

# Fetal postmortem examination

Dr Aude Tessier

17/01/26



For Whom to  
perform  
postmortem  
examination



2<sup>nd</sup>  
trimester  
miscarriage

Stillbirth

TOP

Perinatal  
death

# Why perform postmortem examination



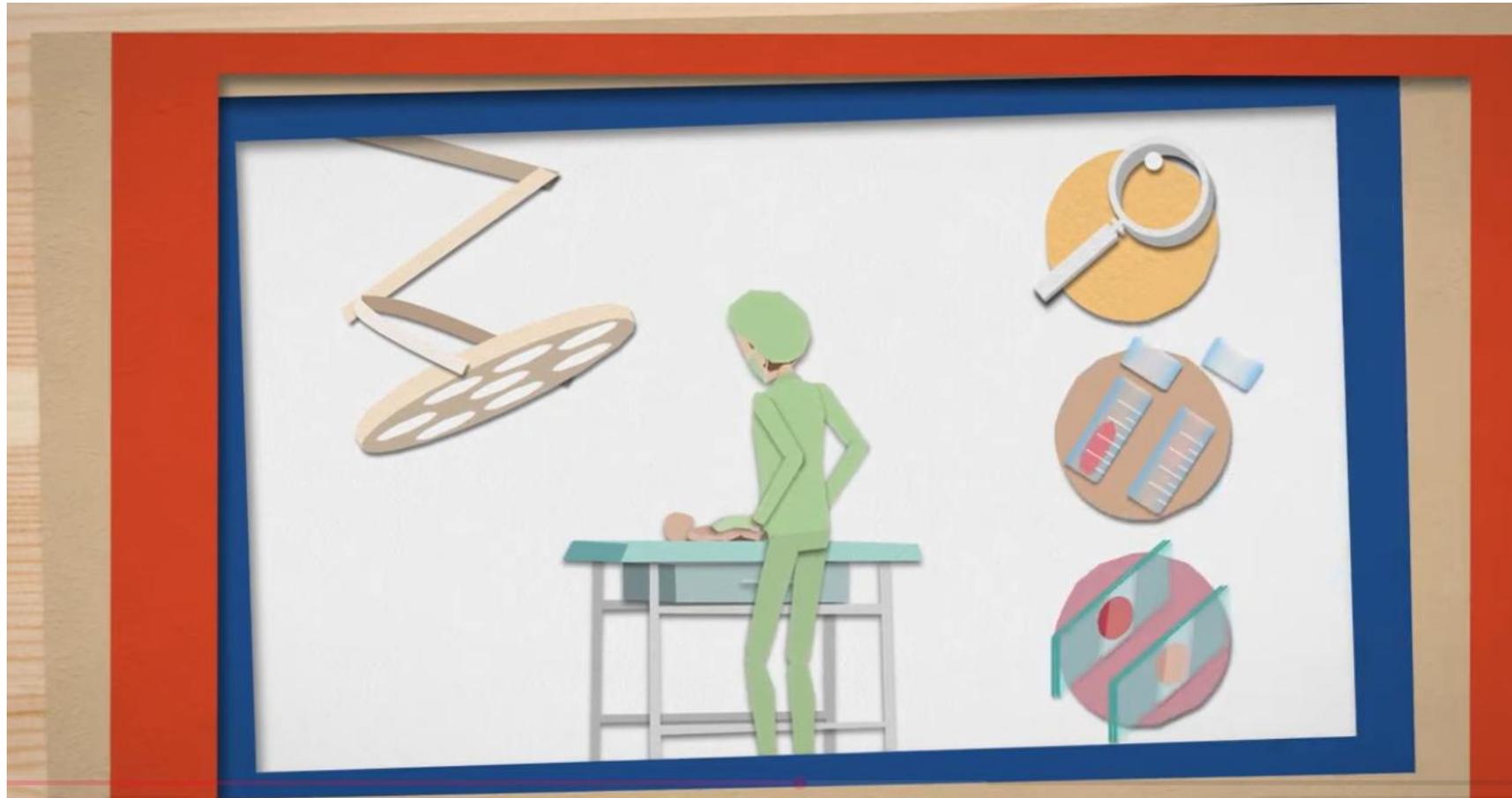
Help explain cause of death or malformations

Guide management of future pregnancy

Option for research program

Can help grieving process

# Video to explain the purpose of fetal postmortem



# Written consent is highly recommended

Autorise (ons) l'Institut de Pathologie et de Génétique, dans le respect du secret médical, à pratiquer sur le corps de mon (notre) enfant mort-né ou décédé après la naissance :

Entourez votre choix :

Des examens à visée diagnostique (permettant de rechercher la cause du décès ou des anomalies dont mon enfant était atteint) incluant :		
• un examen clinique externe avec réalisation de photographies et radiographies	OUI	NON
• un examen interne/ autopsie complète avec réalisation et conservation de prélèvements à visée diagnostique (examens histologique, biologique, biochimique)	OUI	NON
• des prélèvements pour examen génétique (caryotype et/ou étude en biologie moléculaire). En cas de refus d'examen interne/autopsie complète, des prélèvements superficiels peuvent être réalisés (peau, muscle) ou à défaut sur le placenta.	OUI	NON
La conservation en biobanque de prélèvements en vue d'éventuelle(s) recherche(s) scientifique(s) afin d'améliorer les connaissances sur le développement embryo-fœtal normal et/ou pathologique. Ils ne modifient en rien la procédure diagnostique.	OUI	NON
Une incinération (crématorium de Gilly, qu'il y ait un examen fœtal préalable ou non).	OUI	NON

Date : \_\_\_\_\_

Signature de la mère ou Parent 1 (obligatoire) :

Signature du Parent 2 (facultative) :

# Reduce artifacts



Feticide : KCl vs Lidocaine



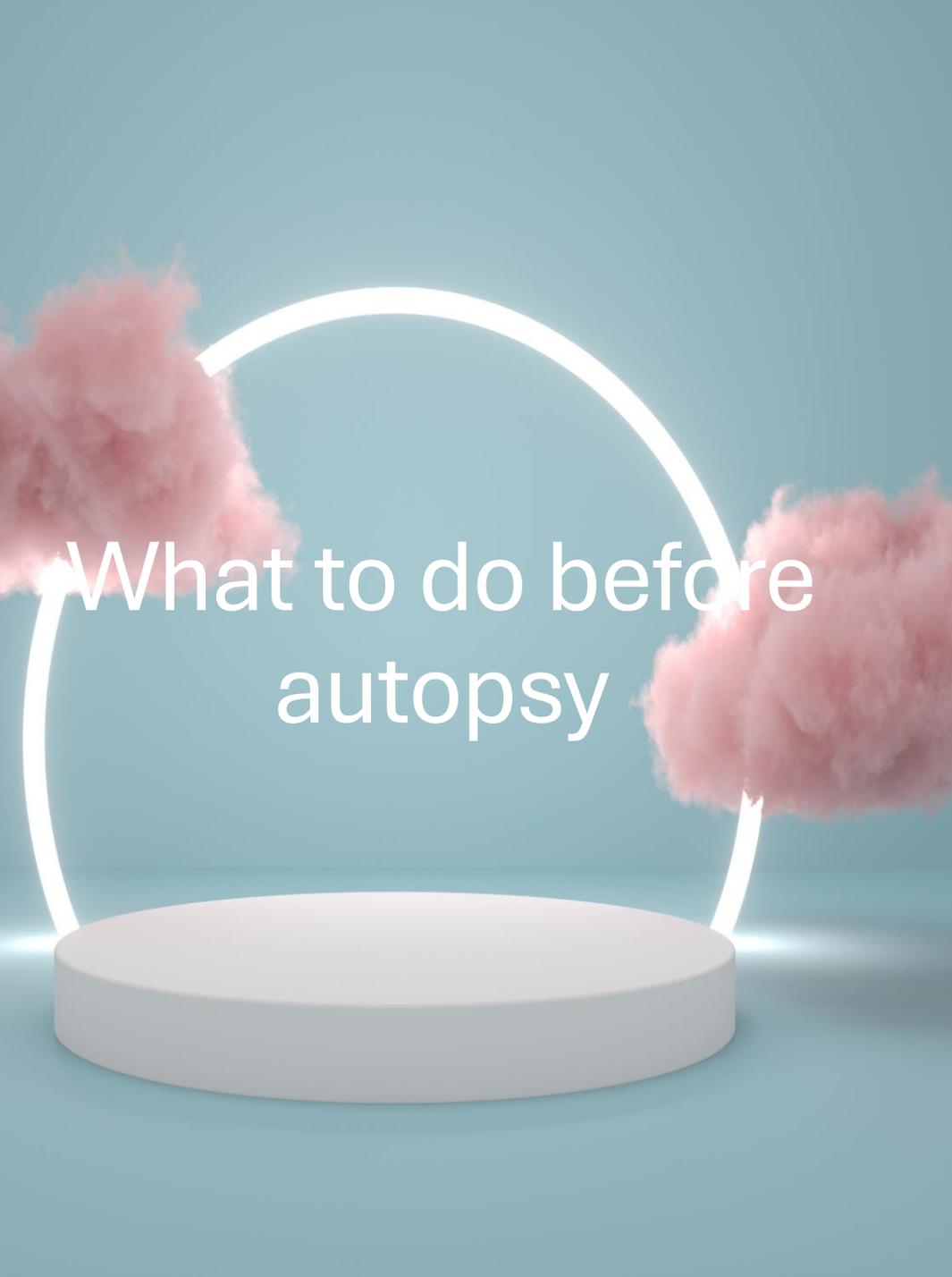
Short delay between birth and examination



Transport and preservation in a large box



Fresh examination



# What to do before autopsy

## Check that the file is complete

- Consent form

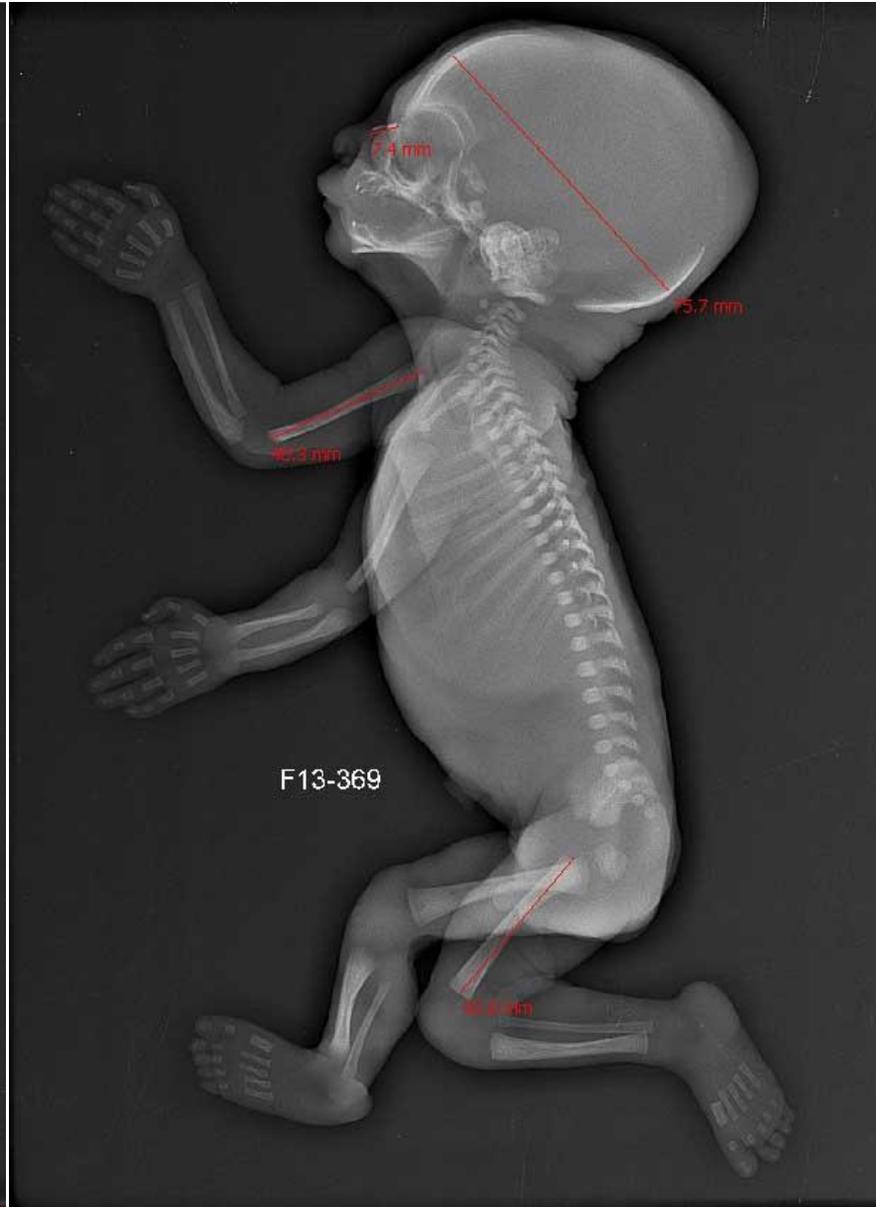
## Study the history of pregnancy

- Infection
- Diabetes
- US
- Genetic test

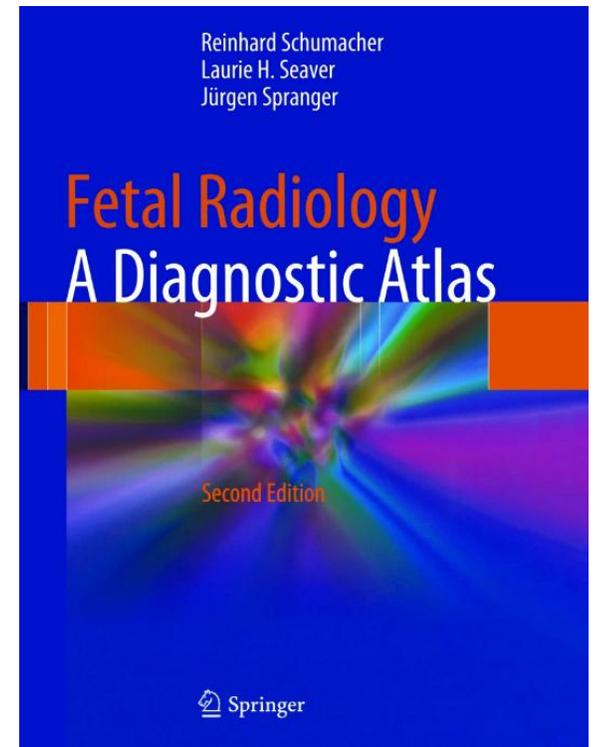
## Check at the X-rays

Xray :  
positioning

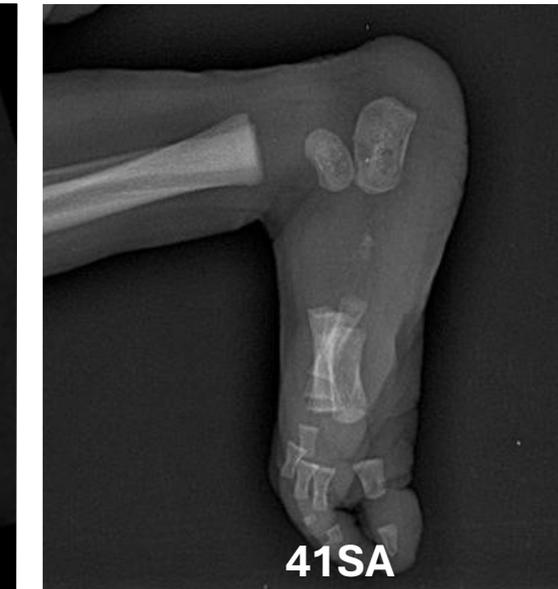
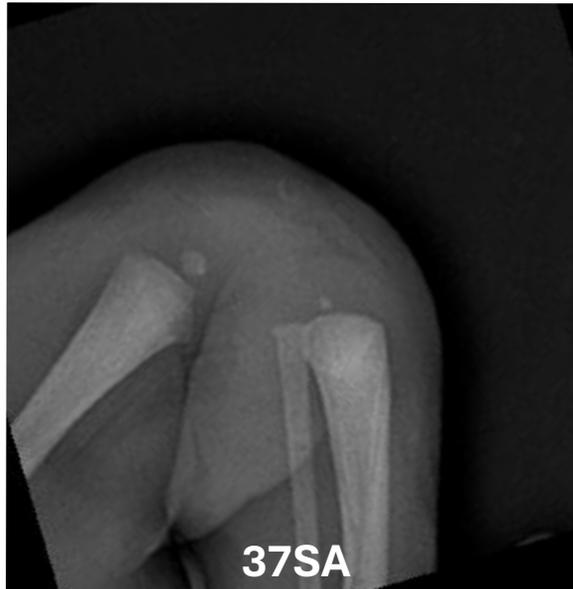
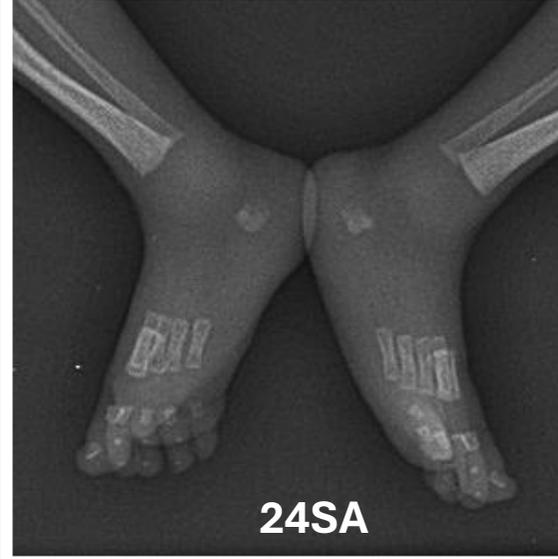
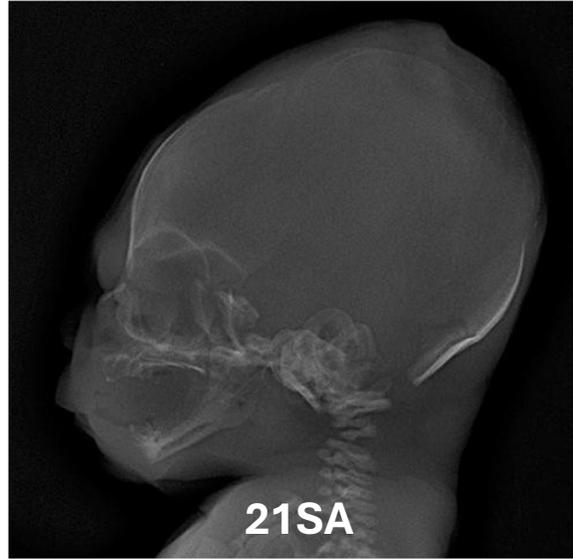
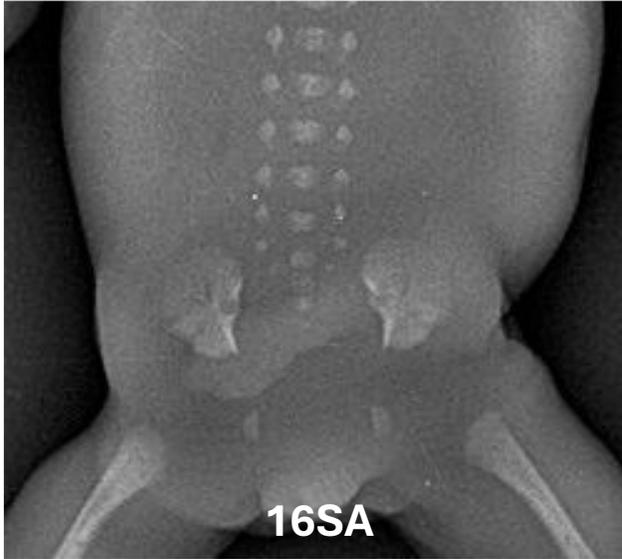




# Xray : growth



# Xray : bone age



## ATLAS RADIOGRAPHIQUE DU SQUELETTE FOETAL NORMAL

Danielle Eurin

sous la direction de  
Pierre Maroteaux

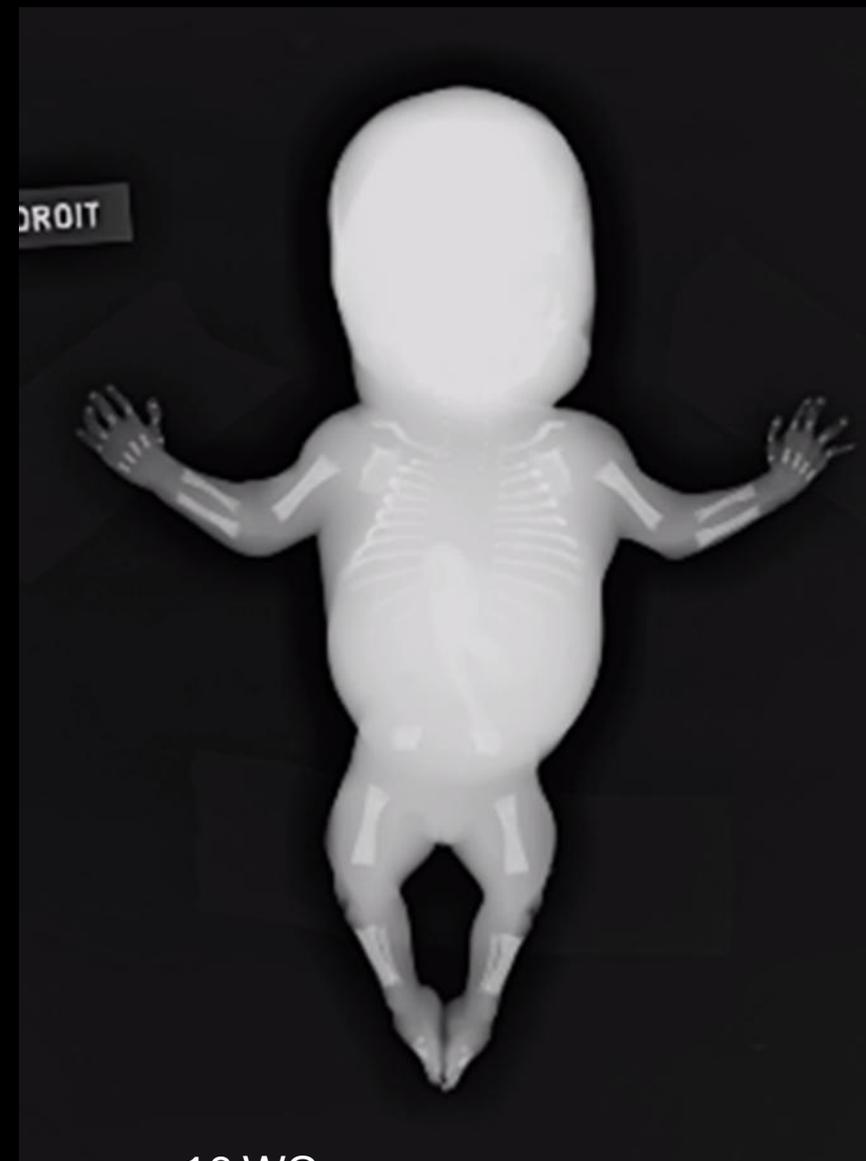
## LE SQUELETTE EN FŒTOPATHOLOGIE

L'os normal : développement,  
imagerie, structure

Anne-Lise DELEZOIDE  
Danielle EURIN  
Gwenaëlle ANDRE  
Suonavy KHUNG-SAVATOVSKY



SAURAMPS  
MEDICAL



16 WG  
Hypochondrogenesis



Hypophosphatasia



Campomelic  
dysplasia



CHARGE

# Postmortem examination : multiple steps

External examination (including pictures)

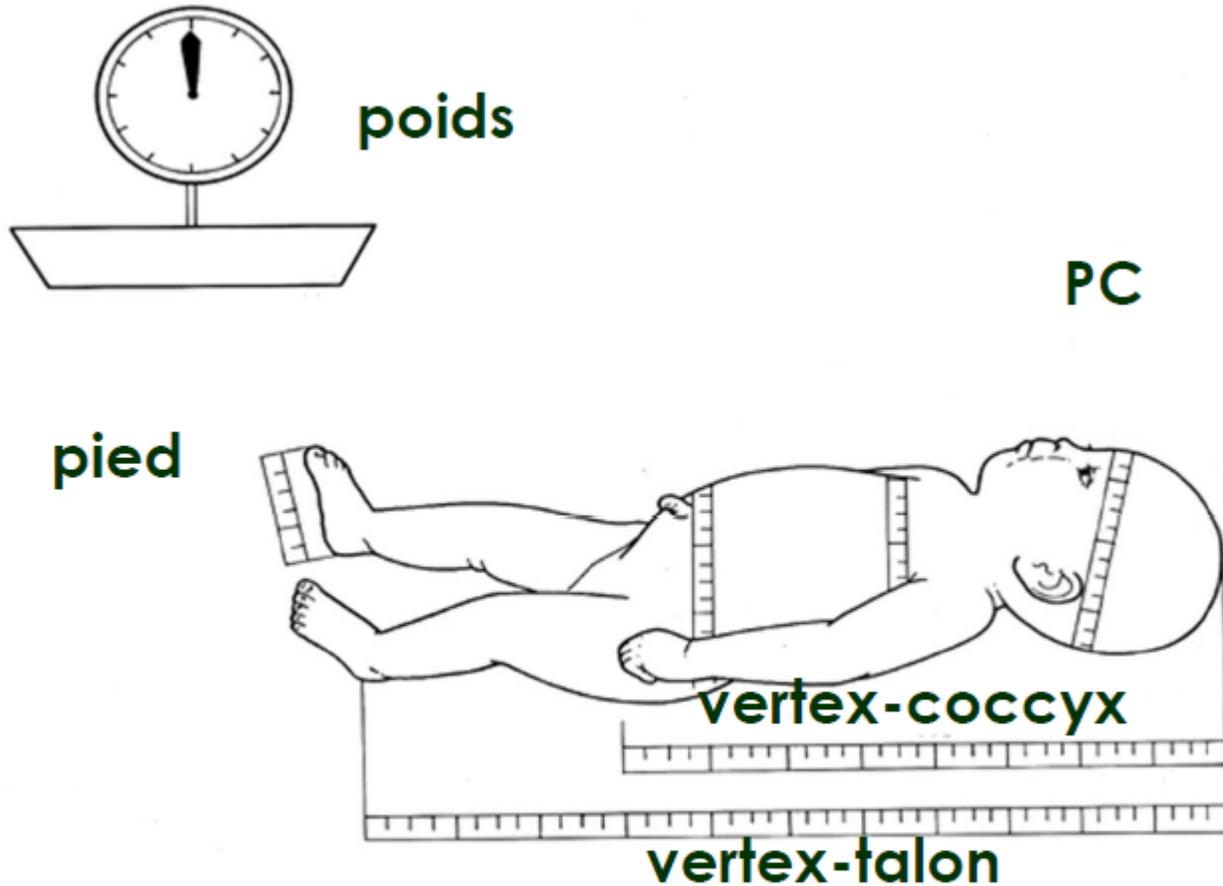
Internal examination

Histology

Neuropathology

Placenta examination

# Growth parameters



Guihard-Costa et al. Fetal Diagn Ther. 1995, 10, 211

Pediatric and Developmental Pathology 8, 204–217, 2005

DOI: 10.1007/s10024-004-7084-0

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## Autopsy Standards of Body Parameters and Fresh Organ Weights in Nonmacerated and Macerated Human Fetuses

LISA LETH MAROUN,<sup>\*</sup> AND NIELS GRAEM

Department of Pathology, The Centre of Diagnostic Investigations, Rigshospitalet, Copenhagen University Hospital, Blegdamsvej 9, 2100, Copenhagen O, Denmark

Pediatric and Developmental Pathology 5, 559–578, 2002

DOI: 10.1007/s10024-002-0036-7

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## Organ Weights in Human Fetuses after Formalin Fixation: Standards by Gestational Age and Body Weight

ANNE-MARIE GUIHARD-COSTA,<sup>1\*</sup> FRANÇOISE MÉNEZ,<sup>2</sup> AND ANNE-LISE DELEZOIDE<sup>2</sup>

<sup>1</sup>Centre National de la Recherche Scientifique (CNRS), Unité Propre de Recherche (UPR) 2147, 44 rue de l'Amiral Mouchez, 75014 Paris, France

<sup>2</sup>Service de Biologie du Développement, Hôpital Robert Debré, Assistance Publique-Hôpitaux de Paris, France



## Photographs

- Front/back/sides
- Face (front/sides)
- Hands/feet (palmar/dorsal)
- Pelvic floor
- Any anomaly

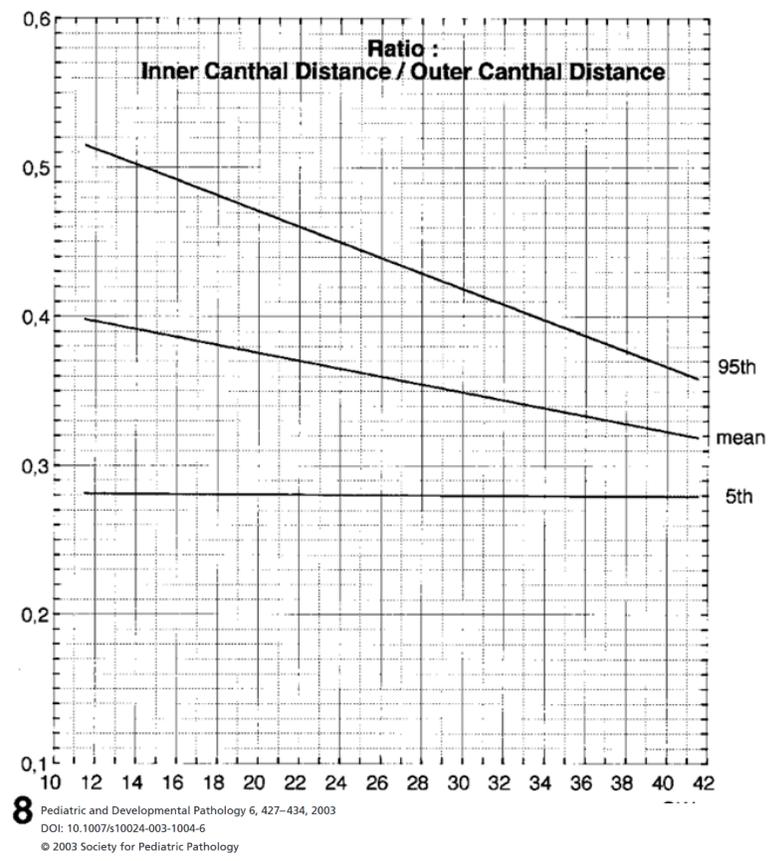
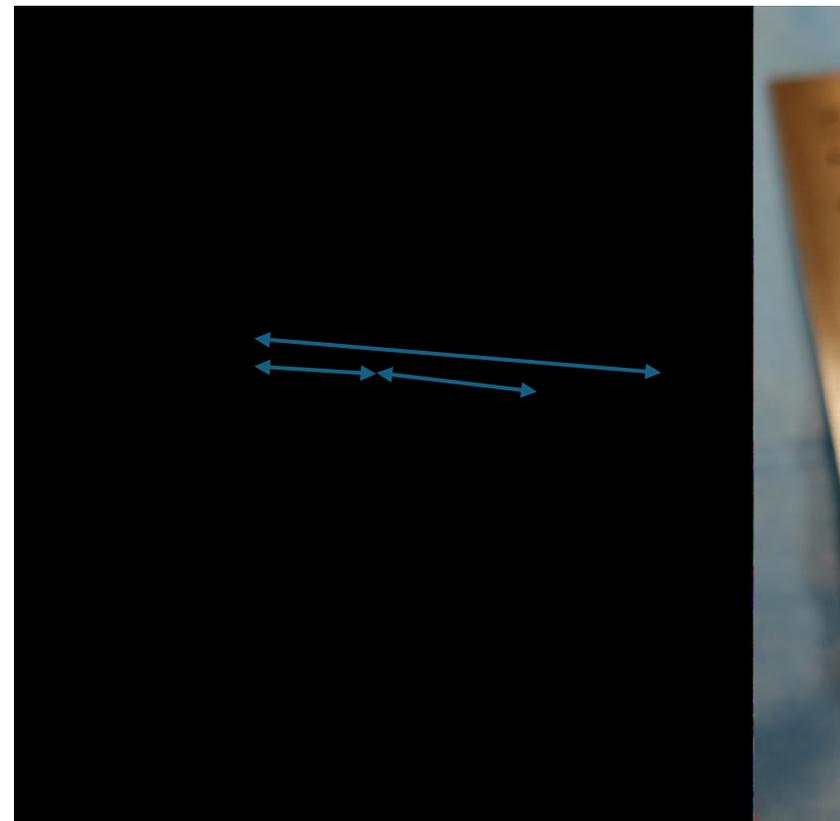
# Maceration



# Clinical examination : general aspect



# Facial features



## Standards for Dymorphological Diagnosis in Human Fetuses

ANNE-MARIE GUIHARD-COSTA,<sup>1\*</sup> F. MENEZ,<sup>2</sup> AND A.L. DELEZOIDE<sup>2</sup>

<sup>1</sup>Unité Propre de Recherche (UPR) 2147, Centre National de la Recherche Scientifique (CNRS), 44 Rue de l'Amiral Mouchez, 75014 Paris, France

<sup>2</sup>Service de Biologie du Développement, Hôpital Robert Debré, Assistance Publique-Hôpitaux de Paris, Paris, France

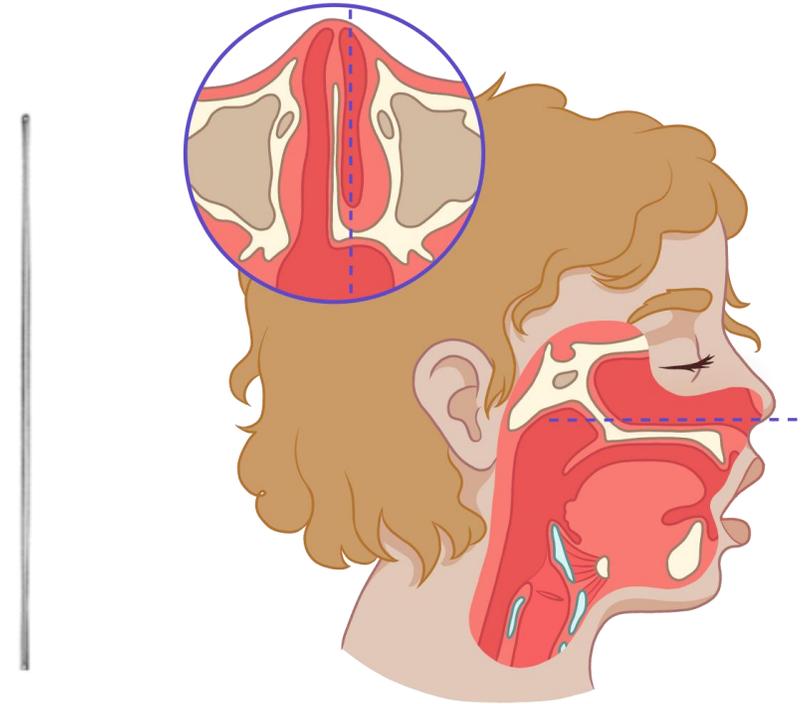


Ears, nose, chin..

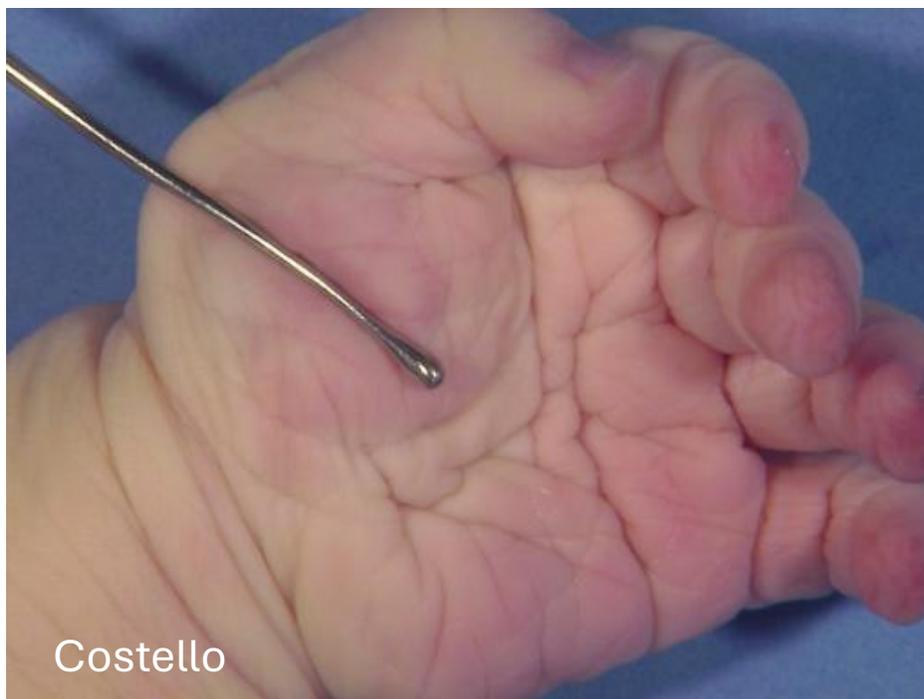
Eyes, eyebrows, nose, philtrum, mouth...



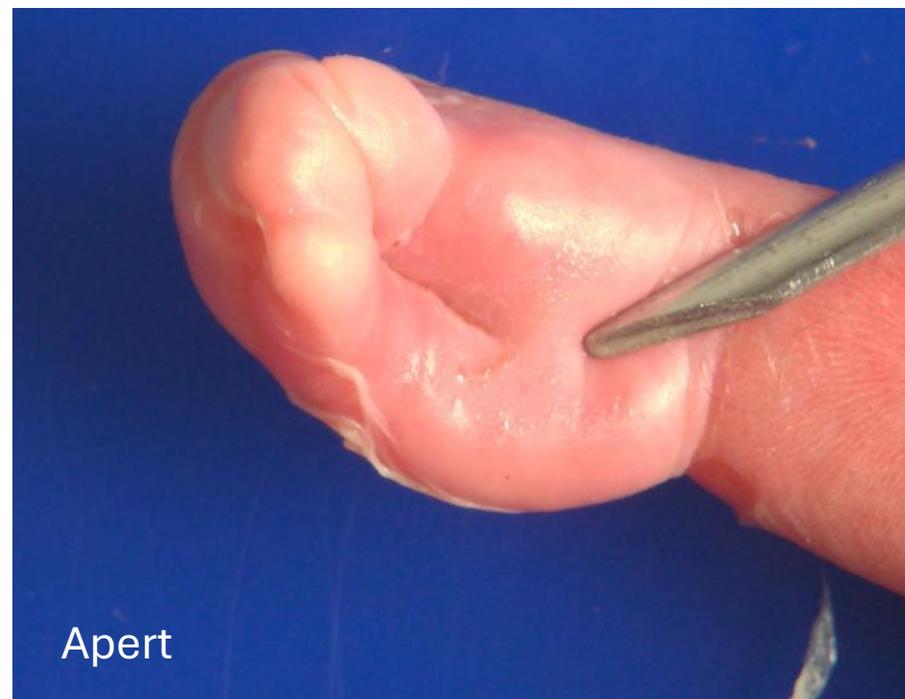
# Facial features



Don't forget intraoral examination and to check the permeability of the choanae



Costello



Apert

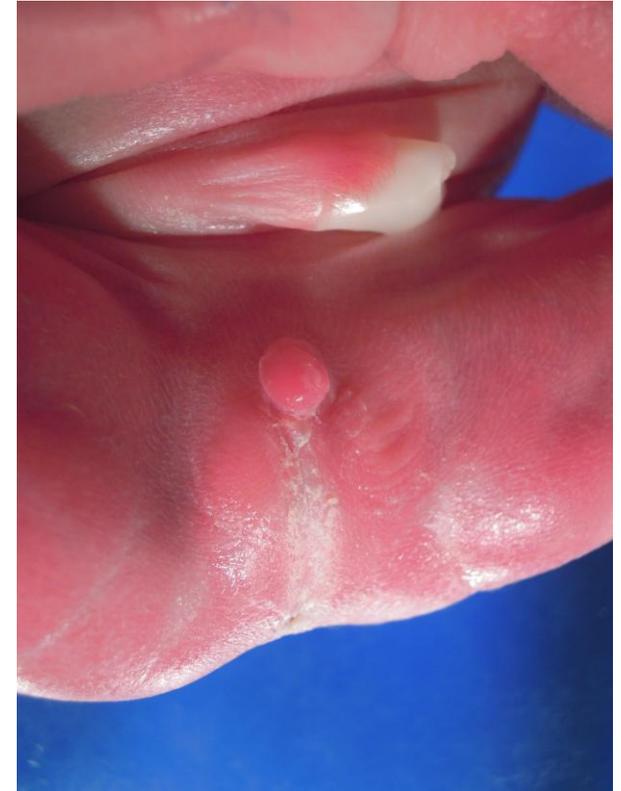
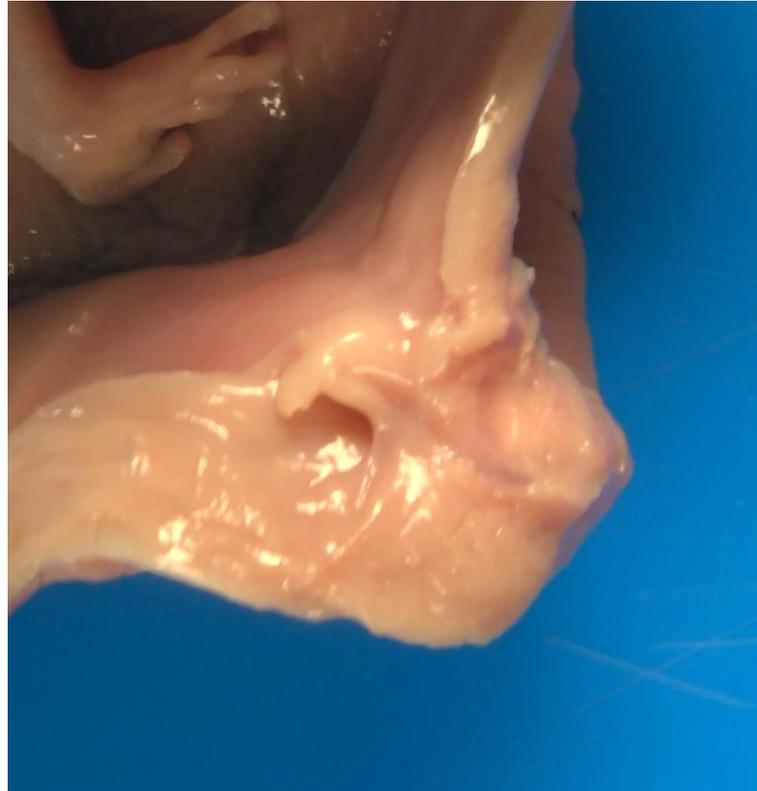


Amniotic band



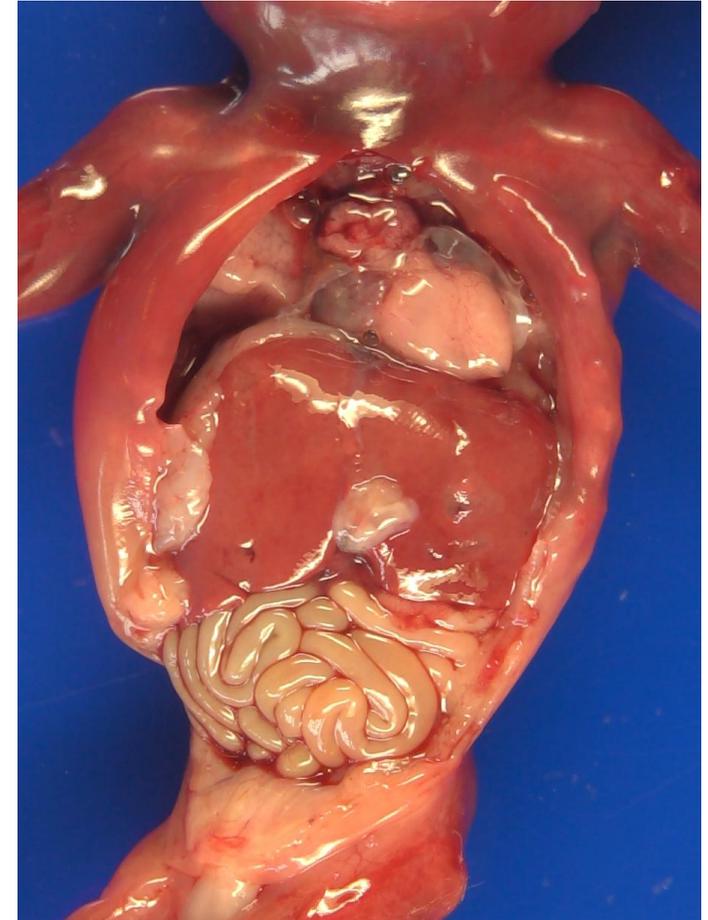
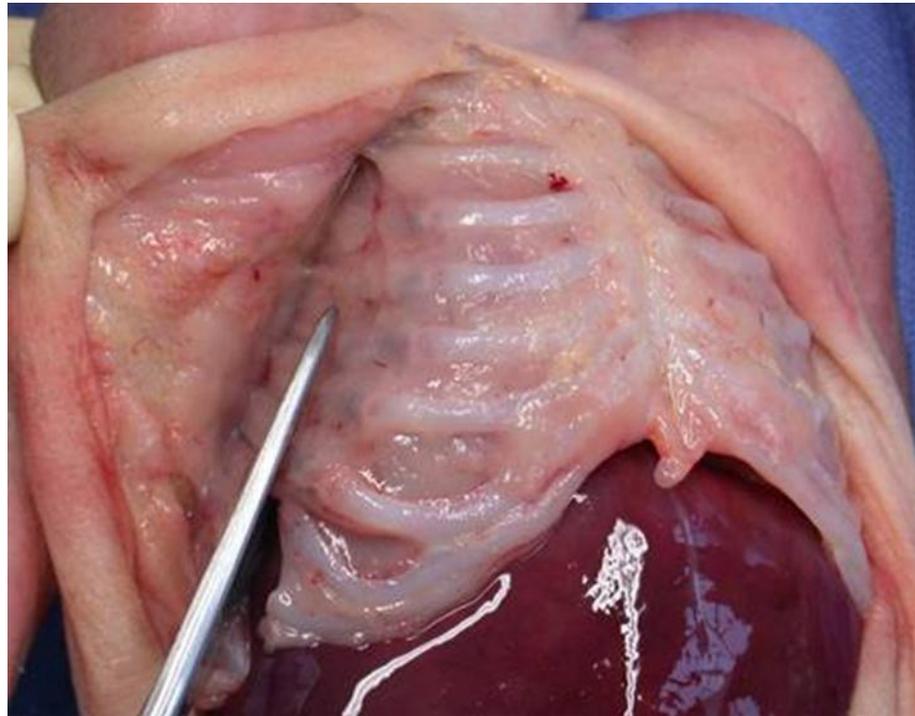
SLO

# Pelvic floor

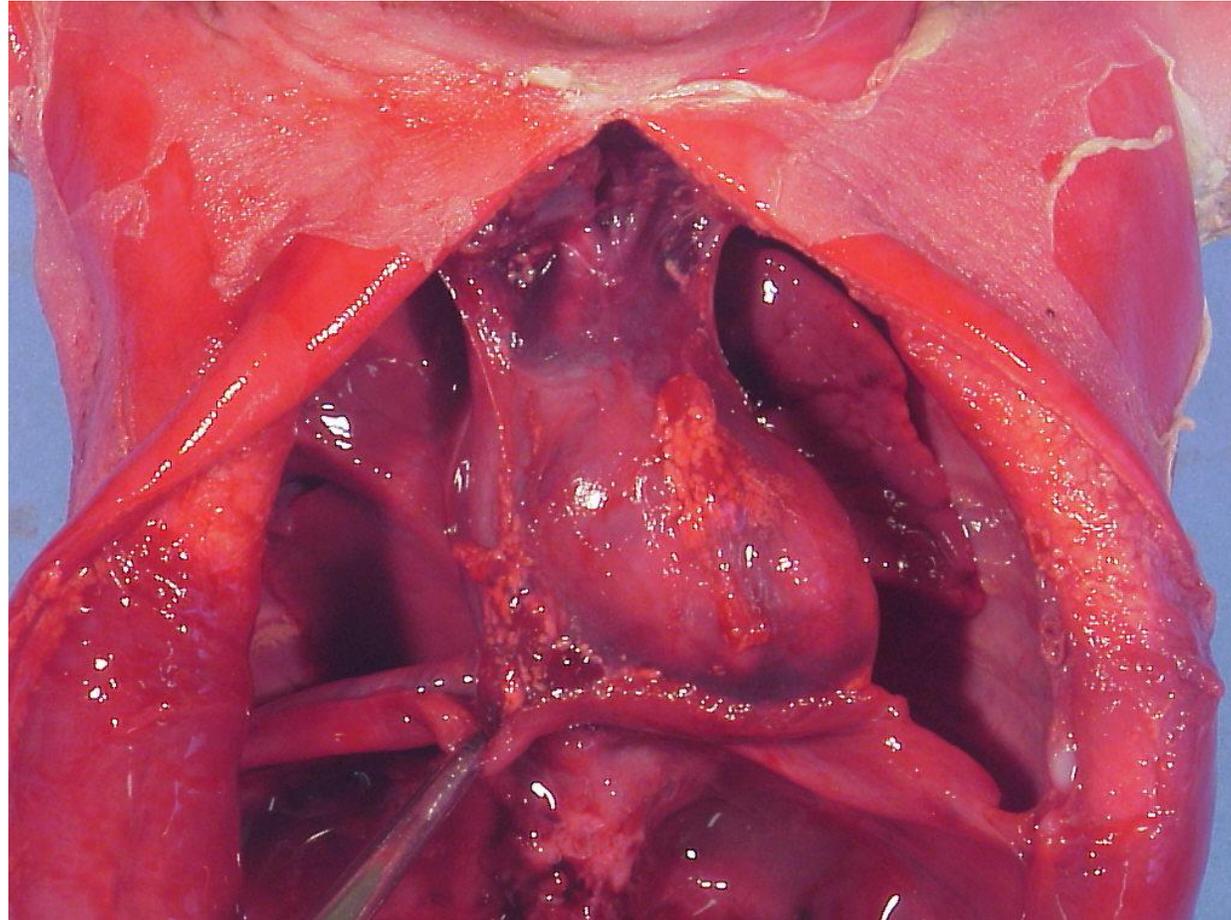
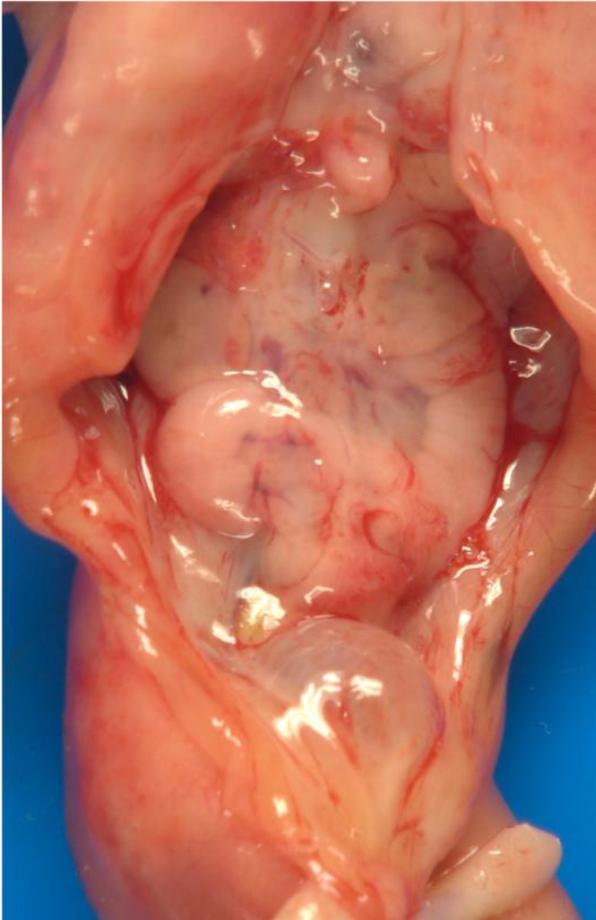


Check for correlation between chromosomal and phenotypical sex

# Internal examination

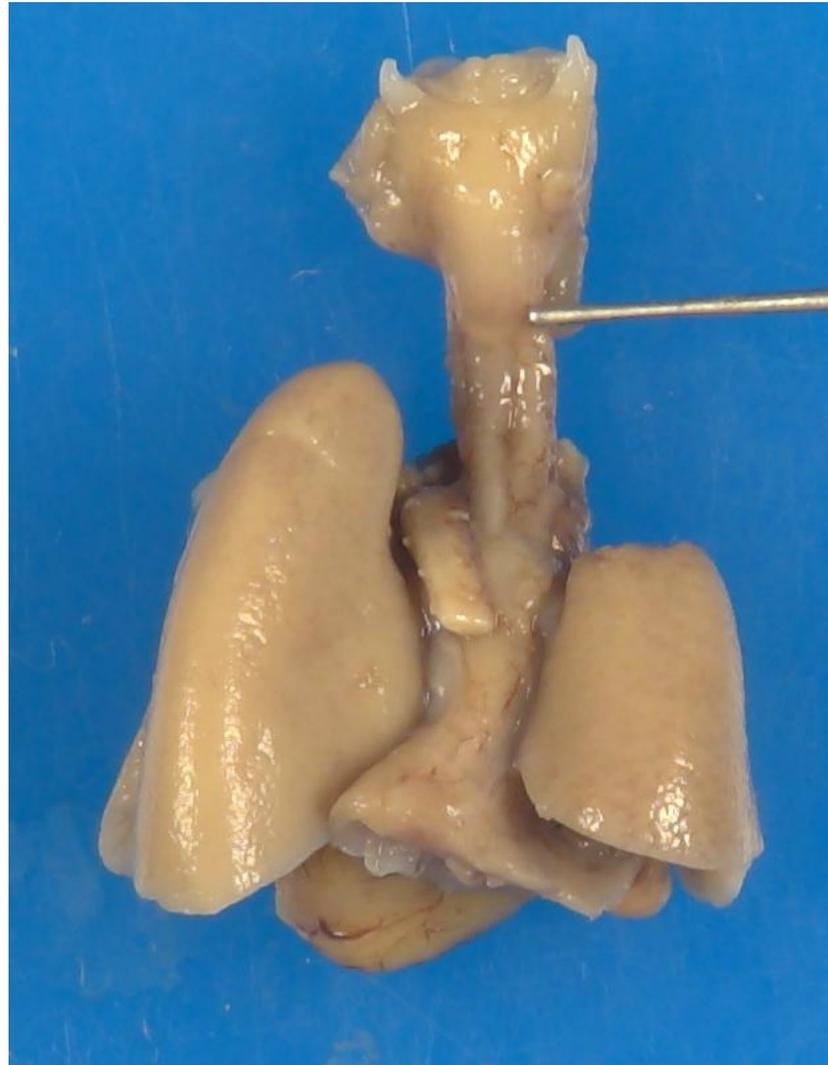
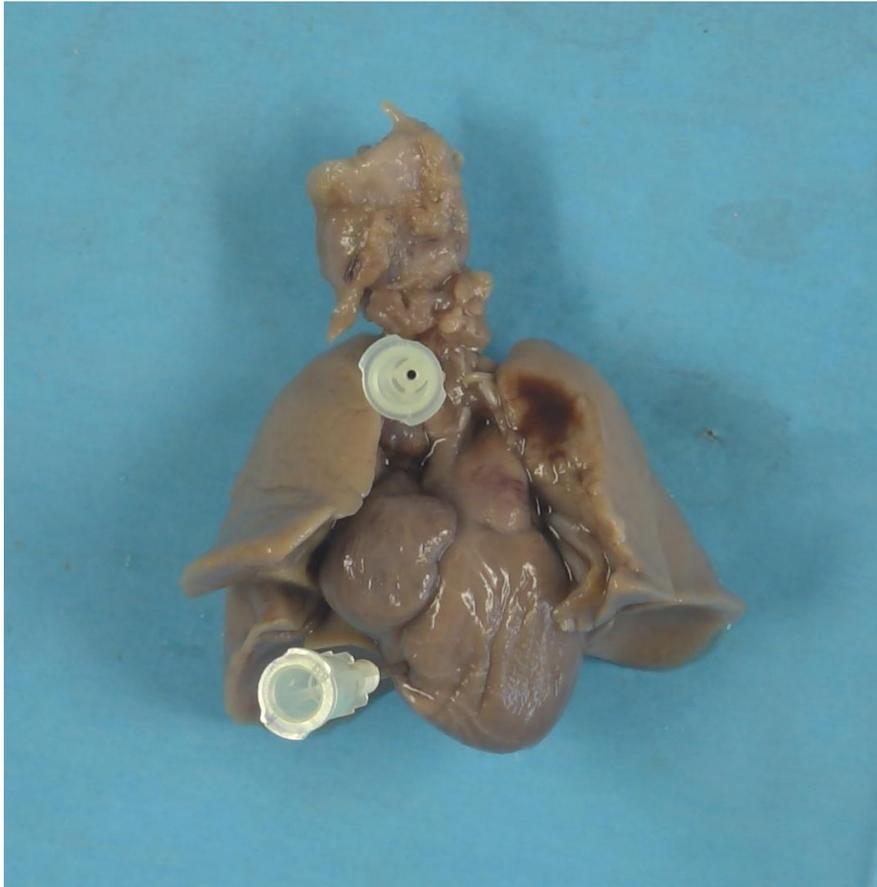


# Internal examination



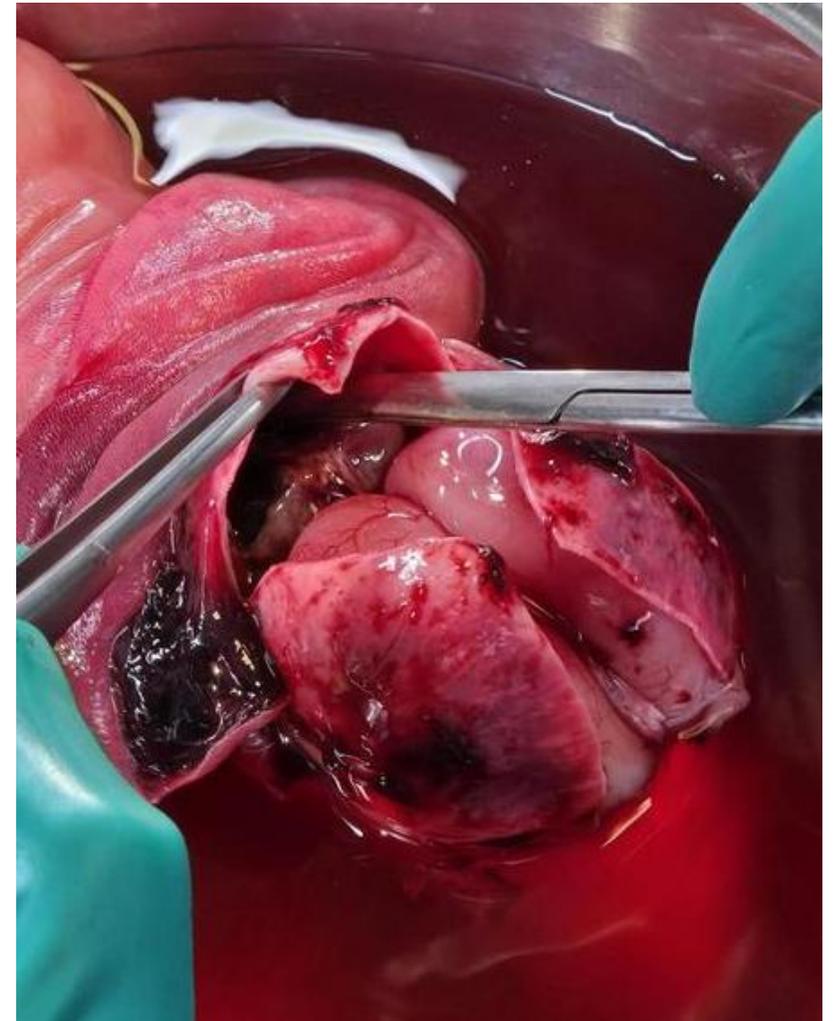
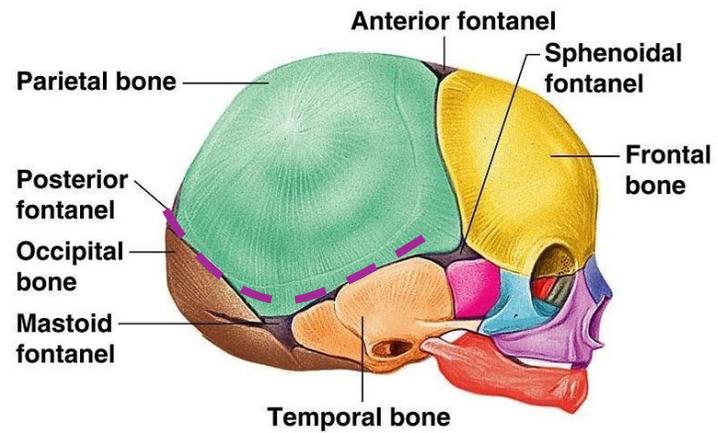
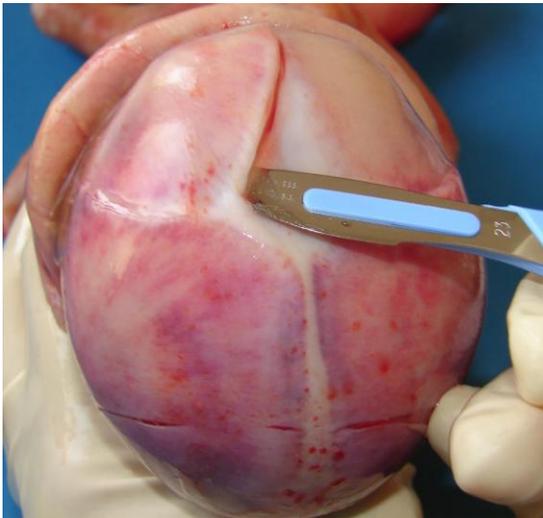
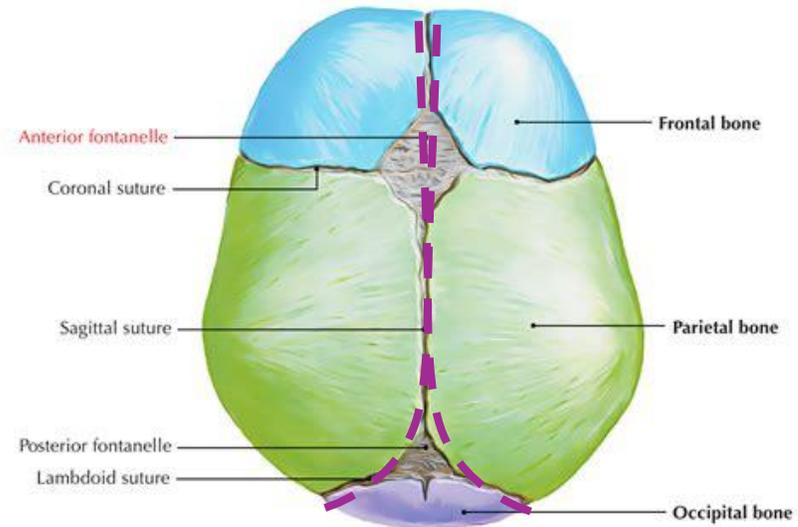
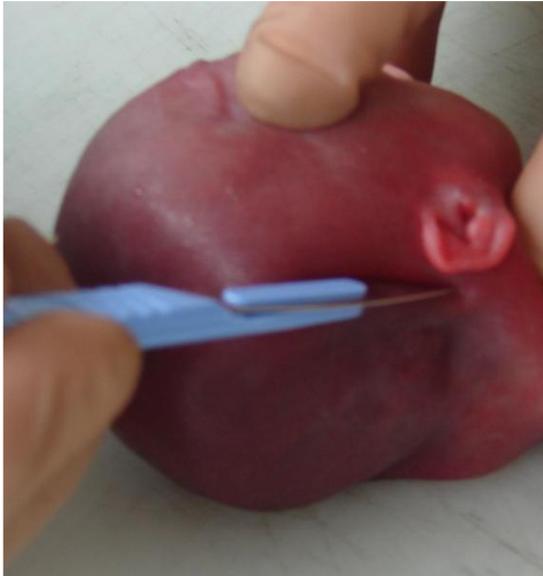
Tissu sample to  
freeze

# Internal examination

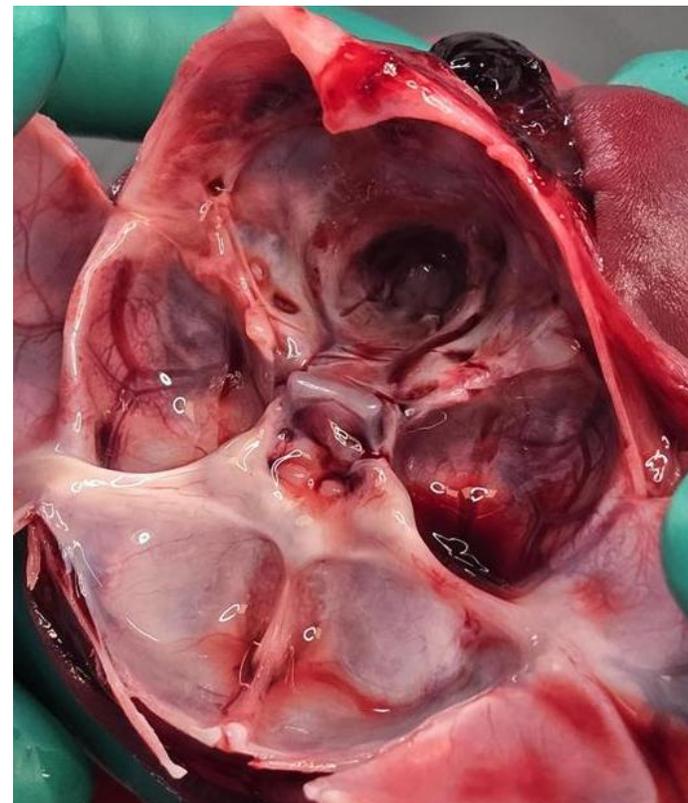
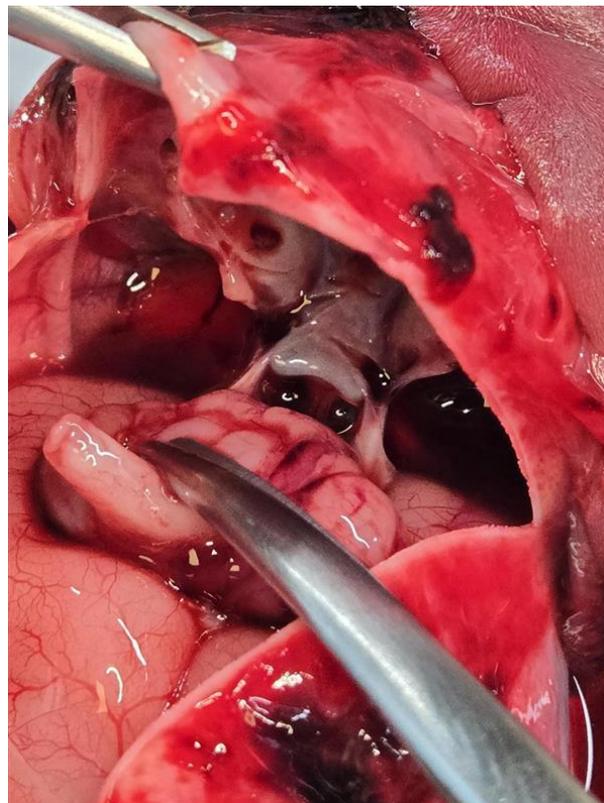
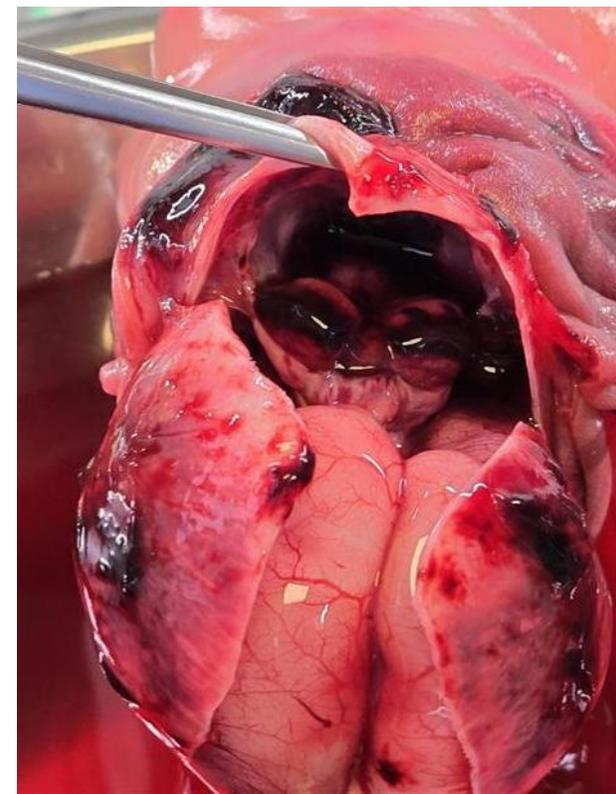


Sampling for histology

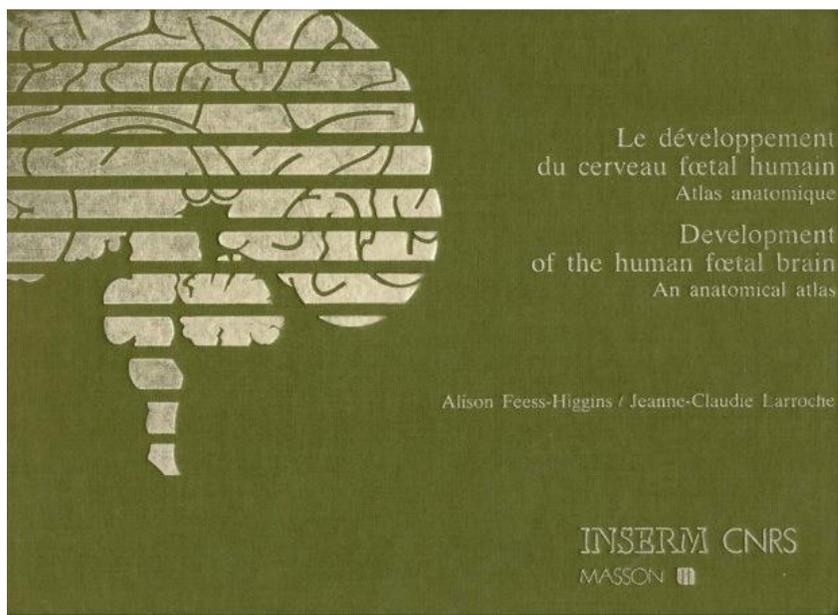
# Brain extraction



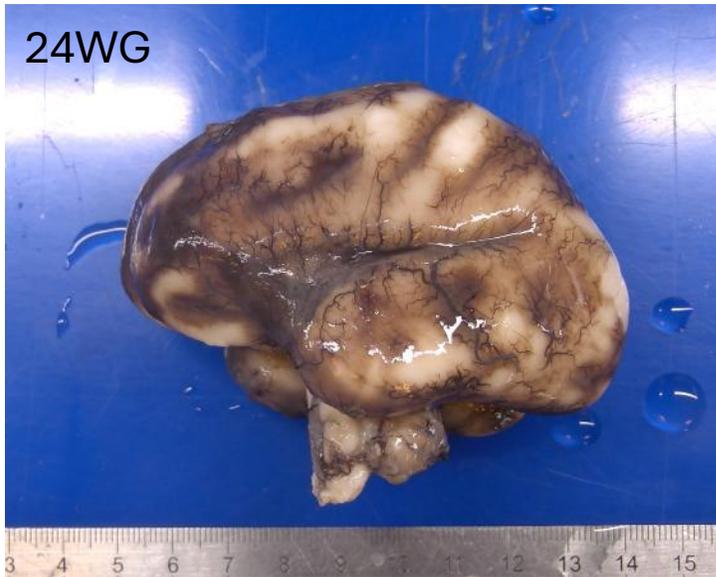
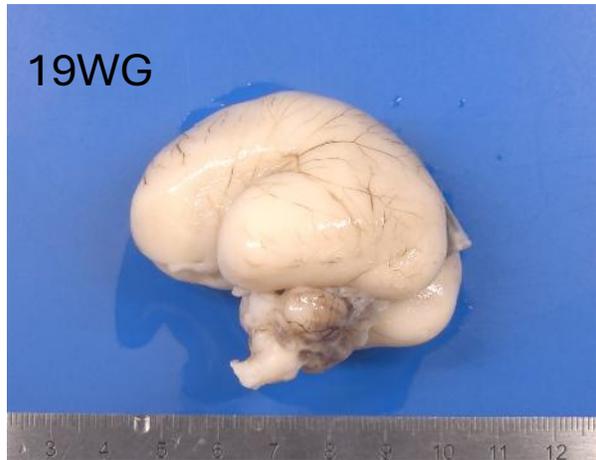
# Brain extraction

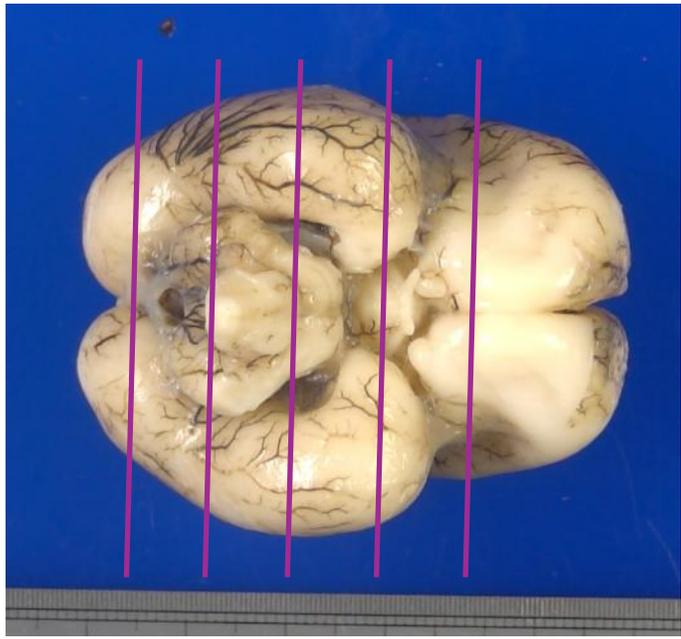


Zinc formalin fixation during 1 to 4 weeks

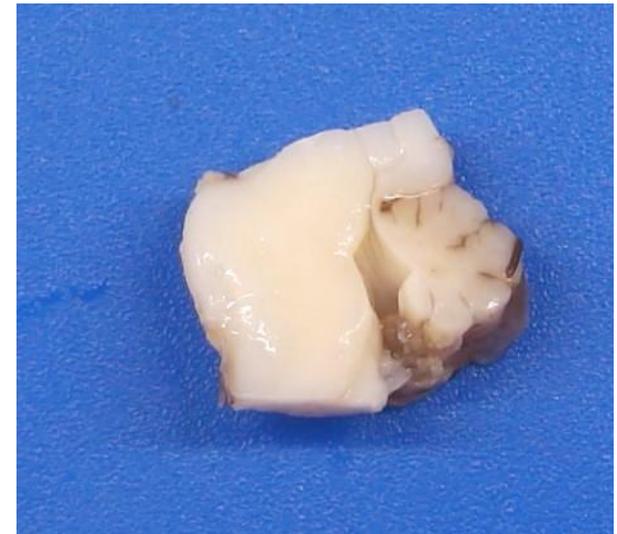
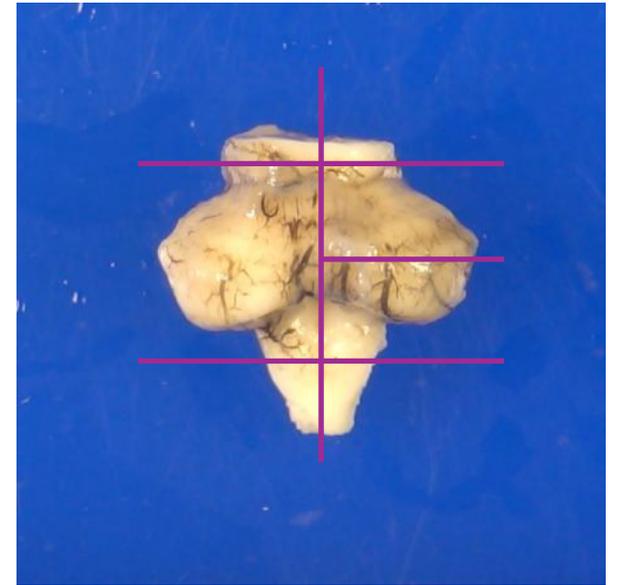


# Size, weight and maturation



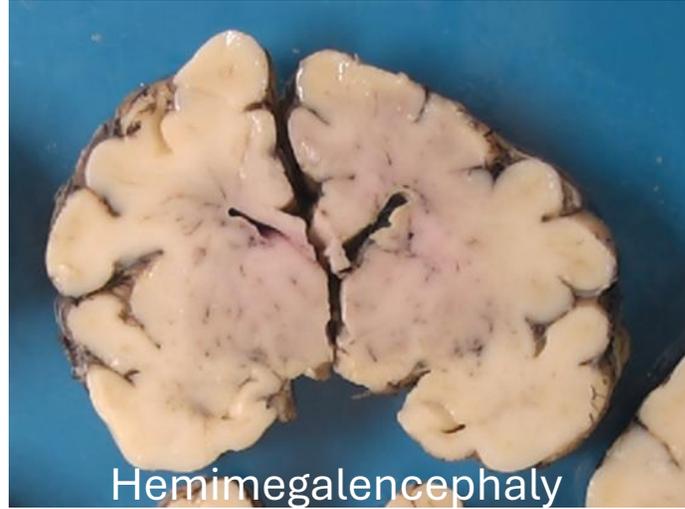


## Brain sections





Hydranencephaly



Hemimegalencephaly



Corpus callosum agenesis



Schizencephaly

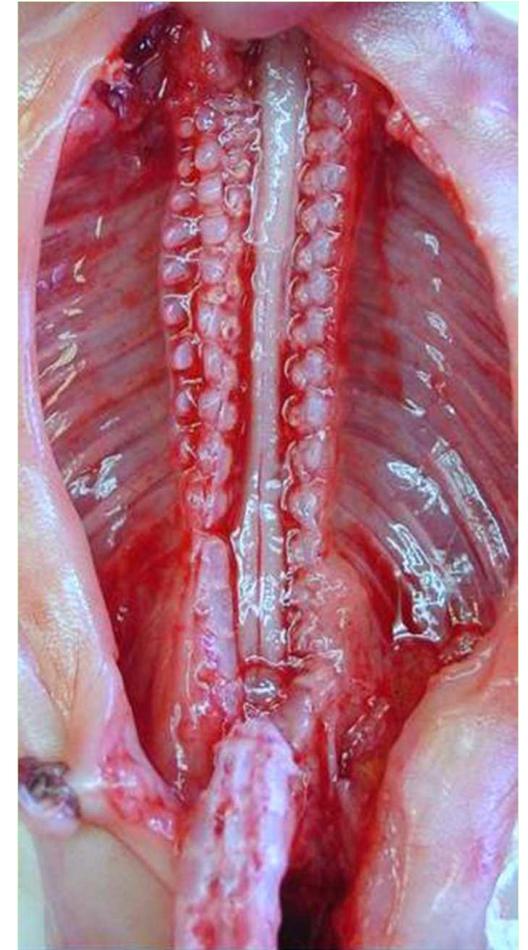
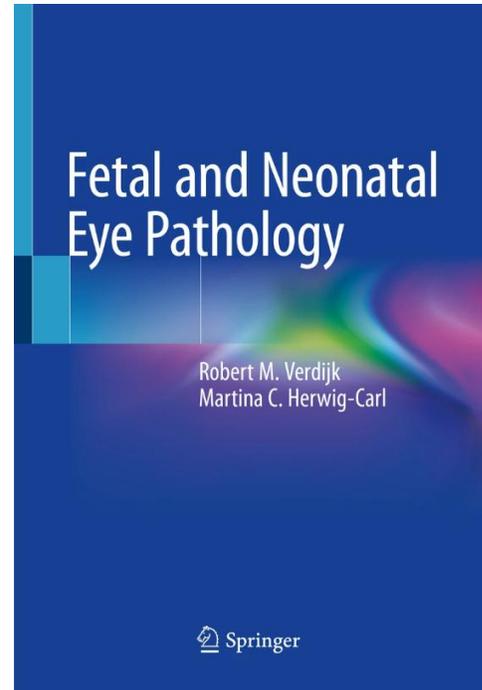


Chiasma agenesis



Dandy Walker

# Eyes and spinal cord





Twins

[www.has-sante.fr/upload/docs/application/pdf/2014-06/protocole\\_examen\\_autopsique\\_foetal\\_neonatal\\_cd\\_20140528\\_vd.pdf](http://www.has-sante.fr/upload/docs/application/pdf/2014-06/protocole_examen_autopsique_foetal_neonatal_cd_20140528_vd.pdf)

**HAS**

HAUTE AUTORITÉ DE SANTÉ

PROCOLE TYPE

## Protocole type d'examen autopsique foetal ou néonatal

Juin 2014

