Differential Diagnosis in Pathology: Postclassic Maya from Ka’kabish, Belize
Grant Smith, Jocelyn Williams, Helen Haines
Department of Anthropology, Trent University

Site and Sample

- Located in north-central Belize, Ka’kabish is a moderately sized Maya site occupied from the Middle Formative (800–600 BC) into the Postclassic period (AD 900–1500) (Haines et al. 2017).
- Human remains were recovered from four chultuns (B-2, C-1, C-2, and C-3) at Ka’kabish.
- A minimum number of 28 individuals were identified in the chultuns.
- Pathological lesions were identified on individuals from chultun C-2, which contained 6 adult individuals.

Pathology

![Fig 1: Adult Sacrum: Shape abnormality, absence of S3-S5](image)
a. Dorsal view of sacrum

![Fig 2: Adult Sacrum: Shape abnormality, absence of S3-S5, ventral view](image)

![Fig 3: Adult Sacrum: Shape abnormality, superior view](image)

![Fig 4: Adult Sacrum: Shape abnormality, absence of S3-S5, inferior view](image)

![Fig 5: Adult Sacrum: Shape abnormality, S1 inferior view](image)

![QR Code](image)  Take picture to see more

Differential Diagnosis

Table 1. Differential Diagnosis of Sacral Pathology

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoclastic hyperplasia</td>
<td>Increased bone density and remodeling of bone</td>
<td>Normal or abnormal bone density</td>
</tr>
<tr>
<td>Endocystic hyperplasia</td>
<td>Hyperplasia of endocystic cells</td>
<td>Normal or abnormal endocystic cell density</td>
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<tr>
<td>Periosteal hyperplasia</td>
<td>Increased bone density at the periosteal surface</td>
<td>Normal or abnormal periosteal bone density</td>
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</tbody>
</table>

Fig 6. Abnormally Shaped T11, T12 and L1 Vertebrae

![Fig 7. Adult Left Humerus: Bowed/Swollen](image)

![Fig 8. Adult Left Radius: Swollen](image)

![Fig 9. Adult Left/Right Fibula: Swollen](image)

Discussion and Conclusion

- Sacrococcygeal agenesis/dysgenesis is often associated with syndromes that include intestinal, urinary, and bowel dysfunctions (Duncan et al. 1991).
  - Shape abnormalities of the long bones in this individual may be evidence of intestinal malabsorption of vitamins and/or minerals (e.g., scurvy, anemia, rickets) which could be related to this congenital defect (Figs 7-9).
- Sacrococcygeal agenesis/dysgenesis is often associated with other defects that can limit lower limb function (Duncan et al. 1991). Diamis (1978) notes that it is difficult to assess impact on mobility in this individual due to fragmentation.
  - No evidence for clubfoot (KLX); talus are poorly preserved but appear normal, calcaneus missing.
  - Fibula (KLX intact) and diaphysis of tibia (poorly preserved) appear normal in size (i.e., no evidence for wasting).
  - Femora and ossa coxae are very fragmented and mostly incomplete, cannot evaluate for congenital hip dislocation.
  - Associated abnormalities to the spine of this individual include:
    - Porosity and depression of the bodies of L1, L3, L4, L5 (Fig 6).
    - L2 spinous processes of lumbar vertebrae are missing.
    - Misshapen vertebral bodies (T11, T12 and L1) and compression of T11 and T12 bodies (Fig 6).