



An Early 20th Century Man with Advanced Tertiary Syphilis

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Abstract



The Old Don Jail located in Toronto, Ontario, Canada

This poster presents a case study of a man with advanced tertiary syphilis who was judicially hanged in the early 20th century and was encountered during a 2008 archaeological assessment by Archaeological Services Inc. at the Old Don Jail in Toronto, Ontario, Canada.

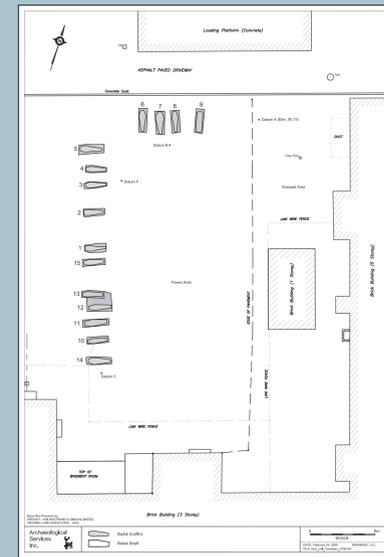
The Old Don Jail was in operation from 1862 until 1977. This individual was one of 15 men who were hanged and buried in the East Exercise Yard. The skeleton of Burial 8 exhibits classic manifestations of venereal syphilis, including frontal and parietal lesions, tibial involvement, and facial disfigurement. These features marked this individual as distinct within the skeletal assemblage.

Through comparison of the osteological and archaeological data with newspaper accounts of the men executed at the jail, it was possible to positively identify the individual as a 43 year old machinist executed in 1922. The accounts of the man's life and medical condition are a positive match to the skeletal remains.

The advanced nature of the syphilis suggests little to no medical intervention, which would have severely affected the man's quality of life. Newspaper accounts describe him as ailing from a condition that was quite severe and would have killed him if he hadn't been hanged.

While the remains have been reinterred, further work is being done on this case. Soil samples from the area adjacent to the skeletal remains and samples of the bones themselves were taken to test for levels of mercury and arsenic, which were used to treat syphilis before the widespread use of penicillin. Samples were taken for DNA sequencing and the remains were subject to a CT scan and radiography.

Introduction



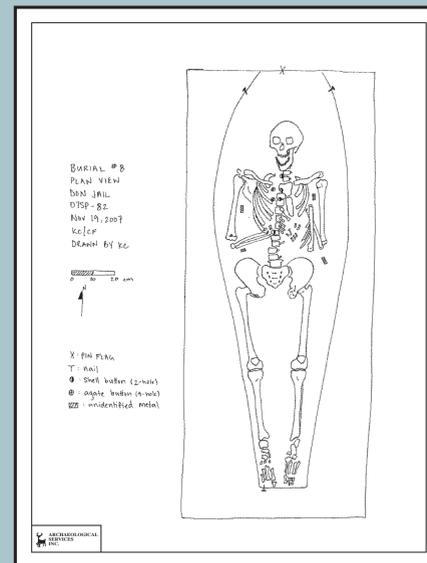
The Old Don Jail is located in the east end of Toronto, Ontario, and was in active use for over one hundred years. From the jail's opening in 1862 until 1965 when capital punishment was abolished in Canada, 34 men were executed by hanging and 15 of them were buried on jail property.

After the closing of the jail in 1977 and the demolition of the yard walls, the locations of the 15 burials were lost. With the aid of a newly discovered map dating from the 1950s identifying the East Exercise Yard as the prison cemetery, an exploratory excavation was undertaken in 2007 by Archaeological Services Inc. (ASI) to re-locate the burials and define the extent of the cemetery. The burials of all 15 individuals were found, exposed, and preliminary analyses were undertaken in order to initiate the identification process.

Left: Cemetery plan of the Old Don Jail

In late 2008, and in accordance with the Ontario Cemeteries Act process, all 15 individuals were exhumed and their remains analyzed by ASI staff in conjunction with researchers from the Department of Anthropology at the University of Toronto. The remains were subsequently re-interred in a local cemetery. During this process, one set of remains, Burial 8, was found to exhibit the classic symptoms of advanced tertiary venereal syphilis. Archival newspaper accounts were used in concert with osteological and archaeological analyses to identify him as a 43 year-old machinist, executed in 1922. This provided a rare opportunity to positively match a set of skeletal remains with a name and published accounts of a person's actions.

Burial 8



Above: Sketch of Burial 8

Below left: anterior view of cranium and mandible showing resorption at mid-face.

Below right: superior view of caries sicca on frontal and parietals



Burial 8 showed multiple pathological changes to the skeleton as a result of infectious processes.

Simultaneous erosive and healing lesions, *caries sicca*, were present on the frontal and parietal bones. The cranial vault was not actually perforated entirely, but the lesions were extensive, particularly centered at bregma.

In addition to the frontal and parietal bones, the facial bones also showed signs of disease. The palate was degenerated with resorption of the alveolar bone resulting in a sunken appearance. The resorption was the likely cause of the loss of all four upper incisors, which had been replaced by a gold and enamel dental bridge. The orbits had a very marked rounded shape.

The left tibia exhibited thickening with heavy periosteal new bone growth known as *saber tibia*. This was distinguished from periostitis, as there was no cloaca present.

Additive bone growth was present throughout the skeleton. In addition to the tibia, both clavicles were thick and broad with a roughened appearance. Both humeri were expanded and thickened at the distal end. The right humerus also had an enthesiopathy at midshaft.



"Saber tibia" right tibia displaying diaphyseal expansion (top). Note the difference from the normal, left tibia (bottom).

Skeletal Evidence of Syphilis

Venereal syphilis will only present itself in the skeleton once it has reached a very advanced stage. This individual represents a textbook example of tertiary syphilis exhibiting pathognomonic changes to the skull, tibiae, and other bones throughout the body (Hackett 1975).

Caries sicca and *saber tibia* are the two key changes associated with syphilis. *Caries sicca* can take various forms, affecting different portions of the skull but most common are lesions on the frontal and parietal bones as well as the erosion of the palate and maxilla (cf. Roberts and Manchester 2007).

Saber tibia is a build up of disorganized uneven new bone growth and thickening of the tibia. Unbowed tibiae are associated with venereal syphilis, rather than the congenital form of the disease (cf. Waldron 2008).

Although the skull and tibiae are the two areas affected most commonly by syphilis, other bones can be affected with additional bone growth and are likely to have a generally diseased appearance.

In life, this individual would have had a distinct appearance from the narrow face, dental work, and skin lesions resulting from the *caries sicca*.

Historical Accounts

Newspaper accounts played a key role in identifying the individual. This man was executed for the rape and murder of a young boy under "revolting circumstances" that took place in the summer of 1920 (The Globe, Friday, November 11, 1921). A police bulletin that was issued identifying the man as a criminal suspect described him as having gold dental work, peculiar lips, and wearing a wig. At the time of his arrest for the crime, he was already incarcerated in New York State for an unrelated crime (The Toronto Daily Star, Friday, June 24, 1921).

At the time of his extradition to Canada, the man admitted that he had spent the day with the boy and acknowledged that he had killed him but blamed liquor as the cause of the violent act. The trial took place in early 1922 and resulted in a guilty verdict.

The convicted man attempted to gain a reprieve and have the death sentence commuted based on his ailing health, with doctors stating that due to his "physical and mental condition... [this individual is] liable to go violently insane, and might drop dead at any time" (The Toronto Daily Star, Friday, April 7, 1922). His appeal was denied. The execution took place on May 8, 1922. At the time of the hanging, the doctor who attended the execution stated that the prisoner would have died within two years, owing to "his physical condition." He was buried within an hour of the execution, and was interred in "Murder's Row," an area in the exercise yard northeast of the jail (The Toronto Daily Star, Tuesday, May 9, 1922).

Right: Photograph of the syphilitic machinist hanged at the Old Don Jail on May 8, 1922. Note the sunken appearance of the mid-face and the use of a hairpiece.



Conclusions and Further Work

During the investigations of the Old Don Jail cemetery, the osteological and historical data were gathered separately to preclude any influence of the interpretation of one set of data on another. The biological profile of Burial 8 matched perfectly with historical accounts of this individual. A photograph of the man at the time of his arrest has the same rounded orbits and very thin mid-face.

The physical description in the police bulletin indicates that this man was likely suffering from very advanced tertiary syphilis at the time of the crime. In addition to the changes to the skeleton, this advanced stage of syphilis is associated with dementia. Although a physician testified at his appeal to his disordered mental health, the execution went ahead as planned, a not inconsistent outcome given the administration of criminal justice in North America in the early 1920s.

Research is on-going even though the remains were reinterred in December of 2008. Bone and soil samples were taken for testing levels of mercury and arsenic, both of which were utilized as treatments for syphilis before the advent of penicillin. In that doctors were aware of his existing condition, the presence of either might represent evidence that he was given treatment to alleviate the effects of the syphilis. Additional samples of cortical bone were taken in order to attempt the extraction and amplification of treponemal DNA from the skeletal remains. Due to the extreme fragility of the Treponema outside its living host, this has only been accomplished once before (Kolman et al. 1999). Burial 8 is an excellent candidate for a successful sequence. Nexus 3D laser scans of the cranium will be subject to facial reconstruction for comparison with a known photograph of the man and CT scans and x-rays were taken of affected bones to examine changes on their interior structures.