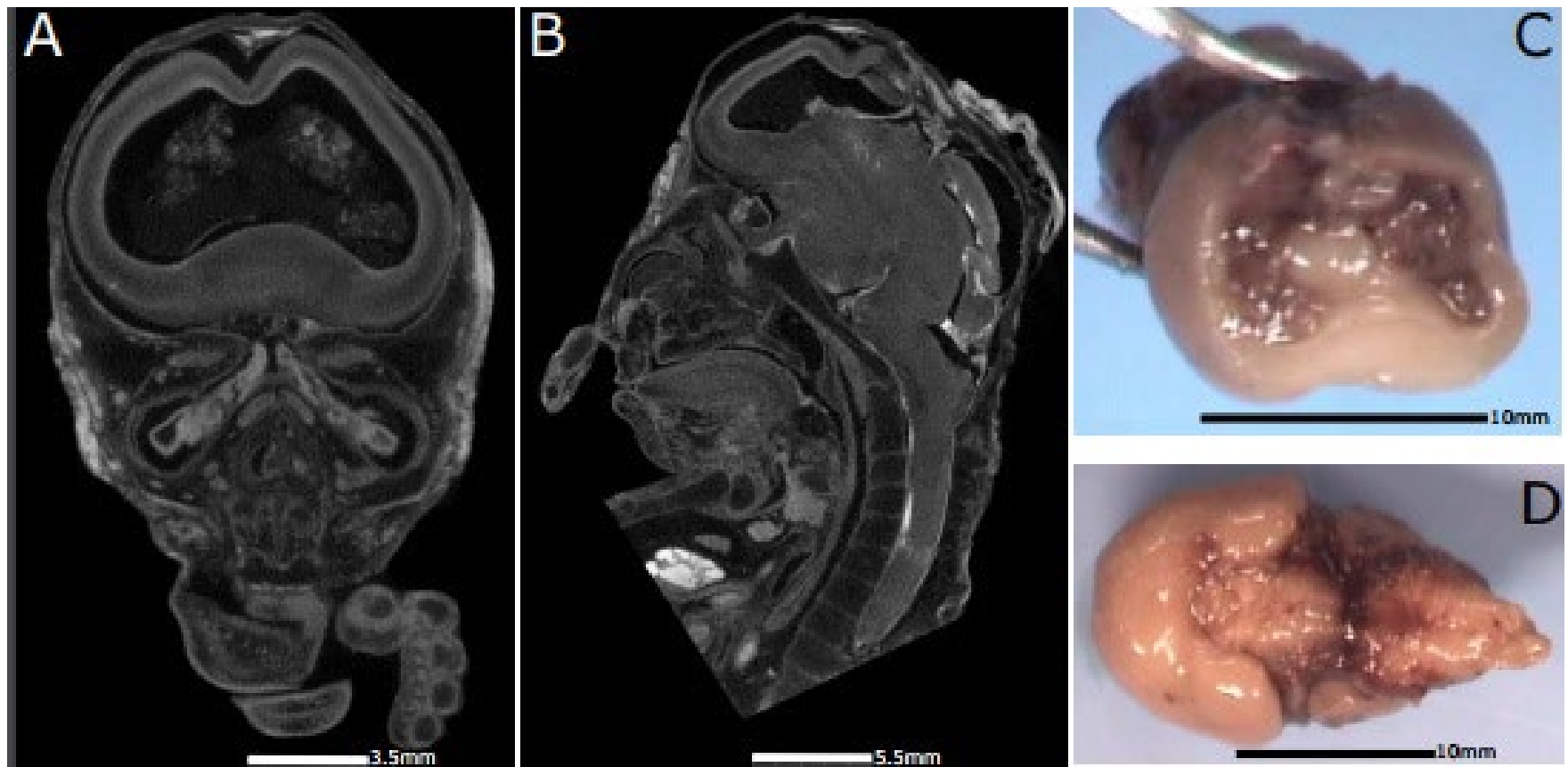


Figure 2. Micro CT of a 13 gestational week fetus with holoprosencephaly (case 4, A&B). Autopsy (C&D) confirmed the abnormal finding identified on micro CT.

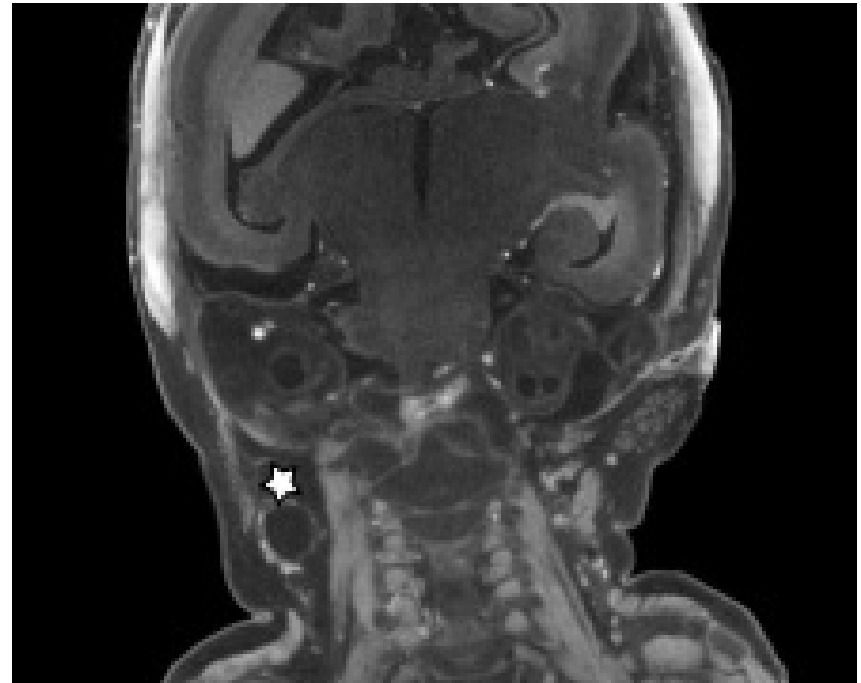


Figure 4. An apparent overcall from micro CT data in case 5 was a cystic neck lesion (star), which was overlooked at autopsy, as this region is not routinely dissected.

THANK YOU

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