

Material report: Human skeletal remains of the Edo period excavated from the Shokenji 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 Shokenji Ato site in Shinjuku-ku, Tokyo. This collection is one of the good collections of human skeletal remains with good preservation state and large sample size that are 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 Shokenji Ato site in English. The total number of individuals reached to 964, and 226 individuals had well-preserved human skeletal remains.

Key Words: Edo period, 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 Sug-enji and Shokenji Ato sites are one of the good collections for anthropological researches because of well-preserved and large sample size. The Sug-enji and Shokenji Ato sites were located in Minamimotomachi Shinjuku-ku, Tokyo, Japan. These sites are the ruins of the Sug-enji and Shokenji Buddhist temples that utilized 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 Sug-enji Ato site and 855 at the Shokenji Ato site. 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 Sug-enji 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.” We already had reported the inventory of the human skeletal remains excavated in Sug-enji Ato site (Sakaue and Kajigayama, 2018).

The purpose of this report is to present the inventory of human skeletal remains excavated from the cemetery of the Shokenji Ato site in English. This report will help all researchers to investigate the human skeletal remains 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.”

It 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 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.

“Cutting”

This refers to the relationship of cutting and re-cutting of some pits when they were excavated with arrows.

“Burial style”

This 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.

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

Square wooden coffin: This style of square wooden coffin was seen after the late 17th 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.

“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 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 have been cremated, from which sex cannot be diagnosed basically but age-at-death was roughly estimated as “Child?” or “Adult?” as noted below.

Fragments: This category contains a small amount of identified bones and unidentifiable bone fragments in one facility.

Contamination: This refers to a small amount of identified bones which were apparently from the other persons 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 into following 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 “ante-mortem 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 auricu-

lar 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.

A blank cell means there is no clue for sexual diagnosis.

“N. of Measurable” in Cranium and Mandible

This number indicates the number of how many variables (out of 13 variables) 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 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”

A “○” sign in these columns means that it was possible to measure the maximum lengths of each long bone. 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 Shokenji Ato site. It is showed that 661 out of the 855 burial facilities contained the human skeletal remains. The total number of individuals was 964, which indicated that the estimated numbers of individuals were overpassed those of burial facilities. Over one-third of faculties (268 out of 661) had the inter relationship of cutting and re-cutting between each other. And there were 251 samples classified in “contamination”. Similar trends could be seen also in the Sugenji Ato site (804 individuals out of 500 facilities, and 235 facilities having cutting and re-cutting, and 169 samples of “contamination”: Sakaue and Kajigayama, 2018). These results must have been caused by the burial system of the Edo city that people were buried additionally in a grave where someone already had been buried within a narrow and restricted cemetery area (Tanigawa, 2004).

As seen in Table 2, the number of the well-preserved remains reached to 127 for “Good” and 99 for “Not bad” conditions. The number of individuals who could be assigned to the eight age categories reached to 695, of which 371 individuals were able to be estimated their sexes (192 males, 111 females) in Table 3. It can be said that

the human skeletal remains excavated at the Shokenji Ato site show the same good condition as those at the Sugenji Ato site, and they both will have great value for anthropological research.

Acknowledgement

We wish to express our sincere gratitude to Dr. K. Shinoda and Ms. A. Nakatuka (The National Museum of Nature and Science) and for valuable advice.

Reference

- Buikstra, J. E. and D. H. Ubelaker (1994) Standards for Data Collection from Human Skeletal Remains. Research Series, no. 44. Arkansas Archaeological Survey, Fayetteville.
- Lovejoy, C., R. S. Meindl, T. R. Pryzbeck, and R. P. Mensforth (1985) Chronological metamorphosis of the auricular surface of the ilium: A new method for the determination of adult skeletal age at death. *American Journal of Physical Anthropology*, **68**: 15–28.
- Nagaoka, T. (2007) Demographic Structure of the Human Skeletal Remains from the Ikenohata-Shichikencho Site, Tokyo. *Bulletin of National Museum Nature and Science, Tokyo, Ser. D*, **33**: 21–38.
- Sakaue, K. and N. Adachi (2009) Evaluation of sexing methods using cranial traits in the Japanese population (In Japanese with English summary). *Nihon Houigaku Zashi*, **63**: 125–140.
- Sakaue, K. and M. Kajigayama (2018) Material report: Human skeletal remains of the Edo period excavated from the Sugenji Ato site, Shinjuku-ku. *Bulletin of National Museum Nature and Science, Tokyo, Ser. D*, **44**: 21–43.
- Taisei Engineering Co., Ltd. (2005) Kensyutusareta ikou to ibutu (Detected relics and remains). In: Taisei Engineering Co., Ltd. (Ed.), *Sugenji Syoukenji Ato*, Meiji-Jingu, Tokyo, pp. 22–143. (in Japanese)
- Tanigawa, A. (2002) Excavating Edo's Cemeteries: Graves as Indicators of Status and Class. *Japanese Journal of Religious Studies*, **19**: 271–297.
- Tanigawa, A. (2004) Edo no haka no maisousisetu to hokusouhin (Burial facilities and accessories in the graves of the Edo era). In: Edo Iseki Kenkyukai (Ed.), *Haka to Maisou to Edo-jidai (Tombs and Burial System during the Edo Era)*. Yoshikawakobunkan, Co. Ltd., Tokyo, Pp. 224–250 (in Japanese).

Table 1. Continued

Number	Branch N.	Grid	Level		Cutting	Burial style	Condition	Age-at-death	SEX	Cranium N. of measurable	Mandible N. of measurable	Humerus length		Radius length		Ulna length		Femur length		Tibia length		Fibula length				
			Upper	Lower								right	left	right	left	right	left	right	left	right	left	right	left			
424		I10	14.890	14.777	→422	Burial pit	Bad	Adult?																		
							Bad	Adult?																		
							Bad	Adult?																		
							Good	Child?																		
425		H10	14.815	14.165		Kamekan	Contamination	Middle adult	Female	5	○	○	○	○	○	○	○	○	○	○	○	○				
							Contamination	Adult?																		
							Contamination	Adult?																		
							Bad	Young adult	Male																	
426		H10	14.699	14.499	←290 294	Square wooden coffin	Bad	Middle adult	Male																	
							Bad	Adult?	Male																	
427		H10	14.678	14.298		Burial pit	Contamination	Child?			○															
							Contamination	Adult?																		
429		H10	14.849	14.649		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
431		H9	14.879	14.629		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
432		H9	14.800	14.575	→49 la	Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
433		H9	14.852	14.652		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
434		H9	14.914	14.684		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
435		H9	14.831	14.591		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
436		H9	14.751	14.551		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
437		H9	14.711	14.501		Cinerary urn	Burned	Child?																		
							Cinerary urn	Burned	Child?																	
438		H9	14.882	14.662		Cinerary urn	Burned	Child?																		
							Cinerary urn	Burned	Child?																	
439		H9	15.132	14.942		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
440		H9	14.869	14.599		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
441		H9	14.855	14.665		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
442		H9	14.836	14.606		Cinerary urn	Burned	Adult?																		
							Cinerary urn	Burned	Adult?																	
443		H9	14.791	14.591		Cinerary urn	Burned	Child?																		
							Cinerary urn	Burned	Child?																	
444		H9	14.822	14.692		Cinerary urn	Burned	Adult?																		
							Good	Middle adult	Male	13	5	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
446		H·110	14.918	14.468	→487	Square wooden coffin	Not bad	Adolescent		5																
							Bad	Middle adult	Male																	
447		H9	14.856	14.356		Square wooden coffin	Contamination	Adult?																		
							Contamination	Adult?																		
							Good	Middle adult	Female	13	5	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
							Contamination	Adult?																		
448		H·110	14.661	14.461		Earthenware coffin	Bad	Adult?																		
							Contamination	Child?																		
449		H10	14.817	14.317	→487	Hayoke	Bad	Middle adult																		
							Contamination	Adult?																		
450		G10	14.726	14.426		Hayoke	Not bad	Infant																		
							Contamination	Adult?																		
451		G9·10	14.440	13.85		Kamekan	Good	Middle adult	Female	13	5	○	○	○	○	○	○	○	○	○	○	○				
							Contamination	Adult?																		

Table 2. The number of individuals classified in each condition at the Shokenji Ato site and the Sugenji Ato site

	Shokenji	(%)	Test*	Sugenji	(%)
Good	127	(13.2)	<<	170	(21.1)
Not bad	99	(10.3)	>>	33	(4.1)
Bad	260	(27.0)	<<	380	(47.3)
Burned	197	(20.4)	>>	38	(4.7)
Fragments	30	(3.1)		14	(1.7)
Contamination	251	(26.0)	>	169	(21.0)
Total	964	(100.0)		804	(100.0)

*Two proportion Z-test were done for two tailed. A single inequality sign means significant difference at 0.05 level, and double inequality sign does at 0.01 level respectively.

Table 3. Summary of the estimated sex and age groups at the Shyokenji Ato site and the Sugenji Ato site

	Shokenji				Sugenji			
	Male	Female	Unknown	Total	Male	Female	Unknown	Total
Infant			89	89			65	65
Child			23	23			13	13
Adolescent	6	4	8	18	12	16	17	45
Young adult	21	30	1	52	45	46	0	91
Middle adult	109	43	4	156	120	52	2	174
Old adult	7	7	0	14	15	24	4	43
Child?			50	50			25	25
Adult?	49	27	217	293	29	12	84	125
Total	192	111	392	695	221	150	210	581

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