Report on the Exhumation of Human Skeletal Remains from Portion 37 of Farm Uitkomst 23 – Saldanha Bay Municipality

(Permit No. 2007-11-001) (Ref. No. C13/3/6/2/1/1/1/1/C4) Heritage Western Cape

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1. Introduction

Instructions were given by Centre for Archaeological Resource Management cc (CARM) under permit number 2007-11-001 (Ref. No. C13/3/6/2/1/1/1/1/C4) from Heritage Western Cape to remove human skeletal material from Portion 37 of the Farm Uitkomst 23, Paternoster, Saldanha Bay Municipality. This material had been disturbed by earth moving equipment, which was halted by an archaeological monitor once exposure took place. Instructions were given to the local working group to leave the skeleton *in situ*, and to cover up the bones. The area was then cordoned off.

Subsequent to the removal of skeletons 1 & 2, a third skeleton was uncovered during construction and we were directed by CARM cc to remove this individual under the same permit.

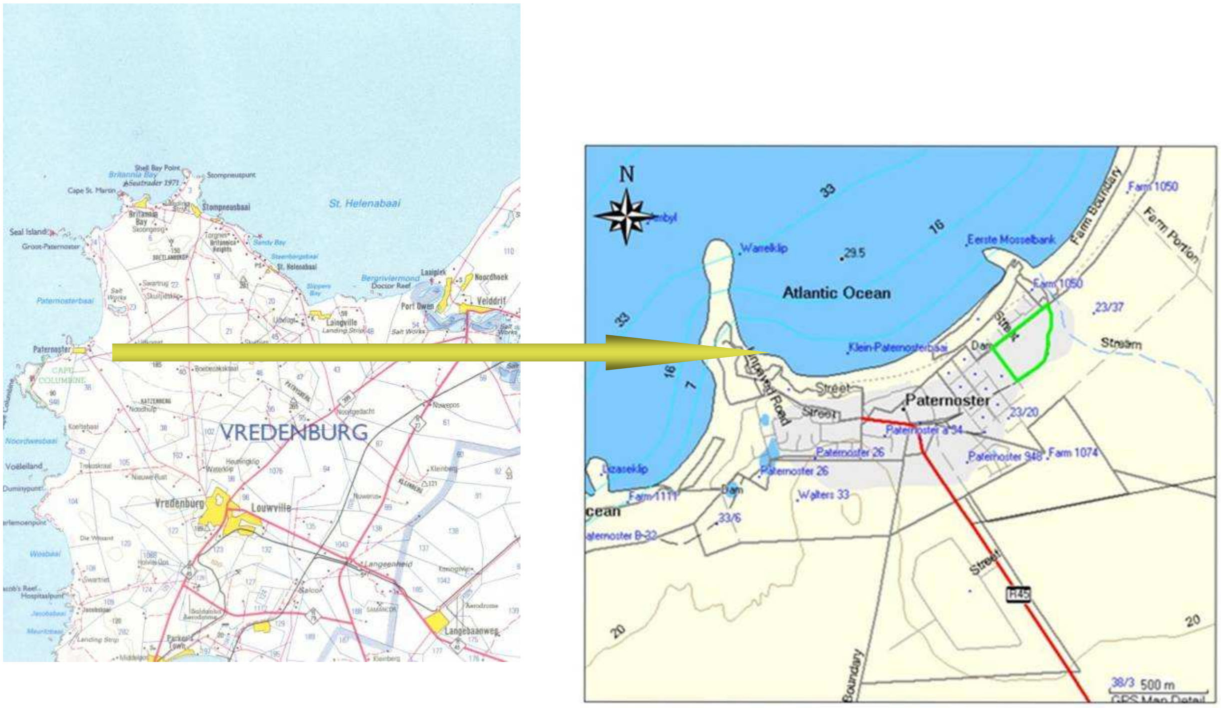

Figure 1.1: Site location. (Source 3218 Clanwilliam and WGS84 DD 3271D)

2. Exhumation of Skeletons 1 and 2

On 10 November 2007 a crew of four people arrived at the development site. Fortunately, one of the crew had been on site when the skeleton was exposed, so knew where to excavate (Fig. 2.1). We set up a 2 x 2m grid across the area, oriented to magnetic north, and took a GPS reading (E 17° 54.050': S 32° 48.314') (Fig. 2.2).

Figure 2.1: Location of skeletal remains

After mapping the human bones that were visible on the surface (Fig. 2.3), we began carefully excavating the two opposing squares 1 & 3. We passed the sand through a 3mm mesh sieve, and some bones were retrieved from the top 5cm. We assumed that these had been part of the initial disturbance from earth moving equipment. We continued to dig down, but the sand was sterile. Opening up squares 2 & 4 proved equally fruitless, and subsequent deep shovelling with a spade again produced no bones *in situ*.

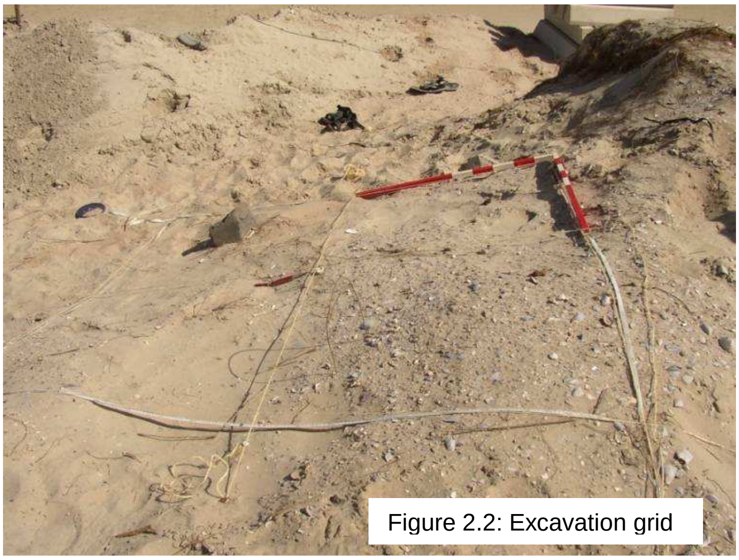

Figure 2.2: Excavation grid

As this did not make any sense to our colleague who had seen the burial when it was initially exposed, we had to conclude that the burial had been moved. Fortunately, he still had the phone number of the local worker with whom he had worked on the day the skeleton had been uncovered. He called this person, to be told that indeed he had moved the bones to protect them, had dug a hole, and placed them under a plastic bag before covering with sand (Fig. 2.4), and marked the place with a metal stake.

Figure 2.3: Skeletal remains on the surface

We immediately knew where the bones should be, as the stake was obvious outside our grid. The bones were in the hole, as described (Fig.2.5). It turned out there were actually two individuals, one of which was partially missing.

The bones were then collected, boxed and placed with the excavation gear in the car for transport and analysis to Cape Town.

Because the bones had been moved illegally by an untrained person (and against instructions), the context of the burial, including the relationship of the skeletons to each other and to the shell midden, and the orientation of the bodies, has been lost. This is unfortunate, as the bones are in excellent condition, and would, presumably, have offered important information.

Figure 2.4: Location of skeletal remains under plastic bag

Figure 2.5: uncovered remains

Figure 2.6: large bovid bone

In addition to the human bones there was a single vertebra of a large bovid (cow or eland) (see Fig. 4.3), and a skull fragment, also of a large bovid (Fig. 2.6), was lying on the edge of the midden deposit. Because the bones had been removed without adequate documentation, we are uncertain whether these bones were directly associated with the human burials.

Exhumation of Skeleton 3

On 11 Jan 2008, a crew of three departed from Cape Town at 0700, and arrived on site at Paternoster by 0845.

Figure 3.1: location of skeleton 3 relative to the location of skeletons 1 and 2 (indicated by arrow) with Kasteelberg in the background

After removing the hay bale marking the site of the grave (Fig. 3.1), we noted that the skull was exposed on the surface. A 2 x 2m grid aligned to magnetic north was laid, using the skull as the 'cross hairs' of the grid (Fig. 3.2). We started by clearing the loose surface material, and could see that the shell and straw was purely on the surface, presumably strewn to keep the sand from blowing. The skeleton was basically in hard, compacted, mostly sterile sand, except around the skull. This alerted us to the fact that the skull had probably been moved and then replaced. This was confirmed by finding some straw under the mandible.

The rest of the skeleton was *in situ*, so excavation started in squares B1 and D1, and the deposit was passed through a 3mm mesh sieve. These squares turned out to have the bulk of the remainder of the skeleton which was tightly flexed. Some long bones and the skull were exposed, and this allowed us to photograph how the body was oriented (Fig. 3.3).

Figure 3.2

Figure 3.3

Once the skull and mandible were removed, we could see that the face had been damaged, possibly when the body was initially discovered. We were now in a position to expose the rib cage and vertebral column (Fig. 3.4). The hands were placed close to where the skull had been before disturbance. Close to the finger bones were 26 ostrich eggshell beads, unfortunately scattered, so we were unable to ascertain if they had been around the wrists (Figures 3.5 and 3.6). There were also a few sea shells close to the head, in the otherwise sterile matrix. These consisted of one whole mussel, a small limpet and three whole whelks, plus a few broken pieces and a dune mole phalange. It is possible that the whole shells represented some form of grave offering. No other grave goods were evident, nor were we able to distinguish a grave pit in the homogenous clean sands.

Figure 3.4

Figure 3.5

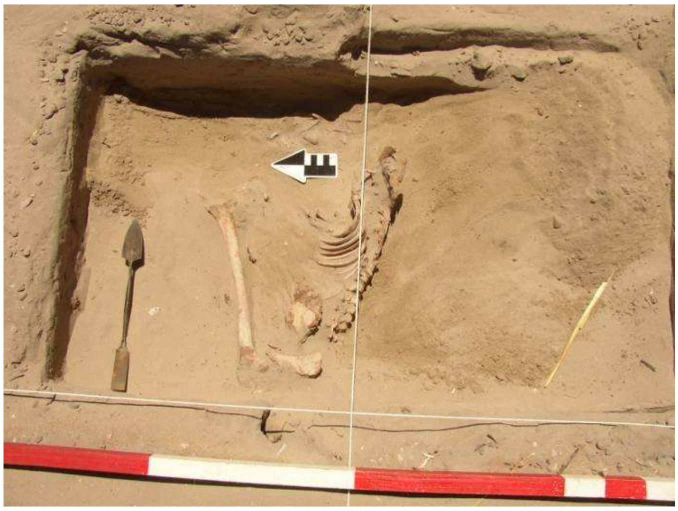

Figure 3.6: *in situ* ostrich eggshell bead (indicated by arrow)

General

It would appear that the body had been buried in clean sand, either below, or adjacent to the main midden, which, unfortunately had been removed by heavy earth-moving equipment (possibly exposing the skull) by the time we were on site. We are thus unable to state how the body related to any stratigraphic sequence.

Skeleton 3 was located within 20m of the previously salvaged skeletons 1 and 2 (Fig. 3.1). Whether this represents a coherent burial place is impossible to state, although dating of the skeletons could give some idea if they were all buried within the same period.

The ostrich eggshell beads, and possibly the sea shells, are a nice touch, considering how few grave goods are usually found with burials on the west coast, although beads associated with skeletons are known in some cases (Morris 1992). The beads range in size (outside diameter) from 4.7mm to 5.4 mm. This would place them within the range of hunter-gatherer size beads (Smith *et al* 1991).

3. Analysis of the Skeletal Remains of Skeletons 1 and 2 (prepared by Thabang Manyaapelo, Department of Anatomy, University of Cape Town)

The osteological data recording standards from Buikstra and Ubelaker (1994) are used as a guide in this report. The skeletal elements observed indicate that two human individuals were uncovered (A and B), together with one non-human skeletal element. Individual A has a fairly complete skeleton (see Tables 1-4 and Figure 4.1) while Individual B is grossly incomplete (See Figure 4.2).

4.1. Individual A:

The total number of skeletal elements for individual A includes:

Cranial Bones and Joint Surfaces					
	Left	Right		Left	Right
Frontal	Present	Present	Sphenoid	Present	Present
Parietal	Present	Present	Zygomatic	Present	Present
Occipital	Present	Present	Maxilla	Present	Present
Temporal	Present	Present	Palatine	Present	Present
Temporo-mandibular Joint	Present	Present	Mandible	Present	Present

Table 1: Cranial Bones and Joint Surfaces

Post-cranial Bones and Joint Surfaces					
	Left	Right		Left	Right
Clavicle	Present	Present	Ilium	Present	Present
Scapula body	Present	Present	Ischium	Present	Present
Glenoid Fossa	Present	Present	Pubis	½ surface eroded	¼ surface eroded
Patella	Absent	Present	Present	Present	Present
Sacrum	Present	Present	Auricula Surface	Present	Present

Table 2: Post-cranial Bones and Joint Surfaces

Skeletal Element	Quantity
Sternum	Manubrium and Body
Cervical Vertebrae	5
Thoracic Vertebrae	8
Lumbar Vertebrae	3
Ribs left side	11
Ribs right side	10

Table 3: Skeletal elements present

Long Bones			
		Left	Right
Humerus		Present	Present
Radius		Present	Present
Ulna		Present	Present
Femur		Present	Present
Tibia		Present	Present
Fibula		Present	Present
Talus		Absent	Present
Calcaneus		Present	Present
Hand	Carpals	2	5
	Metacarpals	3	5
	Phalanges	3	2
Foot	Tarsals	2	1
	Metatarsals	2	2
	Phalanges	1	3

Table 4: Long bone elements

The colour of the skeletal bone fragments recovered (Individual A) is consistent with bone interred in sandy soil. Some parts show a bleaching form of discolouration which suggests some exposure of these concerned skeletal parts. These include the left side of the skull (left maxilla and left mandible); left carpals; left metacarpals as well as the left talus. There are also a few other bones whose appearance is bleached but are inconsistent with only left side exposure. These include one right middle and one right distal phalanges.


Figure 4.1: Skeletal elements of Individual A

4.2 Individual B:

The skeletal elements for Individual B do not allow for a proper ageing and sexing. The discolorations of the cranial and humeral fragments of Individual B suggest a sandy soil burial with some exposure. No pathologies could be observed from all these skeletal fragments from this individual. The total number of skeletal elements for Individual B includes:

- Right scapula (a)
- Two right side ribs (b)
- Fragmented left humerus (c)
- Two fragmented left parietal bones and one unidentified cranial fragment (d)
- One unidentified bone fragment (e)

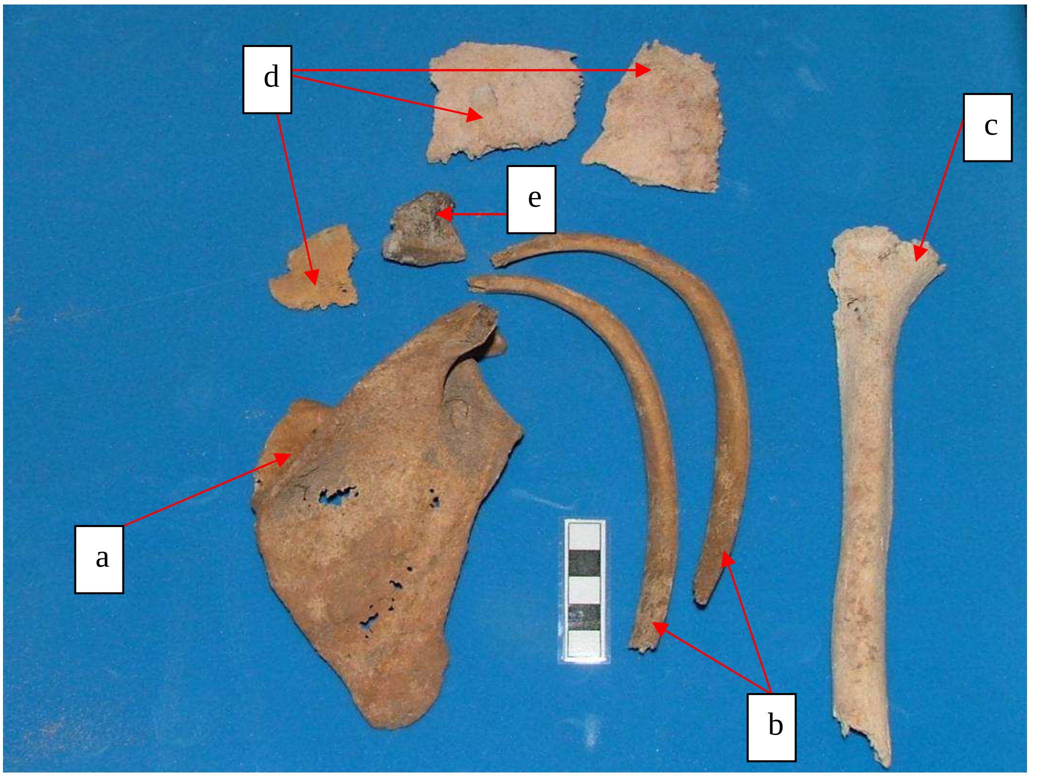

Figure 4.1: Individual B skeletal elements

4.3 Non Human Faunal Remains:

A single non-human bone was collected with the human skeletons. This is a vertebra of a large bovid (Figure 4.3).

Figure 4.3: Large Bovid Vertebra

4.4 Age Estimation

The following analysis is only for Individual A.

Suture closure as well as the Suchey – Brooks pubis age estimation technique (Buikstra and Ubelaker, 1994) shows that this individual must have been between the ages of 30 and 40 at the time of death.

4.5 Sex Estimation

The subpubic bone has a concavity, a ventral arc and a ridge on the medial aspects. The nuchal crest, mastoid process, supraorbital margin and the glabella have gracile features. The mental eminence is moderately developed. The skull and pelvis sex estimation landmarks convincingly suggest a female individual with no signs of any obstetric history.

4.6 Stature Estimation

Using the Feldesman *et al* (1990) stature reconstruction formula (femur length in mm × 3.745) on the left femur (390 mm) this individual was at least 1.46 metres tall at death. The mean stature for the KhoiSan is 1.56 m, men and women combined (Wells 1967).

4.7 Population Affinity

The cranial metric measurements are consistent with a female forager KhoiSan individual (Rightmire 1971). The alveolar prognathism (Figure 4.4) seen is, however, inconsistent with the morphology of KhoiSan populations. This is more a feature of Bantu-speaking peoples from tropical Africa, who arrived in South Africa only after AD500 (Vansina 1995), and were not known to have inhabited the Western Cape.

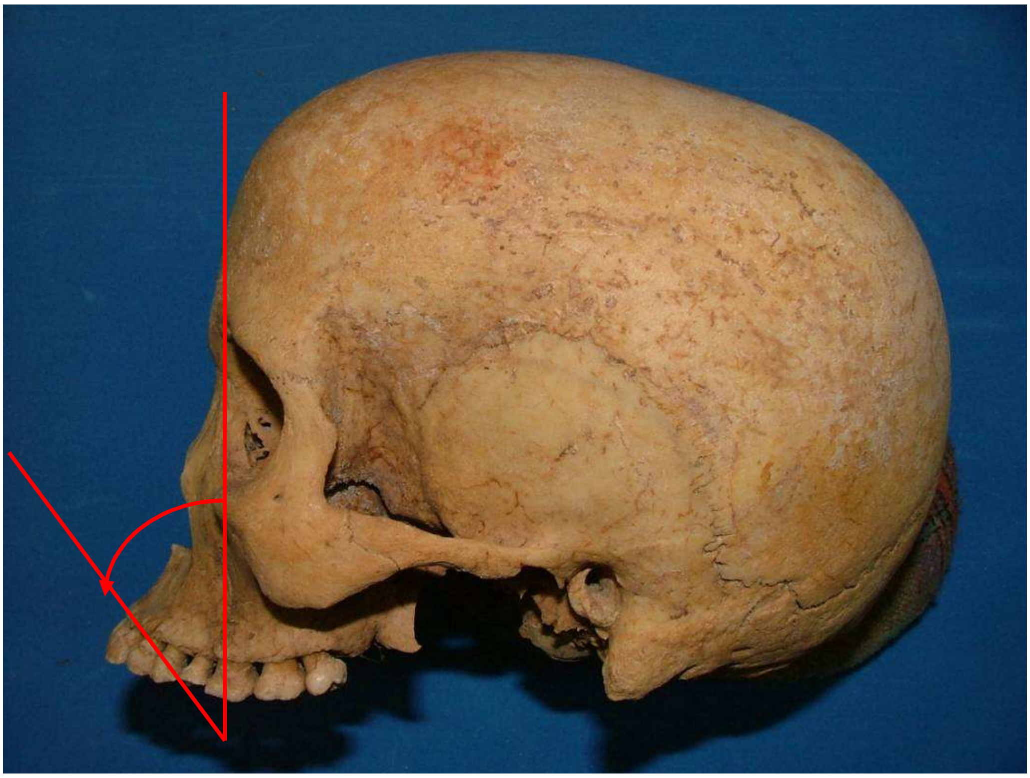

Figure 4.4: Alveolar prognathism as seen in Individual A.

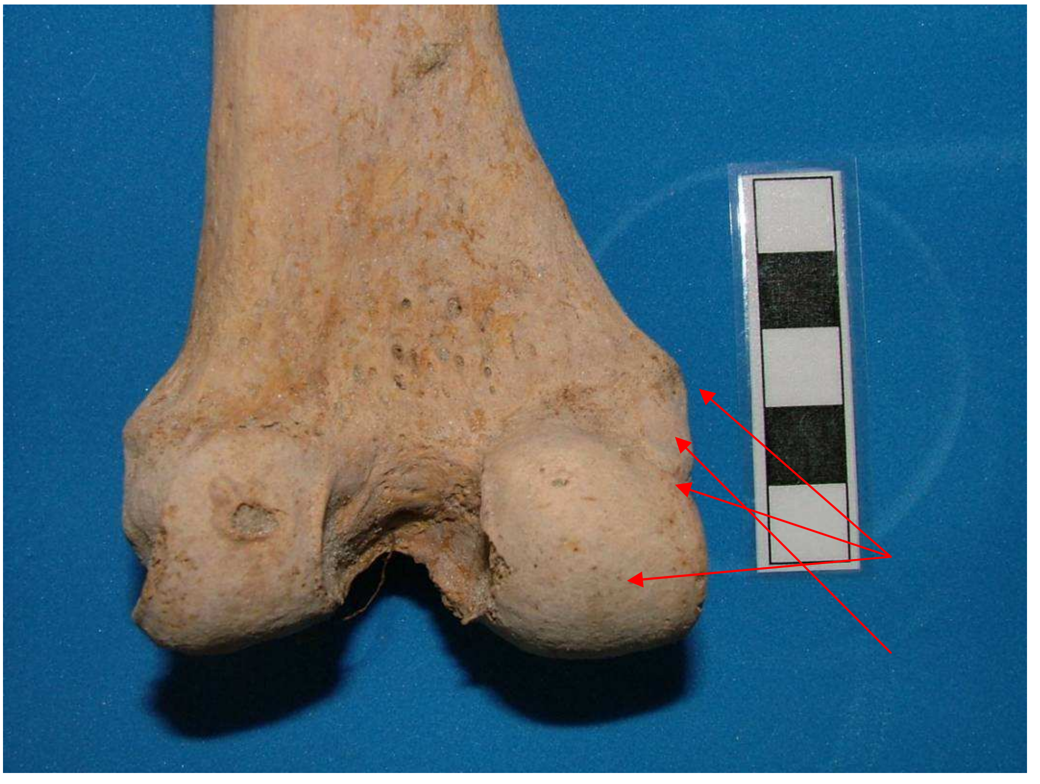

Figure 4.5: Squatting facet on distal posterior surface of left femur

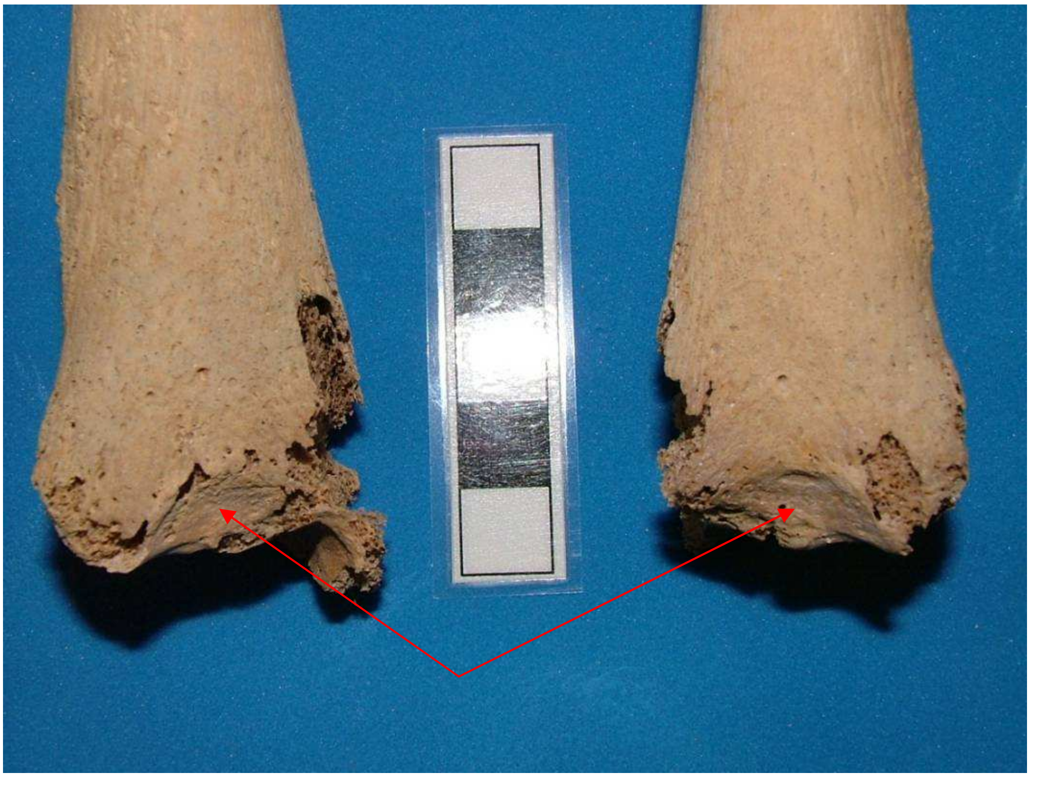

Figure 4.6: Squatting facets on the distal anterior surface of both tibias

4.8 Health and Lifestyle

There were no other pathological lesions observed on the post-cranial except for arthritic changes seen especially on the vertebrae (Figure 4.7). These arthritic changes are usually a sign of old age and bone degeneration therefore are inconsistent with this individual's age. This means that in this particular case the arthritic changes can only be pathological. The extensive wear (Figure 4.5) on the dentition (Molnar 1971, Larsen 1997), low caries rates, minimal calculus levels and the signs of habitual squatting facets (Figures 4.5 and 4.6) on the post-cranials (Dlamini 2005) are consistent with a forager mode of life.

Both the maxillary and mandibullary teeth showed no signs of caries (Figure 4.8). The alveolar were free from abscesses but there was a moderate sign of periodontal disease. Calculus was minimal. Linear enamel hypoplastic lesions were observed on the following teeth: maxillary right central incisor, maxillary left central incisor and mandibular right lateral incisor. The linear enamel hypoplasia suggests a stress related episode in the childhood of this individual. The central and lateral incisor crowns of both the maxilla and mandible develop between 6 months and four years of age (Buikstra and Ubelaker 1994) therefore the stressful episode in this Individual's life could have been around that time.

Figure 4.7: Lipping on the body of a lumbar vertebra

Figure 4.8: Extensive occlusal wear (dentine exposure shown by arrows) with no signs of caries on mandibular dentition

Cranial and Post Cranial Measurements

Cranial Metric trait	Measurement in millimetres
Maximum Cranial Length	170.2
Maximum Cranial Breadth	140.0
Bizygomatic Diameter	110.4
Basion-Bregma Height	130.0
Cranial Base Length	90.2
Basion-Prosthion Length	90.1
Maxillo-Alveolar Length	50.2
Maxillo-Alveolar Breadth	50.8
Biauricular Breadth	110.0
Upper Facial Height	60.3
Maximum Frontal Breadth	90.0
Upper Facial Breadth	90.9
Nasal Height	40.2
Nasal Breadth	20.3
Orbital Breadth	30.7
Orbital Height	30.0
Biorbital Breadth	90.0

Interorbital Breadth	150.0
Frontal Chord	100.8
Parietal Chord	110.4
Occipital Chord	90.5
Foramen Magnum Length	30.4
Foramen Magnum Breadth	20.8
Mastoid Length	20.8
Chin Height	Infra-dentale damaged
Height of Mandibular Body	20.6
Breadth of Mandibular Body	13.0
Bigonial Width	100.3
Bicondylar Breadth	80.2
Maximum Ramus Breadth	30.6
Minimum Ramus Breadth	40.0
Maximum Ramus Height	50.5
Mandibular Length	90.1 (estimated-broken mandible)

Table 5: Cranial Measurements

Post-cranial Metric trait	Measurement in millimetres
Maximum Clavicle Length	130.8
Maximum Humerus Length	280.0
Maximum Radius Length	210.2
Maximum Ulna Length	220.7
Maximum Femur Length	390.0
Maximum Tibia Length	340.4
Maximum Fibula Length	320.3

Table 6: Post- cranial Measurements (all taken on left side unless otherwise stated)

5 Analysis of the Skeletal Remains of Skeleton 3 : prepared by Thabang Manyaapelo (Department of Anatomy, University of Cape Town)

The osteological data recording standards from Buikstra and Ubelaker (1994) are used as a guide in this report. The skeletal elements observed are consistent with the remains of one human individual. The skeleton of this individual is fairly complete and well preserved (see tables 7-10 and Figure 5.2).

The total number of skeletal elements for Individual C is presented in the following tables.

Cranial Bones					
	Left	Right		Left	Right
Frontal	Present (fragmented)	Present (fragmented)	Sphenoid	Present (fragmented)	Present (fragmented)
Parietal	Present	Present	Zygomatic	Present	Present
Occipital	Present	Present	Maxilla	Present	Present
Temporal	Present	Present	Palatine	Present	Present
			Mandible	Present	Present

Table 7: Cranial elements Individual C

Post-cranial Bones and Joint Surfaces					
	Left	Right		Left	Right
Clavicle	Present (fragmented)	Present	Ilium	Present	Present
Scapula body	Present	Present	Ischium	Absent	Absent
Glenoid Fossa	Absent	Absent	Pubis	Absent	Absent
Patella	Present	Absent	Auricula Surface	Present	Present
Sacrum	Only S1 present				

Table 8: Post-cranial elements Individual C

Skeletal Element	Quantity
Sternum	Manubrium and Fragment of Body
Cervical Vertebrae	8
Thoracic Vertebrae	10 (fragmented)
Lumbar Vertebrae	5
Ribs left side	10
Ribs right side	12

Table 9: Torso elements Individual C

Long Bones			
		Left	Right
Humerus		Present (incomplete)	Present (incomplete)
Radius		Present (incomplete)	Present (incomplete)
Ulna		Present (incomplete)	Present (incomplete)
Femur		Present (incomplete)	Present (incomplete)
Tibia		Present (incomplete)	Present (incomplete)
Fibula		Present (incomplete)	Present (incomplete)
Talus		Absent	Present
Calcaneus		Absent	Absent
Hand	Carpals	?*	?*
	Metacarpals	3*	Absent
	Phalanges	6*	9*
Foot	Tarsals	Absent	1
	Metatarsals	3	3
	Phalanges	Absent	Absent

* = these skeletal elements could not be conclusively sided given their underdeveloped/immature state (Figure 4.1).

Table 10: Long bone elements Individual C

Figure 5.2: Immature carpal bones

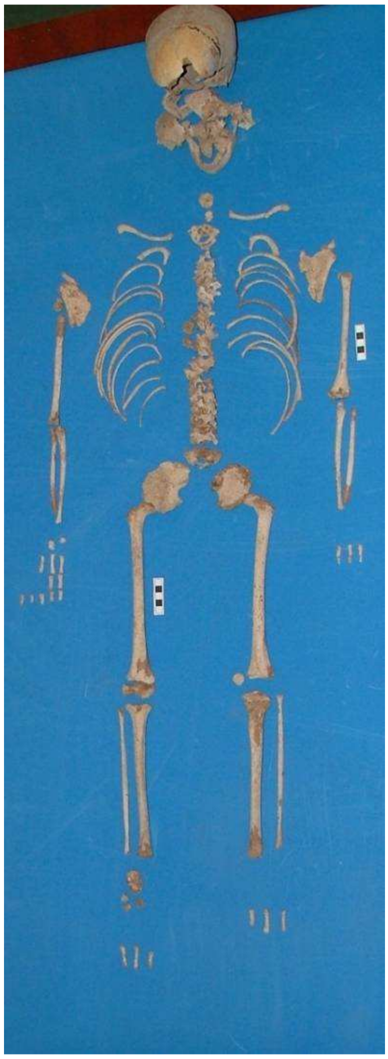

Figure 5.3: All recovered skeletal elements of Skeleton 3

Age Estimation

5.1.1 Dentition

The permanent molars erupt at roughly age 6 years and come into full occlusion at roughly 8 years after birth (Schour and Massler 1940). The All four permanent first molars (Figures 5.3 & 5.4) do not show any signs of occlusion. The central maxillary and mandibullary incisors erupt at roughly age 7 years (Figure 5.5) and come into occlusion about a year later (Schour and Massler 1940). The development of the dentition for this individual suggests that the age is more than 6 years but not older than 9 years.

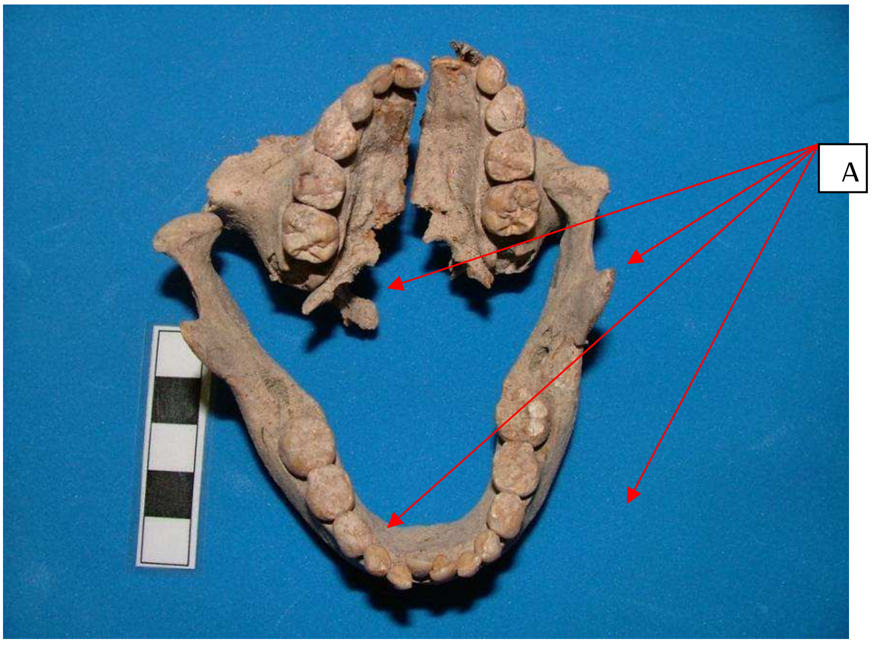

Figure 5. 4: Maxilla and Mandible showing first permanent molars (A)

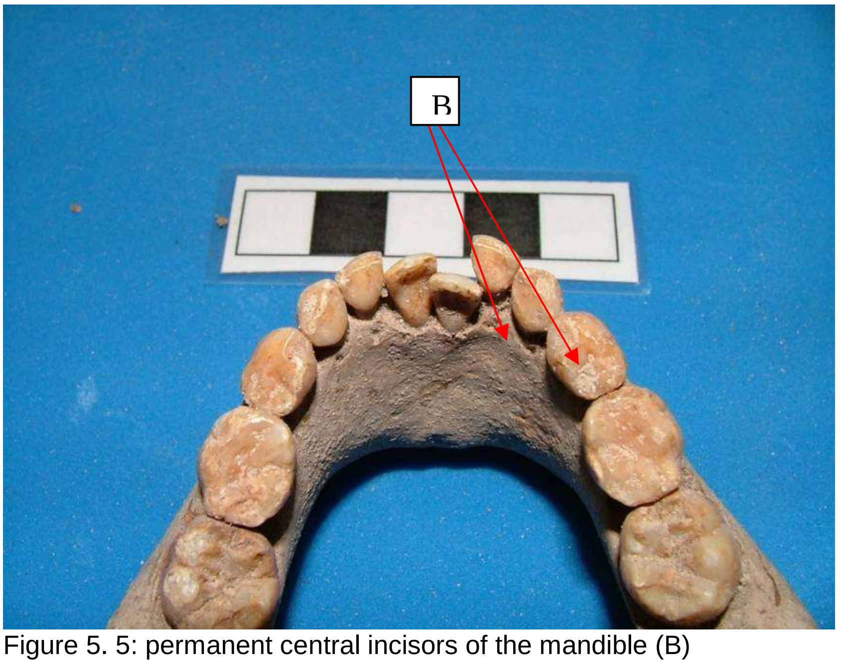

Figure 5. 5: permanent central incisors of the mandible (B)

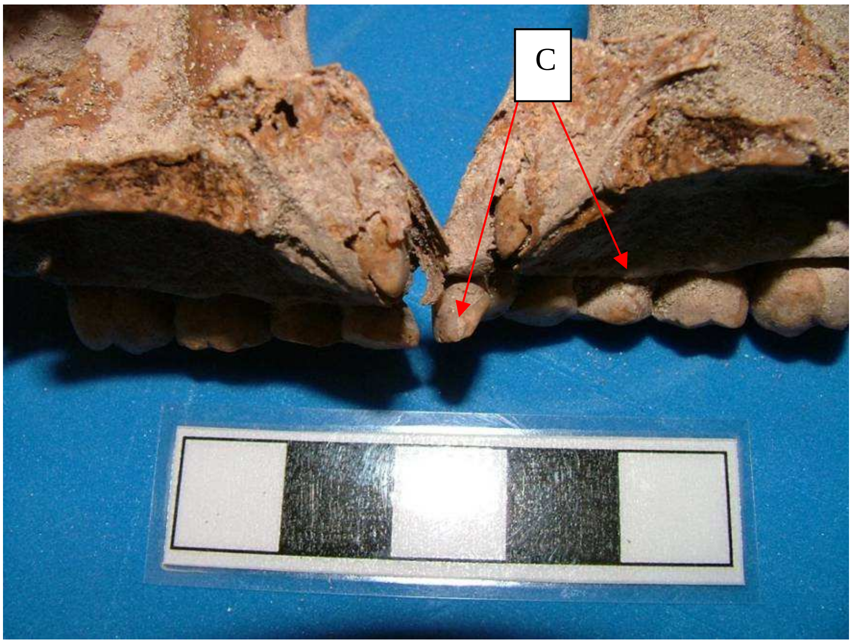

Figure 5.6: Sagittal section of maxilla showing unerupted permanent central incisors (C)

5.1.2 Post cranial development

The pelvic bones have not fused, only the iliac bones are present (Figure 5.6). Similarly, there is no epiphyseal fusion in the left tibia (Figure 5.7). Fusion of the ischial and pubic bones occurs at about 8 years of age, while the tibial tuberosity extension appears at about 10 years of age (Buikstra and Ubelaker 1994).The development of the post cranial skeletal element mentioned above suggests that the individual is not older than 10 years of age.

Figure 5. 7: Incomplete development of the pelvis showing only the iliac bones

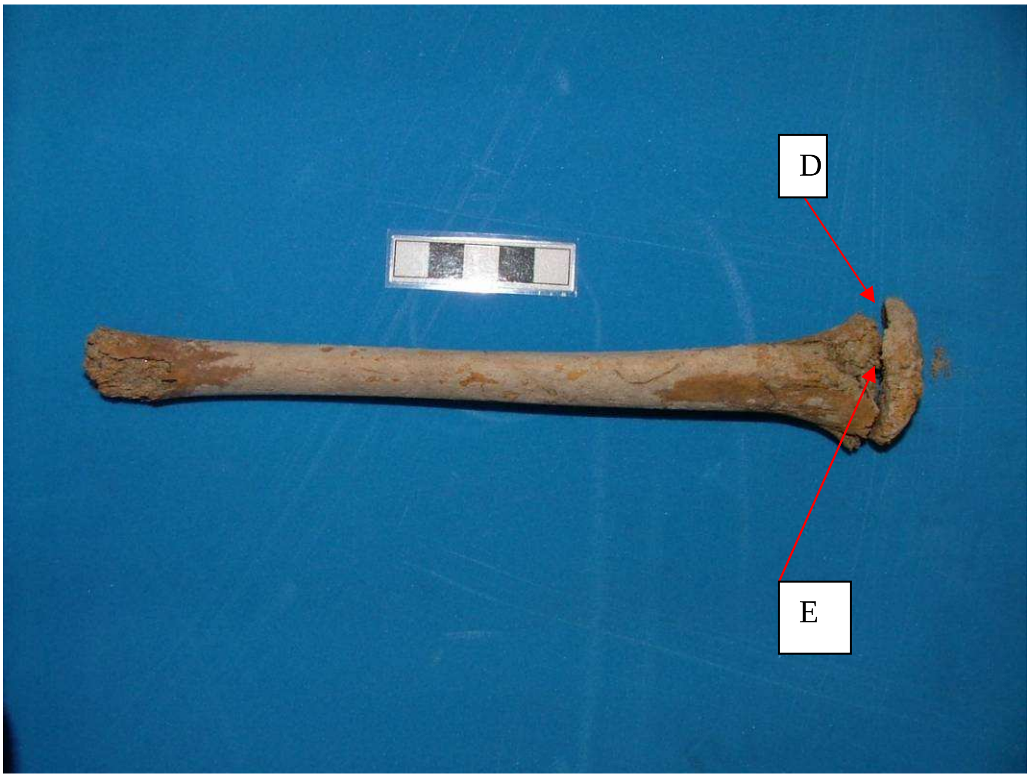

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Figure 5.8: Left tibia with an unfused epiphyseal end (D) and absent tibial tuberosity extension (E)

5.2 Health and Lifestyle

5.2.1 Cranials

The only pathological lesions observed is cribra orbitalia (Figure 5.8) in both the roofs of the left and right orbits. This pathology is as a result of either a dietary stress or a pathogenic systemic insult closely related to iron deficiency anaemia (Aufderheide and Rodriguez – Martin 1998).

Figure 5.9: Cribra orbitalia on the roof of right orbit (F)

5.2.2 Dentition

Both the maxillary and mandibullary teeth showed no signs of caries. The alveolar were free from abscesses and there was no calculus observed. There were no linear enamel hypoplastic lesions on any of the teeth. The maxillary anterior teeth (incisors and canines) show signs of heavy wear with an average score of 5 using the Molnar (1971) attrition table.

Cranial Metric trait	Measurement in millimetres
Lesser Wing of the Sphenoid	a. length - 20.8 b. width - 10.1
Body of the Sphenoid	a. length - 20.3 b. width - 20.4

Table 10: Cranial Measurements

Post-cranial Metric trait	Measurement in millimetres
Maximum Clavicle Length (right side)	90.3
Maximum Humerus Length (left side)	180.5
Maximum Ulna Length (left side)	150.3
Maximum Femur Length (right side)	260.4*

Table 11: Post- cranial Measurements

* = the femur length excludes the unfused distal epiphyses as well as the unfused femoral head.

5.3 Summary

These remains are consistent with those of a juvenile older than 6 years, but not older than 10 years. No attempt was made to sex the juvenile, nor to assign any population affinity or estimate adult stature given the underdeveloped nature of the skeleton. This child did not show any pathological insults, except for the systemic pathology confirmed by the cribra orbitalia. This is a common childhood occurrence usually associated weaning stresses.

6. References

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