

# Material report: Human skeletal remains of the Edo period excavated from the Sugenji Ato site, Shinjuku-ku.

**Kazuhiro Sakaue and Mari Kajigayama**

Department of Anthropology, National Museum of Nature and Science  
4–1–1 Amakubo, Tsukuba-city, Ibaraki Prefecture 300–0005, Japan  
E-mail: k-sakaue@kahaku.go.jp

**Abstract** This is the material report of the human skeletal remains excavated from the Sugenji Ato site in Shinjuku-ku, Tokyo. This collection has good preservation state, is huge in samplesize, and is stored in the department of Anthropology at the National Museum of Nature and Science, Tokyo. Although the anthropological report was published in 2005, it was written only in Japanese and some human skeletal remains were not reported. The purpose of this material report is to present the inventory of human skeletal remains excavated from the cemetery of the Sugenji Ato site in English. The total number of individuals reached to 804, and 170 individuals had well-preserved human skeletal remains.

## Introduction

Some huge assemblages of the human skeletal remains from one archaeological site are contained within the collections of the National Museum of Nature and Science Tokyo. The skeletal remains excavated from the Ikenohata-shichikencho site are the samples used most frequently in anthropological researches by both Japanese and foreign researchers because they are well-preserved, have large sample size (at least 391 individuals), and are documented in an excellent inventory created by Nagaoka (2007) that contains the estimated sex and age-at-death in English. However, other skeletal collections are comparable to the Ikenohata-shichikencho site in term of preservation level and sample size. The Sugenji Shokenji Ato site is one such collection.

The Sugenji Shokenji Ato site was located in Minamimotomachi Shinjuku-ku, Tokyo, Japan and excavated in 2003. The area of excavation was the ruins of the Sugenji and Shokenji Buddhist temples from 1653 A.D. to 1909 A.D. (Taisei Engineering Co. Ltd., 2005). Their cemeteries were clearly divided by remnants of the street. The number of burial facilities in these

temples reached 1434, 579 of which were located at the Sugenji Ato site and 855 at the Shokenji Ato site; both were in use from the late 17th century to the middle 19<sup>th</sup> century.

The anthropological analysis of the human skeletal remains excavated from these sites was reported by Kajigayama *et al.* (2005). This number of individuals reached 661 from the Sugenji temple and 401 from the Shokenji temple and an inventory with estimated sex and age-at-death was also presented in Japanese. However, the number of the unidentified samples, which were not listed in this report, reached 345 due to limited time for analysis.”

The purpose of this material report is to present the inventory of human skeletal remains excavated from the cemetery of the Sugenji Ato site in English. This report will help all researchers to investigate the physical characteristics of those who lived in the Edo city.

## Material and Methods

The criteria for the descriptions contained in this inventory are as follows:

“Number”

The numbers refers to those of burial pits

numbered under the excavation process of this site.

“Additional N.” refers to the branch number assigned under the excavation process of this site.

“Grid”

The characters of this column indicate the point where the skeletal remains were excavated and reported in the archaeological report (Taisei Engineering Co. Ltd. 2005).

“Level”

This category indicates the height above sea level and has two subcategories: “Upper”, which is the highest altitude located at the uppermost point of the burial pit, and “Lower”, which is the lowest altitude at the bottom of the pit.

“Burial style”

“Burial style” means the structure of the burial customs, which are used as indicators of social class and status during the Edo period (Tanigawa, 2002). There are seven styles found in this site as follows;

*Kamekan in wooden burial chamber*: This burial style was adopted among the Hatamoto (the upper vassals of the Tokugawa house), the Koke (noble families of the Hatamoto), and the Omoyaku classes (high ranking samurai as officials and advisors in service to the daimyos). They tended to be buried in a ceramic jar housed in a wooden burial chamber in the earth.

*Kamekan*: This style was used widely among the samurai class among the Hatamoto, the Gokenin (the lower vassals of the Tokugawa house), and the Hanshi classes (vassals of the daimyos). They tended to be buried in only a ceramic jar after the late 17th century.

*Hayaoke*: This style of inexpensive circular wooden coffin was widely seen among the Samurai class and townsmen during the Edo period.

*Square wooden coffin*: This style of square wooden coffin was seen after the late 17<sup>th</sup> century, and its relationship with social class has also not been confirmed.

*Cinerary urn*: This style was used for the burial of the cremated bones during the Edo period. Its relationship with social class has also

not been clarified

*Earthenware coffin*: This was used for the burial of children’s remains during the Edo period.

*Burial pit* and *Secondary burial*: These essentially mean that one (Burial pit) or multiple individuals (Secondary burial) were buried in the earth without any burial facilities.

“Cutting”

This refers to the relationship of cutting and re-cutting of archaeological pits with arrows.

“Conditions”

This means the preservation state of human skeletal remains. It is supposed that one burial facility contained one person. If multiple individuals were contained in one facility, one individual comprised the primary burial and the others were thought to have been added later. In this inventory, the first individual of each burial facility is thought to have been the primary burial, based on the preservation of skeletal remains and their morphological traits such as the length, the thickness of long bones, and degenerative changes.

*Good*: This term is used subjectively to refer to a “good” state preservation, characterized by an almost complete skull and some intact long bones.

*Not bad*: This is also subjective and means that the shape of the skull can be observed and some variables of the skull are measurable.

*Bad*: This is also subjective and refers to a wide range of preservation state, including skulls with a few measurable variables to bone fragments that are identifiable.

*Burned*: This refers to bones that has been cremated, from which sex nor age-at-death can be diagnosed.

*Fragments*: This category contains a small amount of identified bones (less than five pieces) and unidentifiable bone fragments in one facility.

*Contamination*: This refers to a small amount of identified bones (less than five pieces) which were apparently from the other person than a person of primary burial.

“Age-at-death”

The estimation of age at death is based on teeth, pubic symphysis and the auricular surface of the pelvis, epiphyseal union, and cranial sutures. An individual's age at death is classified according to eight "age categories."

*Infant:* This category refers to individuals aged about 0–5 years. Indications for this age group range from "no eruption of deciduous teeth" to "no eruption of permanent teeth." (Ubelaker, 1989).

*Child:* This category refers to individuals aged about 5–11 years. Indications for this age group range from "eruption of the first permanent molar" to "no eruption of the second permanent molar."

*Adolescent:* This category refers to individuals aged about 11–20 years. Indications for this age group range from "eruption of the second permanent molar" to "persistence of epiphyseal lines in any bone but the clavicle."

*Young adult:* This category refers to individuals aged about 20–30 years. Indications for this age group range from the "macroscopic disappearance of epiphyseal lines in all bones but the clavicle" to "persistence of epiphyseal lines of the clavicle." In addition, the pubic symphysis of an individual shows the morphological characteristics of Phases 1–2 in the Suchey-Brooks system (Brooks and Suchey, 1990). There are finely granulations with marked transversely organized billows on the auricular surface (Lovejoy *et al.*, 1985).

*Middle adult:* This category refers to individuals aged about 30–50 years. Indications for this age group range from the "macroscopic disappearance of the epiphyseal lines of the clavicle" to "no or little appearance of degenerative change in the vertebral body." In addition, the pubic symphysis shows the morphological characteristics of Phases 3–5. There are also coarse granulations or a partially dense irregular surface without transverse organization.

*Old adult:* This category refers to individuals aged more than 50 years. Indications for this age group are degenerative changes such as "antemortem tooth loss", "lipping of the vertebral

body," and "lipping on the articular facet." In addition, the pubic symphysis shows the morphological characteristics of Phase 6. The auricular surface shows a dense irregular surface of rugged topography with macroporosity and irregular and lipping margins.

*Child?:* This category is used for individuals without the indicators used to estimate the age-at-death. In this case, however, the size of the bones or the bone surface characteristics such as the smooth area of muscle attachments as well as tooth formation, indicate that the individual was likely a child at his or her time of death.

*Adult?:* This category is used for individuals without the indicators used to estimate age-at-death. However, morphological characteristics such as size, muscle attachments, and tooth formation, indicate that the individual was likely an adult.  
"Sex"

The sex of an individual can be diagnosed based on morphological characteristics comprising the greater sciatic notch and ventral arc of the pelvis, supraorbital ridge, and mastoid process of the skull (Buikstra and Ubelaker, 1994; Sakaue and Adachi, 2009). The following four classifications pertain to this criterion.

*Male:* All characteristics indicate that the individual is male.

*Male?:* Any of the above-mentioned characteristics indicates that the individual is male. In case of a discrepancy, the sex is diagnosed according to the characteristics mentioned above in descending order of importance.

*Female:* All characteristics indicate that the individual is female.

*Female?:* Any of the above-mentioned characteristics indicates that the individual is female.

*"N. of Measurable" in Cranium and Mandible:* This number indicates the number of how many variables (out of a possible 13) that can be measured for the cranium (Maximum length, Basion-Nasion length, Maximum breadth, Basion-Bregma height, Least frontal breadth, Basion-Prosthion length, Bizygomatic breadth, Bimaxillary breadth, Martin's Upper facial









































Table 2. Number of individuals with of each condition and estimated age category of the human skeletal remains

	Adolescent	Young Adult	Middle adult	Old adult	Others	Total	(%)
Good	14	46	84	24	2	170	(21.1)
Not bad	2	5	24	2	0	33	(4.1)
Bad	29	40	64	17	228	380	(47.3)
Burned						38	(4.7)
Fragments						14	(1.7)
Contamination						169	(21.0)
Total						804	(100.0)

Table 3. Summary of the age at death and Sex

	Male	(%)	Female	(%)	Total	(%)
Infant					65	(8.1)
Child					13	(1.6)
Adolescent	12	(5.4)	16	(10.7)	45	(5.6)
Young adult	45	(20.4)	46	(30.9)	91	(11.3)
Middle adult	121	(54.5)	51	(34.2)	174	(21.7)
Old adult	15	(6.8)	24	(16.1)	43	(5.4)
Child?					25	(3.1)
Adult?	29	(13.1)	12	(8.1)	125	(15.4)
Total	222	(100.0)	149	(100.0)	581	(100.0)

"Male?" and "Female?" in Table 1 were included in "Male" and "Female" respectively.

height, Orbital breadth, Orbital height, Nasal breadth, and Nasal height) and five variables of mandible (Bicondylar breadth, Bigonial breadth, Projective length of mandible, Height of mandibular ramus, and Minimum width of ramus).

"Long bone Length": "○" in these columns means that it was possible to measure the maximum lengths of all long bones. If multiple individuals were contained in one burial facility and have difficulty to be assessed the attribution of long bones, the long bones that were able to be measured at their maximum length were not assigned to "Measurable" in this inventory.

### Results and Discussion

Table 1 shows the inventory of the human skeletal remains excavated from the Sugenji Ato site. This inventory clarified in this report that 500 out of the 579 burial facilities excavated contained human skeletal remains. The total number of individuals was 804, and 170 individuals have well-preserved skeletal remains, as seen in Table 2. The number of individuals who could be assigned to the eight age categories

reached to 581; of these, 371 were able to be estimated their sexes (222 males, 149 females). The availability of these data points that this skeletal collection is well-preserved and has great value for anthropological research.

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