

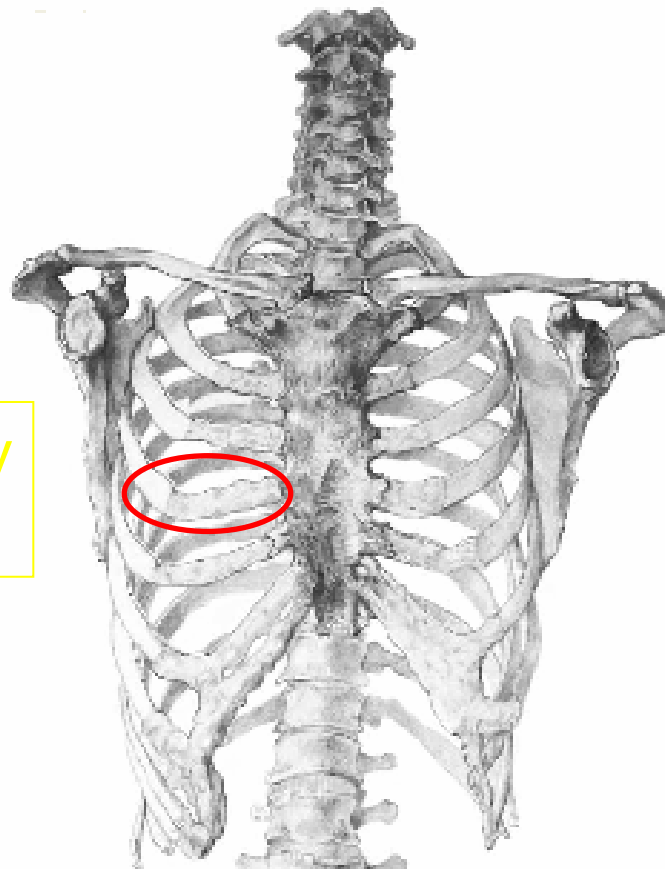
# Age at Death Assessment : the Pubic Symphysis

*DEDOUIT F (1, 2, 3), TELMON N (2, 3),  
JOFFRE F (1), ROUSSEAU H (1), ROUGE D (2, 3)*

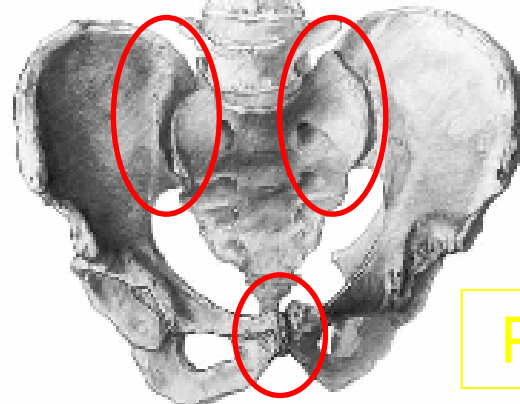
**HOPITAL RANGUEIL-LARREY, TOULOUSE**

Service de Radiologie (1)  
Service de Médecine Légale (2)  
FRE 2960 (3)

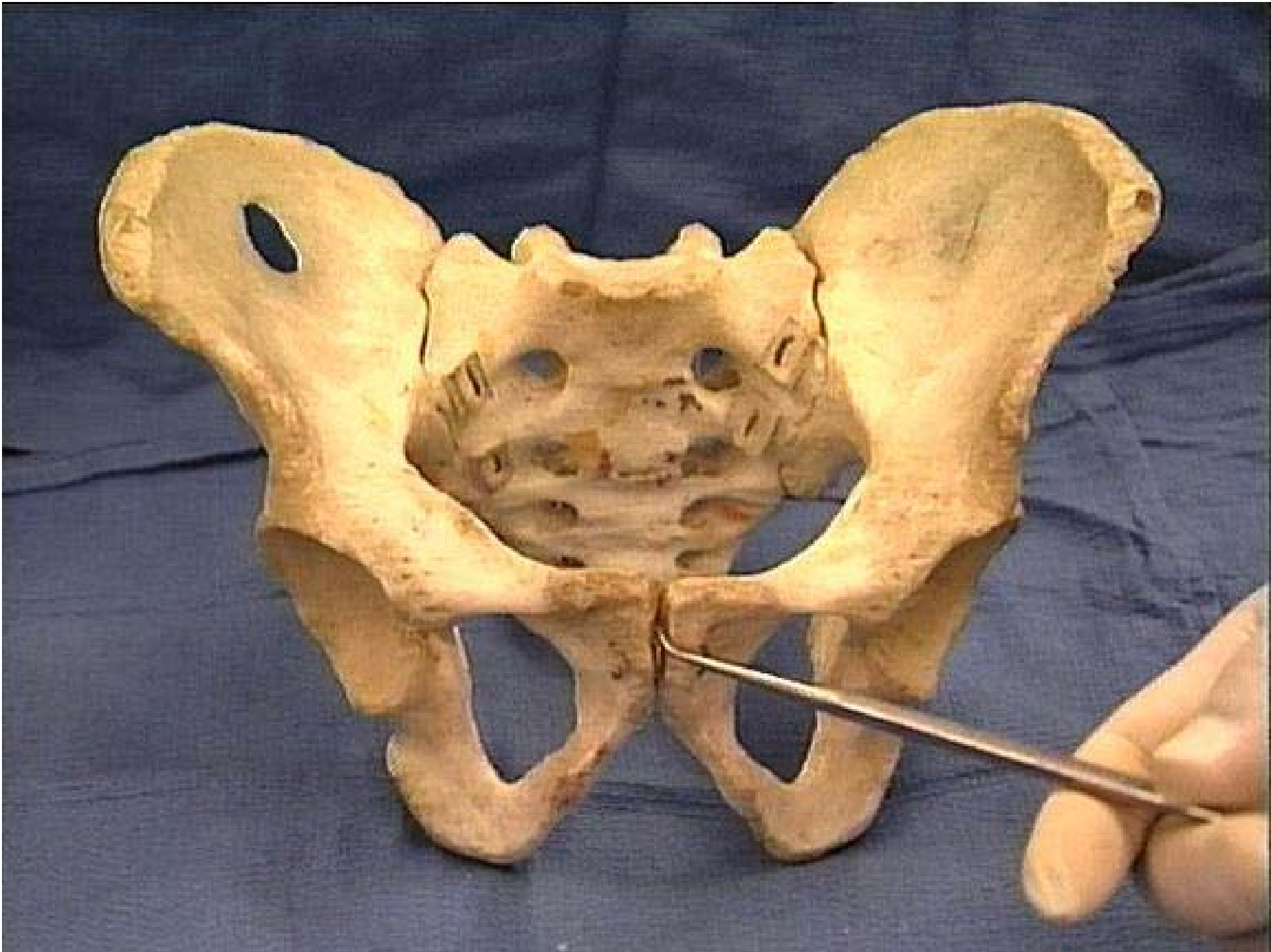
Sternal extremity  
4th right rib

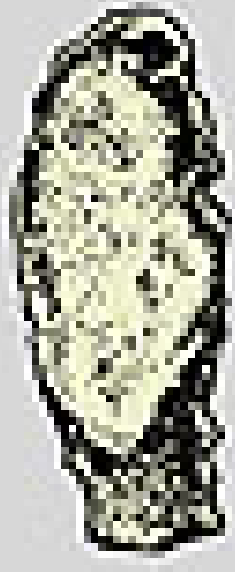
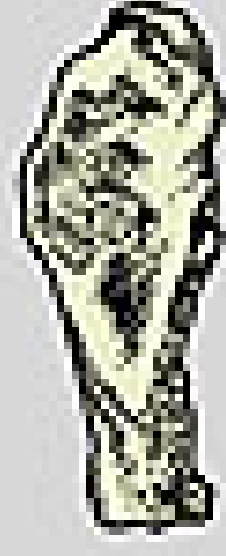
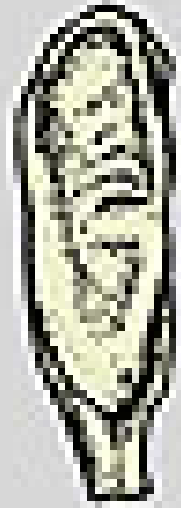
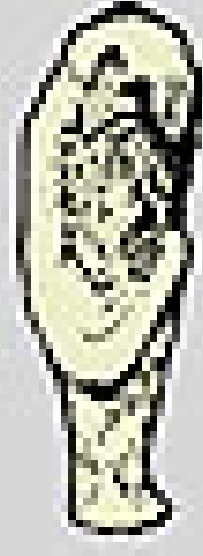
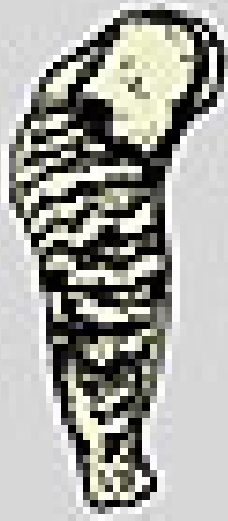
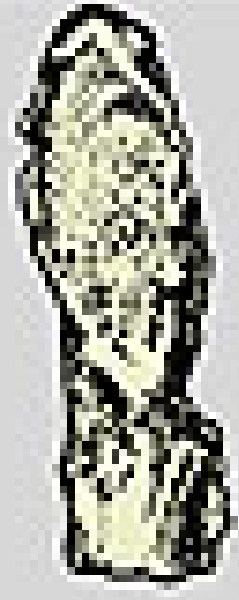
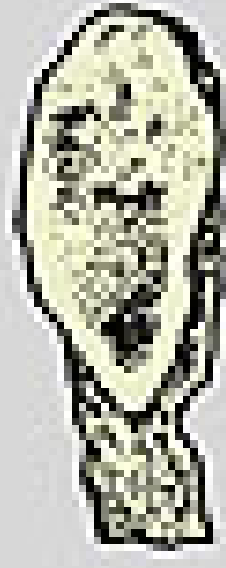
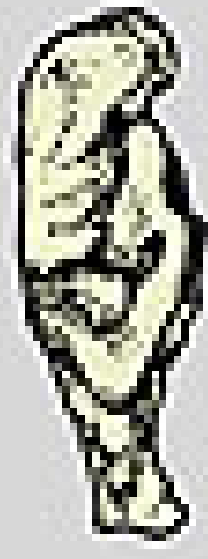


Auricular surfaces



Pubic symphysis







# Pubic symphysis

## *Phase 1:*

- Symphyseal face has a billowing surface composed of ridges and furrows which includes the pubic tubercle.
- The horizontal ridges are well-marked.
- Ventral beveling may be commencing.
- Lack of delimitation for either extremity (upper or lower).



# Pubic symphysis

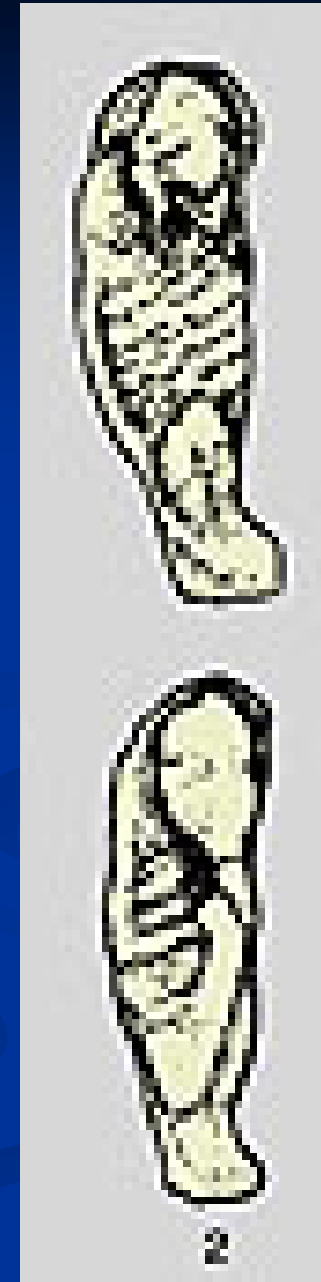
*Phase 1:*



# Pubic symphysis

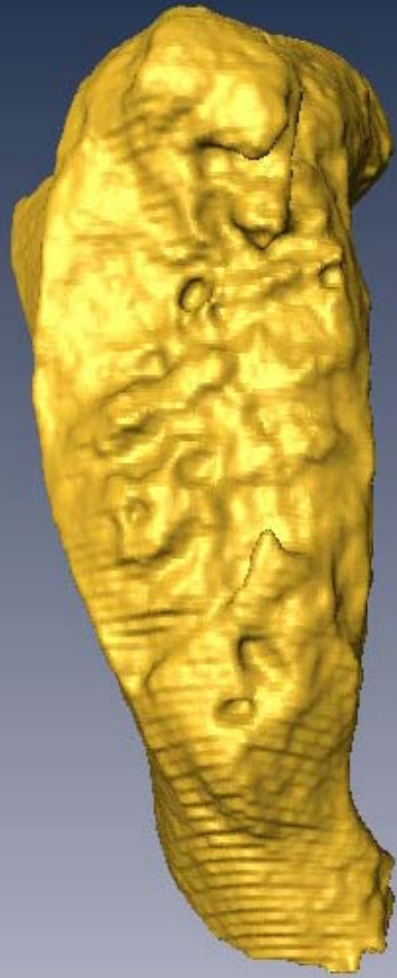
## *Phase 2:*

- Symphyseal face may still show ridge development.
- Lower and upper extremities show early stages of delimitation, with or without ossific nodules.
- Ventral rampart may begin formation as extension from either or both extremities.



# Pubic symphysis

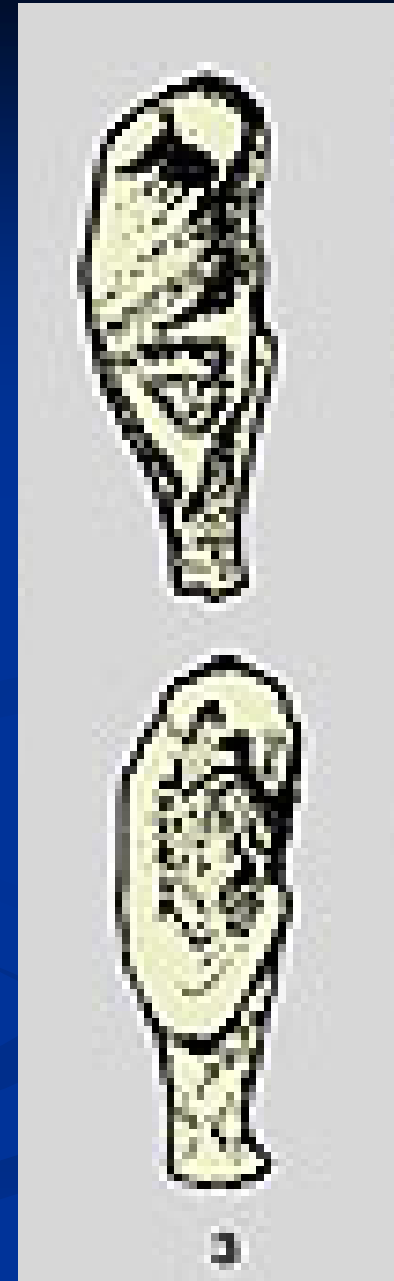
*Phase 2:*



# Pubic symphysis

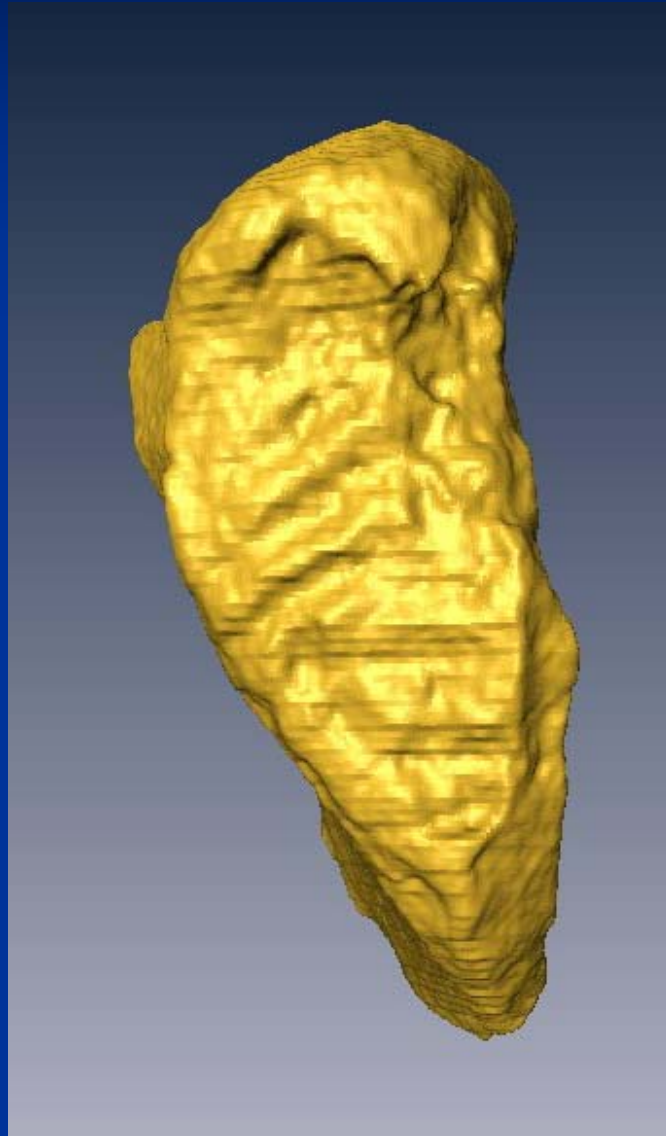
## *Phase 3:*

- Symphyseal face shows lower extremity and ventral rampart in process of completion.
- Fusing ossific nodules may form upper extremity and extend along ventral border.
- Symphyseal face may either be smooth or retain distinct ridges.
- Dorsal plateau is complete.
- No lipping of symphyseal dorsal margin or bony ligamentous outgrowths.



# Pubic symphysis

*Phase 3:*



# Pubic symphysis

## *Phase 4:*

- Symphyseal face :
  - generally fine-grained, although remnants of ridge and furrow system may remain,
  - may have a distinct rim.
  
- Oval outline usually complete at this stage, though a hiatus may occur in upper aspect of ventral circumference.



# Pubic symphysis

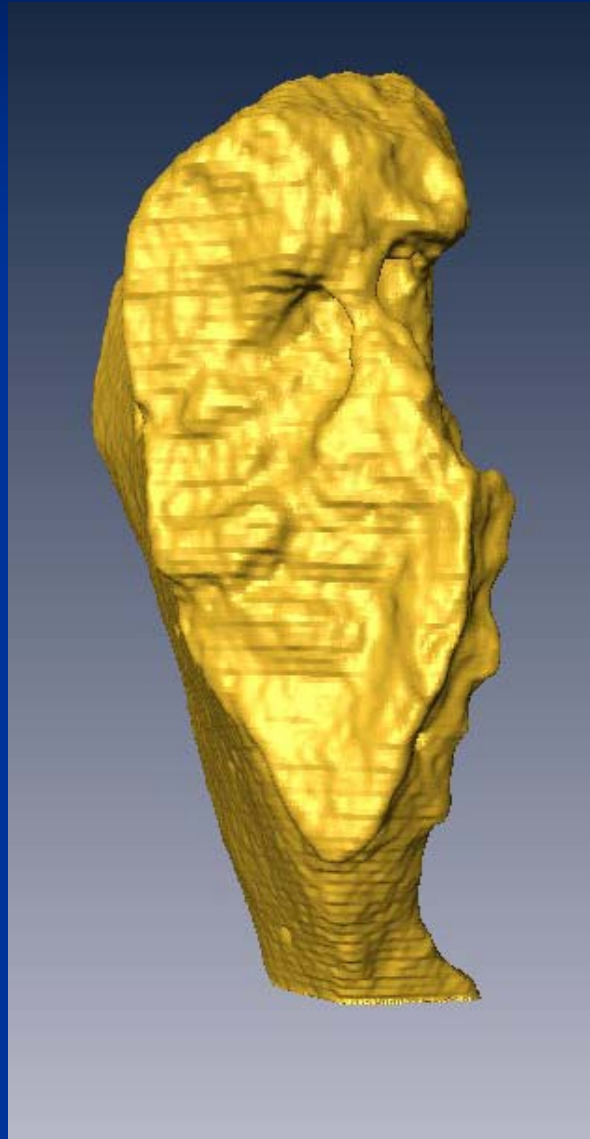
## *Phase 4:*

- Pubic tubercle is fully separated from the symphyseal face through definition of upper extremity.
- Ventrally, bony ligamentous outgrowths may occur in inferior portion of pubic bone adjacent to symphyseal face.
- Slight lipping may appear on dorsal border.



# Pubic symphysis

*Phase 4:*



# Pubic symphysis

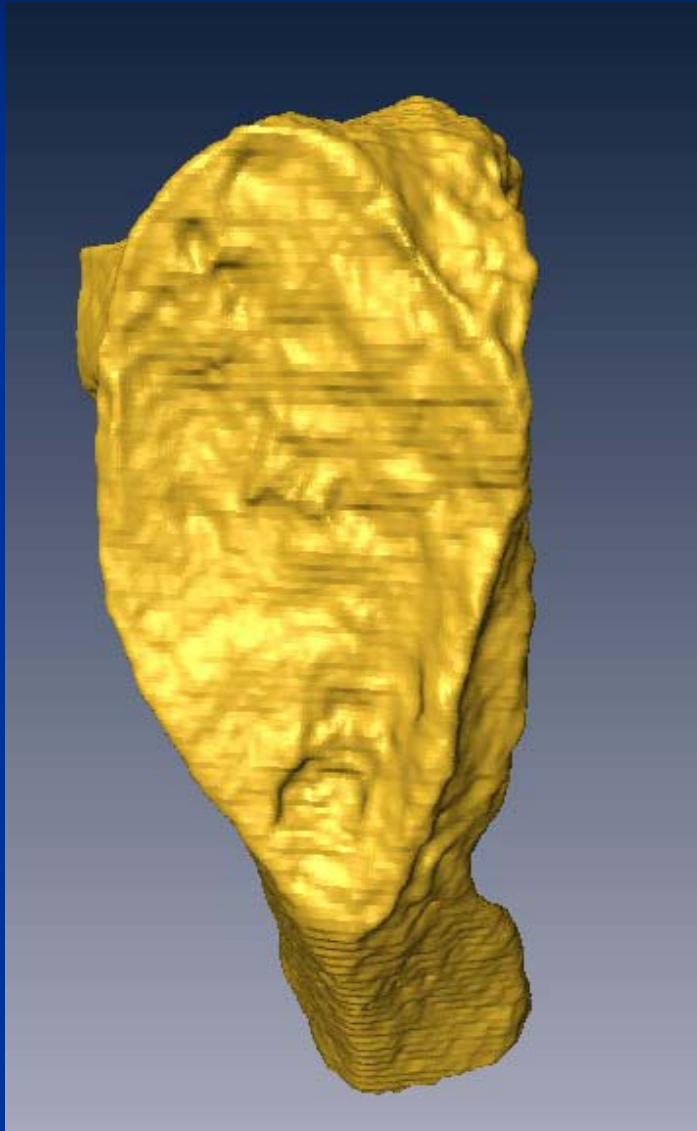
## *Phase 5:*

- Slight depression of the face relative to a completed rim.
- Moderate lipping is usually found on the dorsal border with prominent ligamentous outgrowths on the ventral border.
- Little or no rim erosion, though breakdown possible on superior aspect of ventral border.



# Pubic symphysis

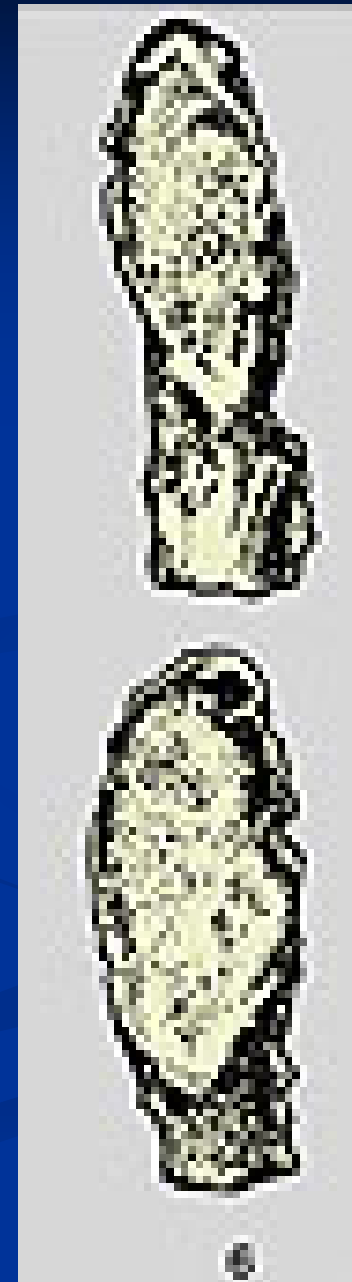
*Phase 5:*



# Pubic symphysis

## *Phase 6:*

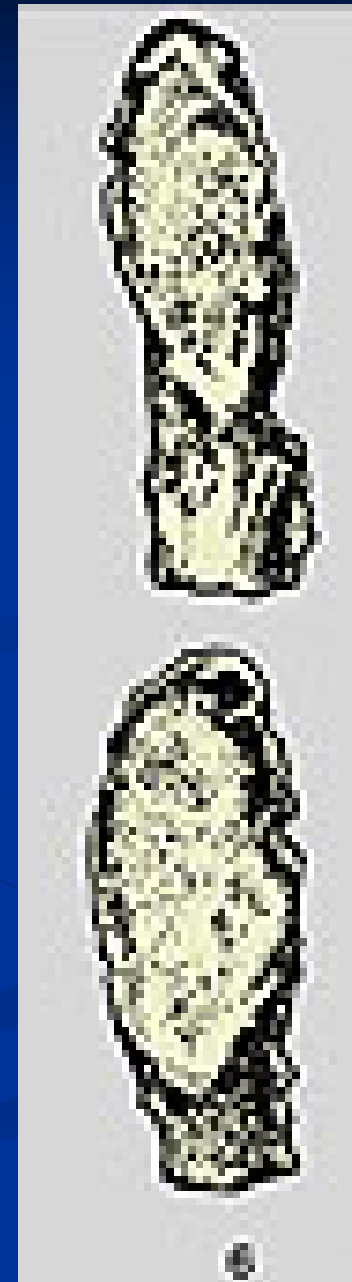
- Symphyseal face shows ongoing depression as rim erodes.
- Ventral ligamentous attachments are marked.
- Pubic tubercle may appear as a separate bony knob.



# Pubic symphysis

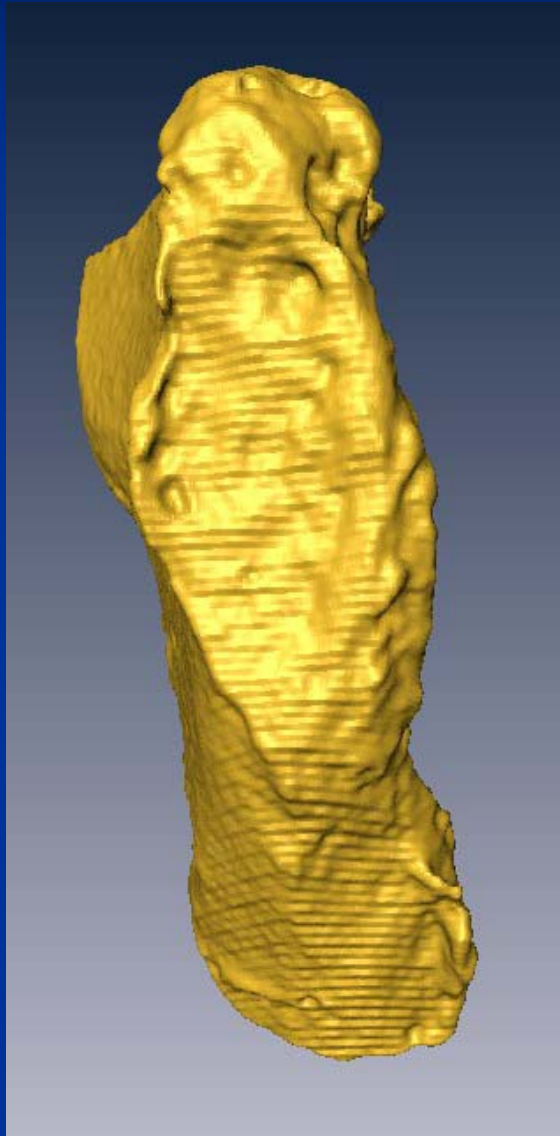
## *Phase 6:*

- Face may be pitted or porous, giving an appearance of disfigurement as the ongoing process of erratic ossification proceeds.
- Crenellations may occur, with the shape of the face often irregular.



# Pubic symphysis

*Phase 6:*



# Pubic symphysis: Females

Stages	Mean	Standard Deviation	Range 95%
I	19.4	2.6	15-24
II	25	4.9	19-40
III	30.7	8.1	21-53
IV	38.2	10.9	26-70
V	48.1	14.6	25-83
VI	60	12.4	42-87

# Pubic symphysis: Males

Stages	Mean	Standard Deviation	Range 95%
I	18.9	2.3	15-23
II	24.7	4.3	19-35
III	28.8	5.9	22-43
IV	36.8	9.6	23-59
V	51	13.6	28-78
VI	62.7	12.4	36-87

# Pubic symphysis: first step

- N. Telmon, A. Gaston, P. Chemla, A. Blanc, F. Joffre , D. Rougé. Application of the Suchey-Brooks method to three-dimensional imaging of the pubic symphysis, J. Forensic Sci. 50 (2005) 507-512,
- Transposition of the Suchey-Brooks method :  
first step

# Pubic symphysis: first step

- Comparative study: 3D reconstructions and dry bones,
- Medico-legal population,
- CT before bone cleaning,
- Suchey and Brooks method,
- Good transposition of the osteoscopic criteria.



# Pubic symphysis: first step

Phase III



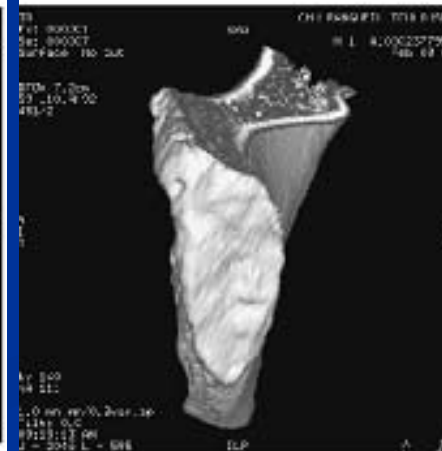
Phase IV



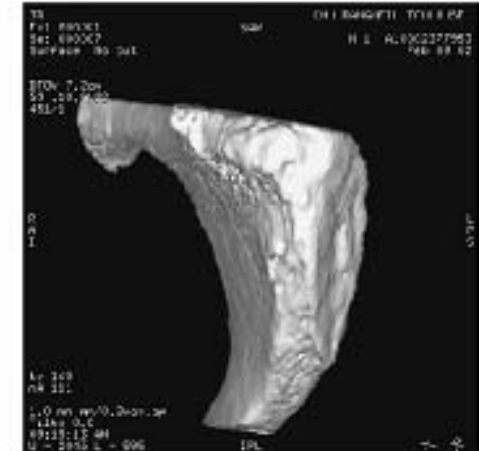
Vue de face



Vue de 3/4 ventral



Vue de face



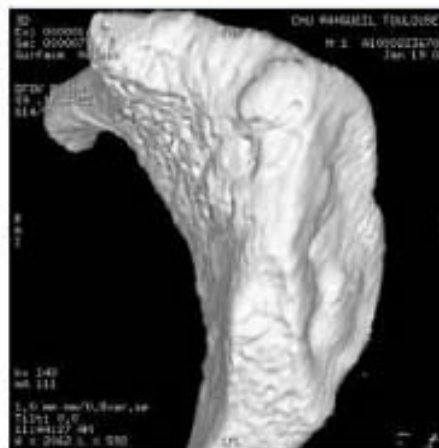
Vue de 3/4 ventral

# Pubic symphysis: first step

Phase V



Vue de face



Vue de 3/4 ventral

Phase VI



Vue de face



Vue de 3/4 ventral

# Pubic symphysis: next step (s)

- CT of casts,
- Characterization of the phases,
- Determination of age related morphological changes,
- Surface analysis: curvatures, elevations, ....
- Comparison subject studied / casts,

# Pubic symphysis: next step(s)

- Possible answer:
  - « The highest corresponding cast is phase X, with a percentage of correspondence of ... % », with histograms,
  - Quantification of the correspondence,
  - Colorimetric approach,
  - Bayesian answer ?

# Pubic symphysis: next step(s)

- Possible answer:

