

Is there light at the end of the tunnel?

The rescue excavation of historical human remains from Silvertondale (Pretoria)

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Introduction

Professional Grave Solutions (Pty) Ltd were contacted by the site engineer of Africon (an engineering firm) for assistance when human remains were uncovered during pipe jacking activities at Silvertondale (Pretoria). After a site visit with all parties concerned, it was decided to brick up the entrance to the pipe until the remains could be legally relocated. As soon as the legal permissions were obtained, the remains were recovered as part of a rescue excavation by the Forensic Anthropology Research Centre assisting PGS in this regard. The remains are currently held at the Department of Anatomy, University of Pretoria, and will be re-buried in a suitable formal cemetery on completion of this study.

Site description

The tunnel in question is located on the eastern bank of the Moreletta spruit where it is bridged by the main railway east of Pretoria. The remnants of the 1886 bridge as well as the rail cutting and embankments of the 1886 alignment are still in existence just to the north of the present railway (Fig.1). The mouth of the tunnel is 2.42 m below the surface at the south side of the base excavation and the embankment continues to slope steeply upwards from there to reach the level of the modern raised railway. Human remains were discovered on the digging face of the excavations (38.8 m from the entrance) and the burial pit was clearly visible in the dug face and in the roof of the tunnel excavation (Fig.2).



Figure 1: Remnants of the 1886 NAZM Railway Bridge over the Moreletta spruit with the modern bridge in the background



Figure 3: Entrance to the 1.2 m high tunnel (depth = 38.8 m)



Figure 2: Picture taken of the roof of the tunnel demarcating the burial pit (blue arrows)

Recovery methodology

The aim of the excavation was the *in situ* exposure of the burial and associated artefacts. Due to the constraints of working at the end of a small, 1.2 m high tunnel, the skeleton was exposed from the northern side. All possible attempts were made to leave the skeletal elements *in situ* until they could be documented. Both the poor preservation of the remains, as well as the hard clay matrix, made this difficult to accomplish in the cramped space available. Due to the nature of the recovery, extensive observations of the burial position were difficult. Poor preservation and the disturbance of the lower limbs during initial discovery further complicated observations and documentation.

Description of remains *in situ*

The skeletonized remains were found lying extended on the back with the arms along the sides. The left radius and ulna were situated below the pelvis, indicating that the left hand was below the body at the time of burial. The skull was resting on its base and faced south-west, with the mandible articulated, indicating that the neck was flexed (Fig.4). The remains were recovered from a well defined burial pit which appeared to be rectangular in shape. Remnants and indications of a wooden coffin and iron nails were found. Two hollow pearly, bulb-shaped glass beads and a larger opaque green oval glass bead with spiraled indentations along the sides were recovered from the vicinity of the remains. These may represent a string of beads worn by the deceased. A corroded copper safety pin was also found.



Figure 4: The remains *in situ* illustrating the position of the head and mandible relative to the postcranial remains

Physical anthropological analysis

The remains were cleaned, reconstructed and standard physical anthropological techniques were applied during the analysis.

Sex determination: Non-metric characteristics of the pelvis (Krogman & Iscan 1986; Iscan & Loth 2000) as well as metric data from the left humerus and right tibia (Iscan & Loth 2000; Steyn & Iscan 1997) were used. The morphological features of the pelvis such as a wide, shallow sciatic notch (Fig.5) and the presence of a pre-auricular sulcus indicated a female. The skull was small and gracile with small mastoids, sharp supra-orbital ridges and a vertical forehead (Fig.6). These features are all indicative of a female. The diameter of the humeral head, the humeral epicondylar breadth, circumference of the femoral midshaft, tibial proximal breadth, tibial circumference at the nutrient foramen and tibial distal breadth are all consistent with that of a female.



Figure 5: Illustration of the wide, shallow greater sciatic notch as found *in situ*



Figure 6: Lateral and anterior view of the skull

Age determination: The assessment of age was difficult due to the poor preservation and the fragmentary nature of the remains. The third lower left molar and both upper third molars were erupted (>18 years). Furthermore, the sternal end of the left clavicle was fused, indicating an individual older than 25 years. Using the Ascadi and Nemeskeri (1970) technique, 16 different points were scored on the cranial sutures and averaged; the result of which fell Phase 2 (30 to 60 years) which is considered to be a young to middle aged adult. Due to the fragmentary nature of the remains, no other methods could be employed.

Ancestry determination: The morphological features of the skull such as a narrow nasal opening and a sharp inferior nasal margin are consistent with a person of European ancestry (Krogman & Iscan 1986; Iscan et al 2000). Due to the fragmentation of the skull, no cranial measurements could be taken. Penrose distance analysis was calculated using the maxillary teeth and the data were compared to modern South African black and white populations as well as a modern British population (Kieser 1990). According to this analysis, the smallest distances can be seen with white South African females and therefore this individual was most probably a white female.

Stature determination: Stature was calculated using the physiological length of the right tibia. The long bones needed reconstruction and were still damaged thus only an estimate could be obtained. Stature was calculated to be approximately 178 ± 2.59 cm. This is tall for an individual of this population group (Steyn & Smith 2007).

Health: Dental health was poor and tartar deposits were evident. The teeth were worn and no dental procedures and modifications were present. There were no signs of trauma or pathology and no observable factors of individualization could be found.

Conclusion

The remains belonged to a white female between the ages of 30 and 60 years. She was approximately 178 cm tall and pelvic scarring suggests that she had at least one child. The preliminary analyses of the cultural material found with the remains (beads and safety pin) indicate that they are historical in origin. Comparison with reference collections in order to establish a possible date of manufacture and an understanding of the distribution of the beads are underway and might contribute to establish a relative date for the burial. Due to the presumed historical age of the burial it can not be directly dated by C14 methods. At present the only indications of the relative age of the burial is its association with the railway line construction in the area. The burial most probably dates from the Afrikaner pioneer era in Pretoria and possibly pre-dates the 1886 railway. It is, however, possible that the burial was next to the 1886 railway after it was built. It is probably older than the mid 20th century construction of the new railway since taphonomical indications show that the burial was disturbed at that time. Pending better relative indications of age as a result of the analysis of the associated cultural objects, it is suggested that the that the burial dates from the Afrikaner pioneer era (approximately mid 19th century) and is at least older than circa 1950.

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