

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

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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 Bud-dhist 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 19th 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 Samurais 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.

“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 1. Continued

Table 1. Continued

Number	Branch N.	Grid	Level	Burial style	Cutting	Conditions	Age-at-death	Sex	Cranium	Mandible	Humerus	Radius	Ulna	Femur	Tibia	Fibula
			Upper	Lower		Burned			N. of Measurable	N. of Measurable	Length	Length	Length	Length	Length	Length
85		D3	15.244	15.017	Cinerary urn	→417		Male	11	5	—	—	—	—	—	—
86		D3	15.119	14.619	Square wooden coffin			Bad Child		○	○	○	○	○	○	—
87		E6	14.691	14.301	Square wooden coffin	←88		Good Young adult	Female	13	5	○	○	○	○	○
89		E5	15.550	15.380	Hayaoke			Bad Child?		○	○	○	○	○	○	○
90		E6	14.770	—	Secondary burial			Contamination		○	○	○	○	○	○	○
91		E5	15.456	15.106	Square wooden coffin	←74		Bad Infant		○	○	○	○	○	○	○
92		D3	15.146	14.856	Secondary burial			Contamination		○	○	○	○	○	○	○
93		E3	15.119	—	Secondary burial			Bad Adult?		○	○	○	○	○	○	○
94		E3	15.119	14.659	Hayaoke	←80		Bad Child?		○	○	○	○	○	○	○
95		E3	15.160	—	Secondary burial			Contamination		○	○	○	○	○	○	○
96		E6	14.656	14.106	Hayaoke			Good Adolescent		○	○	○	○	○	○	○
100		E4	15.487	15.107	Square wooden coffin	→272		Bad Adult?		○	○	○	○	○	○	○
101		E2	15.016	14.756	Square wooden coffin	→250		Bad Infant		○	○	○	○	○	○	○
102		D3	15.311	14.791	Square wooden coffin	→206		Contamination		○	○	○	○	○	○	○
103		F6	15.473	15.283	Square wooden coffin			Bad Infant		○	○	○	○	○	○	○
105		E7	15.604	15.264	Hayaoke			Bad Middle adult		○	○	○	○	○	○	○
106		E4	15.210	14.640	Hayaoke	→324		Bad Young adult		○	○	○	○	○	○	○
107		E4	15.093	14.613	Hayaoke			Bad Middle adult		○	○	○	○	○	○	○
108		E7	15.533	15.313	Square wooden coffin	→368		Contamination		○	○	○	○	○	○	○
110		E7	15.615	—	Cinerary urn			Bad Adult?		○	○	○	○	○	○	○
111		E3	15.181	14.611	Hayaoke	←40 · 63		Bad Middle adult		○	○	○	○	○	○	○
112		E3 · 4	15.542	15.162	Square wooden coffin			Contamination		○	○	○	○	○	○	○
113		D3	15.139	14.769	Hayaoke			Bad Infant		○	○	○	○	○	○	○
114		D3	14.765	14.135	Kamekan			Contamination		○	○	○	○	○	○	○
117		E·F6	15.495	15.183	Square wooden coffin			Bad Child?		○	○	○	○	○	○	○
118		E3	14.729	14.269	Kamekan			Contamination		○	○	○	○	○	○	○
120		E3	14.836	14.206	Kamekan	→299		Good Old adult		○	○	○	○	○	○	○
121		C4	15.158	14.898	Earthenware coffin	→4		Bad Adult?		○	○	○	○	○	○	○
122		D4	14.920	—	Secondary burial			Bad Young adult		○	○	○	○	○	○	○

Table 1. Continued

Number	Branch N.	Grid	Level		Burial style	Cutting	Conditions	Age-at-death	Sex	Cranium	Mandible	Humerus Length	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length	
			Upper	Lower														
163		E3	14.746	14.186	Square wooden coffin	→296	Good	Middle adult	Female	N. of Measurable	N. of Measurable							
164		E3	15.132	15.012	Earthenware coffin	→43	Bad	Child?		13	5	○	○	○	○	○	○	
166		E4	15.242	14.722	Hayaoke	→276	Good	Middle adult	Male	13	3	○	○	○	○	○	○	
167		E4	15.275	14.795	Hayaoke		Good	Middle adult	Male	10		○	○	○	○	○	○	
170		E4	15.340	14.810	Square wooden coffin	→168 · 263/	Not bad	Middle adult	Female			○	○	○	○	○	○	
						→321	Adult?	Male										
						Contamination												
171		E4	15.248	15.158	Cinerary urn		Burned											
172		E4	15.387	15.087	Hayaoke	→224	Bad	Child?										
173		E5	15.403	15.173	Earthenware coffin	→174	Bad	Child?										
174		E5	15.373	14.973	Square wooden coffin	→173/-234	Bad	Contamination										
							Contamination											
175		E4 · 5	15.357	14.827	Hayaoke	→233/-343	Bad	Young adult	Male									
							Bad	Middle adult	Female	3								
177		E4	15.265	14.765	Hayaoke	→325 · 326	Bad	Child										
							Contamination											
179		E5	15.479	15.039	Square wooden coffin		Bad	Middle adult	Female									
							Bad	Adult?	Male									
180		E4	15.351	14.911	Square wooden coffin	→181 · 271	Bad	Contamination										
						→180/-283	Good	Young adult	Male									
181		E4	15.162	14.632	Hayaoke	.329 · 421	Good	Young adult	Female	13	5	○	○	○	○	○	○	
183		E4	15.196	14.976	Cinerary urn		Burned											
186		E3	14.965	14.565	Square wooden coffin	→202	Bad	Infant										
187		D3	15.246	14.896	Square wooden coffin		Bad	Infant										
188		D3	15.319	14.719	Hayaoke		Bad	Adult?	Male									
							Contamination											
189		D3	15.201	14.651	Hayaoke	→301	Bad	Young adult	Female									
							Contamination											
190		D3	15.059	14.859	Earthenware coffin	←373	Bad	Adult?	Male									
191	(Upper) In a (Lower)	D3	15.151	—	Secondary burial		Not bad	Middle adult	Male	13								
191		D3	15.187	14.651	Hayaoke	→192	Bad	Old adult										
							Contamination											
192		D3	15.128	14.628	Hayaoke	←191 lower	Bad	Adult?										
							Contamination											
193		C · D3	15.177	14.747	Square wooden coffin		Bad	Infant										
194		D3	15.265	15.075	Cinerary urn		Burned											
195		C3	15.332	14.812	Hayaoke		Bad	Middle adult	Male									
196		C3	15.121	—	Cinerary urn		Bad	Contamination										
197		C3	15.066	14.356	Kamekan		Not bad	Middle adult	Male	13	5	○	○	○	○	○	○	

Table 1. Continued

Number	Branch N.	Grid	Level Upper Lower	Burial style	Cutting Conditions	Age-at-death	Sex	Cranium N. of Measurable	Humerus N. of Measurable	Mandible N. of Measurable	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
232		E4	15.206	15.026	Cinerary urn	Buried	Bad	Adult?	Male						
233		E4-5	15.453	15.383	Earthenware coffin	→175	Bad	Adult?	Male						
234		E5	15.359	14.789	Hayaoke	←174·265	Bad	Contamination	Male		5				
235		E4	15.035	14.855	Earthenware coffin		Bad	Infant							
237		E2	14.808	14.158	Kamekan		Good	Middle adult	Female	13	5	○			
238		E2	14.944	14.514	Kamekan		Bad	Infant				○	○		
239		E2-3	14.594	14.004	Kamekan		Good	Middle adult	Female	13	5	○	○	○	○
240		E2	14.925	14.715	Cinerary urn		Bad	Infant							
242		E2	15.457	15.327	Earthenware coffin		Bad	Young adult	Male	5		○	○	○	○
243		E2	15.310	15.010	Hayaoke		Not bad	Middle adult	Male	1		○	○	○	○
244		E2	15.007	14.757	Hayaoke		Bad	Old adult	Male	13		○	○	○	○
246		E2	15.181	14.831	Hayaoke		Bad	Young adult	Male	5					
247		E2	15.039	14.819	Hayaoke		Bad	Young adult	Male	4	5	○	○	○	○
248		E2	15.108	14.768	Hayaoke		Good	Middle adult	Male	13	5	○	○	○	○
249		E2	15.115	14.835	Hayaoke	←153	Bad	Adolescent	Male						
250		E2	15.089	14.929	Hayaoke	←101	Bad	Adult?	Male						
251		E3	15.134	14.794	Square wooden coffin	→220b	Bad	Infant							
253		E3	14.817	14.577	Square wooden coffin		Good	Middle adult	Male	12	5	○	○	○	○
254		E2	14.948	14.698	burial pit		Bad	Infant	Female	13	5	○	○	○	○
255		D2	15.150	14.820	Hayaoke	←138	Bad	Young adult	Male	2					
258		E3	15.103	14.943	Earthenware coffin	←259	Bad	Contamination	Male						
259		E3	15.147	—	Secondary burial	←220b/→258	Bad	Adult?							
260		E3	14.364	13.904	Hayaoke	←262·308/ →547	Good	Old adult	Male	12		○	○	○	○
261		E3	15.171	14.811	Square wooden coffin	←159/→160 ·161·270	Bad	Infant	Male	10	5				
262		E3	15.007	14.437	Hayaoke	→260·293 ·307	Good	Young adult	Male	13	5				
264		E4	15.260	14.960	Hayaoke	←166·263/ →276	Bad	Adult?							
265		E5	15.308	15.184	Earthenware coffin	→234	Bad	Adult?							
266		E4	14.855	14.675	Hayaoke	←215	Bad	Contamination	Infant						

Table 1. Continued

Table 1. Continued

Branch N. Number	Grid	Level Upper Lower	Burial style	Cutting Conditions	Age-at-death	Sex	Cranium		Mandible Length	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
							N. of Measurable	N. of Measurable						
300	D·E2	14.465	13.815	Kamekan			Good	Old adult	Male					
301	D3	14.766	14.416	Square wooden coffin	<189/->489	Bad	Adolescent	Female						
302	E3·4	15.034	—	Cinerary urn			Burned							
303	E3·4	15.140	14.940	Square wooden coffin	<154/->312	Bad	Contamination?	Female?						
304	D·E2	15.077	14.609	Hayaoke			Contamination?	Adolescent						
306	D3	15.008	—	Secondary burial			Not bad	Middle adult	Male					
307	E3	14.817	14.417	Hayaoke	<262·293	Bad	Contamination?	Adult?	Female					
308	E3	14.489	14.439	Hayaoke	<260·383	Bad	Contamination?	Child	Male					
309	C4	15.191	14.671	Square wooden coffin			Bad	Contamination?	Male					
311	D3	14.793	14.643	Earthenware coffin	<154·304	Bad	Contamination?	Child?	Male	2	5	5	5	5
312	D·E2	14.894	14.394	Hayaoke			Bad	Contamination?	Young adult					
313	E4	14.484	13.784	Kamekan			Good	Contamination?	Adolescent					
314	E3·4	14.776	14.226	Hayaoke			Good	Contamination?	Middle adult	Male	13	5	5	5
315	E4	14.774	14.194	Hayaoke			Good	Contamination?	Young adult	Male	13	5	5	5
316	E4	14.771	14.231	Square wooden coffin	<225		Good	Contamination?	Young adult	Female	12	5	5	5
318	E3	15.301	14.761	Hayaoke	<319		Good	Contamination?	Old adult	Female	12	5	5	5
319	E3	15.298	14.728	Hayaoke	<298·318	Good	Contamination?	Young adult	Male	13	5	5	5	5
320	E4	14.854	14.524	Hayaoke	<276·321	Bad	Contamination?	Old adult	Male					
321	E4	14.849	14.476	Hayaoke	<170·276	Bad	Contamination?	Old adult	Male					
322	E4	14.649	14.349	Hayaoke	<.320	Bad	Contamination?	Old adult	Male					
323	E4	14.728	14.198	Hayaoke	<267	Good	Contamination?	Young adult	Male					
324	E4	14.886	14.736	Square wooden coffin	<106/->424	Bad	Contamination?	Young adult	Male					
325	E4	15.107	14.597	Square wooden coffin	<177	Bad	Contamination?	Young adult	Female					
326	E4	15.169	14.579	Square wooden coffin	<177/->435	Not bad	Contamination?	Middle adult	Female	13	5	5	5	5

Table 1. Continued

Number	Branch N.	Grid	Level Upper	Level Lower	Burial style	Cutting	Conditions	Age-at-death	Sex	Cranium N. of Measurable	Humerus Length	Mandible N. of Measurable	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
327		E5	14.829	14.259	Square wooden coffin	→494	Good	Young adult	Female	13	—	—	—	—	—	—	
328							Good	Middle adult	Male	13	—	—	—	—	—	—	
329		E4	14.957	14.457	Hayaoke	←181/→438	Bad	Middle adult	Male	—	—	—	—	—	—	—	
330		D3	14.960	—	Secondary burial		Bad	Adult?	Male	—	—	—	—	—	—	—	
331		D3	15.199	—	Earthenware coffin		Bad	Adolescent	Male	—	—	—	—	—	—	—	
332		D-E2	14.848	14.598	burial pit		Good	Adolescent	Male	12	4	—	—	—	—	—	
334		E2	14.935	14.689	burial pit		Contamination	Good	Young adult	Male	—	—	—	—	—	—	
335		E3	14.837	14.687	Earthenware coffin		Bad	Adult?	Male	—	—	—	—	—	—	—	
336	(333)	E6	14.750	—	Secondary burial		Good	Young adult	Male	11	—	—	—	—	—	—	
337		E3	14.782	14.382	Hayaoke		Good	Middle adult	Male	13	5	—	—	—	—	—	
339		E2	14.842	—	Kamekan	←340	Contamination	Good	Middle adult	Male	13	5	—	—	—	—	
340		E2	14.928	14.278	Square wooden coffin	→339	Contamination	Good	Middle adult	Female	13	—	—	—	—	—	
341		E5	14.836	14.556	Square wooden coffin	←342	Bad	Young adult	Male	—	—	—	—	—	—	—	
342		E5	14.847	14.647	Cinerary urn	→341	Burned	Bad	Young adult	Female	—	—	—	—	—	—	
343		E4	15.124	14.694	Hayaoke	←175/→435 · 438	Bad	Adolescent	Female	—	—	—	—	—	—	—	
344	a	E5	14.729	14.329	Hayaoke	→344b	Good	Middle adult	Male	13	5	—	—	—	—	—	
344	b	E5	15.031	—	Hayaoke	←344a	Bad	Young adult	Female	12	—	—	—	—	—	—	
345		E5	15.188	14.608	Square wooden coffin	→347 · 511	Good	Old adult	Female	12	—	—	—	—	—	—	
346		E5	15.171	14.801	Square wooden coffin	→347	Bad	Infant	Female	—	—	—	—	—	—	—	
347		E5	15.116	14.616	Hayaoke	←345 · 346/ →511	Contamination	Bad	Young adult	Female	—	—	—	—	—	—	—
347	upper	E5					Bad	Child	Female	—	—	—	—	—	—	—	
348		E5	15.151	14.751	Square wooden coffin		Bad	Adult?	Male	—	2	—	—	—	—	—	
349		E6	15.364	—	Secondary burial		Bad	Contamination	Male	—	—	—	—	—	—	—	
350		E-F5	14.964	14.614	Square wooden coffin	→473	Bad	Old adult	Female	4	5	—	—	—	—	—	
351		E2	14.397	13.757	Kamekan		Good	Middle adult	Male	11	4	—	—	—	—	—	

Table 1. Continued

Number	Branch N.	Grid	Level		Burial style	Cutting	Conditions	Age-at-death	Sex	Cranium	Mandible	Radius	Ulna	Femur	Tibia	Fibula	
			Upper	Lower													
352.		E3	14.379	14.049	Hayaoke			Bad	Infant								
	253	E3	14.729	14.130	Hayaoke			Bad	Adolescent								
	354	F6	15.410	—	Secondary burial			Contamination									
	355.	F6	14.694	—	Secondary burial			Bad	Adult?								
	E1-2	F7	15.421	14.861	Hayaoke			Not bad	Middle adult	Female	Male?						
	356.	F7	15.528	15.088	Hayaoke			Bad	Young adult	Male	Male?						
	357.	F7	15.367	14.827	Hayaoke			→372.	Bad	Middle adult	Female						
	358.	E7	15.367	14.827	Hayaoke			Bad	Bad	Middle adult	Male						
	359.	E7	15.292	14.822	Hayaoke			Contamination	Bad	Middle adult	Female						
	359 upper	E7	14.979	14.679	Square wooden coffin			Bad	Old adult	Female							
	360.	E7	15.503	15.133	Square wooden coffin			Bad	Old adult	Female							
	361.	F6	15.371	14.871	Hayaoke			←365/-423	Bad	Contamination							
	364.	F6	15.215	14.745	Square wooden coffin			Bad	Adolescent	Male	Male?						
	364 South-east	F6	15.329	15.119	Hayaoke			Bad	Adolescent	Female	Female?						
	366.	F7	14.989	14.689	Hayaoke			Good	Middle adult	Female	Female?						
	367.	F7	14.989	14.689	Hayaoke			Bad	Infant	Female	Female?						
	369.	F7	14.946	14.246	Kamekan			Good	Young adult	Male	Male?						
	370.	F6	14.946	14.246	Kamekan			Good	Middle adult	Male	Male?						
	371.	F4	14.146	13.516	Kamekan			Good	Middle adult	Male	Male?						
	372.	F7	15.440	15.010	Hayaoke			Bad	Infant	Female	Female?						
	374.	E6	15.261	14.851	Square wooden coffin			←375	Bad	Contamination							
	374 upper	E6	14.984	14.414	Hayaoke			Good	Young adult	Female	Female?						
	375.	E6-7	14.911	14.331	Square wooden coffin			←374/-376	Bad	Contamination							
	376.	E4	14.569	13.929	Kamekan			Good	Young adult	Male	Male?						
	377.	C-D3	14.875.	—	Kamekan			Bad	Young adult	Male	Male?						
	378.	D3	14.779	14.559	Cinerary urn			Bad	Contamination								
	380.	D3	14.523	14.323	burial pit			Good	Old adult	Female	Female?						
	381.	D3	14.915	14.345	Hayaoke			Bad	Adolescent	Female	Female?						
	382.	a	D3	14.667	14.247	Hayaoke			→382b	Bad	Adolescent	Female					
	382.	b	D3	14.661	14.291	Square wooden coffin			→382a	Bad	Adolescent	Female					
	383.	E3	14.661	14.291	Square wooden coffin			←308/-491	Bad	Young adult	Male						
									Good	Middle adult	Male						
									Bad	Middle adult	Female						
									Contamination	Contamination	Contamination						

Table 1. Continued

Number	Branch N.	Grid	Level	Burial style	Cutting	Conditions	Age-at-death	Sex	Cranium	Mandible	Humerus	Radius	Ulna	Femur	Tibia	Fibula
			Upper	Lower					N. of Measurable	N. of Measurable	Length	Length	Length	Length	Length	Length
384		F6	15.150	14.920	Cinerary urn	<55/->512	Burned	Male	5	5						
385		E5	15.006	14.576	Square wooden coffin	<142/->474	Bad	Middle adult								
386		E7	14.463	14.263	Earthenware coffin		Fragments									
387		E3	14.263	13.633	Kamekan											
388		F6	14.990		Cinerary urn	<199	Burned									
389		C-D4	14.706	14.306	Square wooden coffin	<408	Bad	Young adult	Female	13	5					
391		C-D3	14.667	14.417	burial pit		Good	Old adult	Male	13						
392		E6	14.297	—	Secondary burial		Good	Middle adult	Female	13						
393		E5	15.034	—	Secondary burial		Bad	Old adult	Female	3						
394	a+b	E6	14.778	—	Secondary burial		Contamination	Male	13							
397		F6	14.641	—	Kamekan		Good	Middle adult	Female	13						
398		F6-7	15.133	—	Secondary burial	<133	Bad	Old adult	Male	11						
							Bad	Adult?	Male?	5						
							Bad	Adult?	Male?	5						
							Bad	Adult?	Female?	5						
399		E7	15.230	15.080	Hayaoka	>474	Contamination	Male	13							
400		E7	14.979	14.469	Kamekan		Bad	Child								
401		E7	15.056	14.536	Hayaoka	>403	Contamination	Male	13							
402		F6-7	15.086	14.516	Hayaoka	<402	Good	Young adult	Female	11						
							Not bad	Middle adult	Male	7						
403		E-F6	14.916	14.586	Square wooden coffin	<71	Contamination	Male	13							
404		F6	15.218	14.588	Square wooden coffin		Bad	Young adult	Female	13						
405		F6	14.504	13.854	Kamekan		Contamination	Male	13							
406		F7	15.528	14.818	Kamekan	<370	Good	Young adult	Female	13						
407		F6	14.374	13.764	Kamekan	<586/->390	Contamination	Male	13							
408		E6	14.759	14.599	Square wooden coffin	<434/->410	Bad	Adolescent	Female	5						
						>468	Bad	Old adult	Male	2						
409		E7	15.166	14.716	Hayaoka	<409 · 434	Good	Middle adult	Male	13						
410		E-F7	15.124	14.654	Hayaoka		Bad	Young adult	Male	13						
411		E7	14.945	14.295	Kamekan		Contamination	Male	13							
							Fragments	Male	13							
							Good	Middle adult	Male	5						

Table 1. Continued

Number	Branch N.	Grid	Level Upper	Level Lower	Burial style	Cutting Conditions	Age-at-death	Sex	Cranium N. of Measurable	Humerus Length	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
412		E7	15.228	—	Kamekan	→520 · 521 Bad	Adult? Adult?								
413		E5	15.340	14.660	Square wooden coffin	Not bad Bad	Middle adult Old adult	Male Female	13 11	5	5	5	5	5	5
415 _{(upper) ↓ (lower)}		F7	15.086	14.826	Secondary burial	Good Good	Middle adult Middle adult	Female Female	13	5	5	5	5	5	5
416		E7	15.108	14.788	Square wooden coffin	←358 Contamination	Bad	Middle adult Contamination	Female	○	○	○	○	○	○
417		D3	14.891	14.481	Square wooden coffin	←86/-→418 Contamination	Bad	Young adult Adult?	Female	○	○	○	○	○	○
419		D3	14.657	14.087	Square wooden coffin	←418 Contamination	Bad	Middle adult Middle adult	Female Female	5	5	5	5	5	5
421		E4	14.912	14.231	Kamekan	←181/-→283 Fragments	Good	Young adult Adult?	Male	13	5	5	5	5	5
422		D3	14.650	14.100	Hayaoke	←382a · b Contamination	Bad	Young adult Contamination	Male	○	○	○	○	○	○
423		F6	15.047	14.807	Square wooden coffin	←364 Contamination	Bad	Young adult Contamination	Male	○	○	○	○	○	○
424		E4	15.143	14.713	Square wooden coffin	←324 Contamination	Bad	Young adult Contamination	Male	○	○	○	○	○	○
425		D3	14.714	14.196	Square wooden coffin	Bad	Young adult Contamination	Male	○	○	○	○	○	○	○
426		F6	14.821	—	Secondary burial	Bad	Adolescent Old adult	Female	11	5	5	5	5	5	5
427		F6	15.026	14.526	Square wooden coffin	Good Bad	Young adult Bad	Male	13	5	5	5	5	5	5
428		F5-6	15.321	14.821	Hayaoke	→429 Contamination	Good	Young adult Infant	Male	13	5	5	5	5	5
429		E·F6	15.234	14.634	Hayaoke	←428 Contamination	Good	Young adult Infant	Female	4	○	○	○	○	○
430		E5	15.084	14.794	Square wooden coffin	→505 Contamination	Bad	Young adult Infant	Male	13	5	5	5	5	5
431		E4	15.119	14.759	Hayaoke	→439 Contamination	Bad	Young adult Infant	Female	○	○	○	○	○	○
432		E·F5	15.286	14.736	Hayaoke	→436 Contamination	Bad	Young adult Infant	Male	12	5	5	5	5	5
434		E7	14.871	—	Hayaoke	→409 · 410 Contamination	Bad	Young adult Infant	Male	○	○	○	○	○	○
435		E4	14.994	14.554	Hayaoke	←326 · 343 Contamination	Bad	Young adult Infant	Male	7	4	4	4	4	4
436		E·F5	15.029	14.769	Square wooden coffin	←432/-→437 Contamination	Bad	Young adult Infant	Male	○	○	○	○	○	○
437		E·F5	14.943	14.793	Square wooden coffin	←436 Contamination	Bad	Young adult Infant	Male	13	5	5	5	5	5
438		E4	14.951	14.381	Hayaoke	←343/-→483 Contamination	Bad	Young adult Infant	Male	○	○	○	○	○	○
439		E4	15.010	14.460	Hayaoke	←431/-→440 Contamination	Bad	Young adult Infant	Male	○	○	○	○	○	○
440		E4	14.520	14.350	Square wooden coffin	←439 · 446 Contamination	Bad	Young adult Infant	Male	○	○	○	○	○	○

Table 1. Continued

Number	Branch N.	Grid	Level Upper Lower	Burial style	Cutting Conditions	Age-at-death	Sex	Cranium N. of Measurable	Humerus Length	Mandible N. of Measurable	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
443		D4	14.580	13.870	Kamekan	←444a/→440	Bad	Adult?							
444	b	E4	14.570	13.970	Square wooden coffin		Good	Adolescent							
445		C4	14.605	13.955	Square wooden coffin		Good	Young adult	Male	13	5	○	○	○	
447		F6	14.435	13.885	Kamekan		Good	Middle adult	Male	13	5	○	○	○	
448		E3·4	14.248	13.738	Square wooden coffin		Bad	Middle adult	Male	2	5	○	○	○	
449		E3	14.315	13.825	Hayaoke		Good	Middle adult	Female	13	3	○	○	○	
450		E3	14.373	14.063	Hayaoke		Good	Young adult	Male	13	5	○	○	○	
451		E3	14.298	13.748	Hayaoke		Good	Not bad	Male	6	6	○	○	○	
453	a	E3	14.233	13.930	Kamekan	→453b	Contamination	Infant							
453	b	E3	13.923	13.323	Kamekan	←453a	Good	Old adult	Female	12	5	○	○	○	
454		F7	14.873	14.343	Kamekan		Good	Adolescent	Female	13	5	○	○	○	
455		F6	14.697	14.547	Cinerary urn		Good	Young adult	Female	13	5	○	○	○	
456		F6	14.512	14.112	Kamekan		Burned	Adolescent	Female	13	5	○	○	○	
457		E6	14.939	—	Secondary burial		Bad	Infant							
458		E7	14.714	—	Hayaoke	→459	Good	Middle adult	Female	13	5	○	○	○	
459		E7	14.832	14.302	Hayaoke	←458/→460	Bad	Old adult	Female	4	5	○	○	○	
460		E7	14.628	14.002	Kamekan	←458/←459	Bad	Middle adult	Male	2	5	○	○	○	
462		E7	14.759	14.229	Hayaoke	←30	Good	Adolescent	Female	12	4	○	○	○	
463		F7	14.933	13.993	Kamekan		Good	Old adult?	Male	10	5	○	○	○	
464		E7	14.638	14.028	Kamekan	←465	Bad	Middle adult	Male	11	5	○	○	○	
465		E7	14.684	14.184	Square wooden coffin	→464	Good	Contamination	Male	11	5	○	○	○	
466		E7	14.653	13.983	Kamekan		Good	Old adult	Male	11	5	○	○	○	
467		E7	14.680	14.370	Hayaoke		Bad	Infant							
468		E7	14.926	14.636	Square wooden coffin	←141·409/ →486	Bad	Middle adult	Female						
469		E7	14.640	14.260	Square wooden coffin	←474	Good	Old adult	Female	13	5	○	○	○	
470		F6·7	14.488	13.868	Kamekan		Bad	Adul?	Male	13	5	○	○	○	
471		F6	14.554	13.924	Square wooden coffin		Good	Middle adult	Male?	13	5	○	○	○	
473		E·F5	14.880	14.620	Hayaoke	←350	Bad	Adult?	Male						
474		E7	14.453	14.363	Square wooden coffin	→469/←142/ ·386·400	Bad	Middle adult	Male						
475		E5	14.751	14.221	Hayaoke		Good	Adolescent	Male	13	5	○	○	○	
477		E·F5	14.823	14.613	Square wooden coffin		Good	Middle adult	Female			○	○	○	

Table 1. Continued

Number	Branch N.	Grid	Level Upper Lower	Burial style	Cutting Conditions	Age-at-death	Sex	Cranium N. of Measurable	Humerus Length	Mandible N. of Measurable	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
478		F5·6	15.090	14.849	Square wooden coffin	→498	Not bad Contamination	Middle adult Young adult	Female	13 5					○
480		E5	14.911	14.611	Square wooden coffin		Bad Contamination	Young adult	Male	2					
481		C4	14.629	14.039	Square wooden coffin		Good Not bad Contamination	Old adult Middle adult	Female	13 5					
482		C3	14.503	13.963	Hayaoke		Good Not bad Good	Young adult Middle adult	Male	9 12					
483		E4	14.558	14.158	Square wooden coffin	←438	Not bad Good Good	Middle adult Young adult	Male	13 13					○
487		C3·4	14.716	13.996	Kamekan		Good Good	Young adult Middle adult	Female	13 13					○
488		C·D3	14.312	13.762	Hayaoke		Bad Contamination	Young adult Adolescent	Male	5					○
489		D3	14.510	14.240	Square wooden coffin	←301	Good Contamination	Young adult Adolescent	Male	13 13					
491		E3	14.568	14.018	Hayaoke	←383	Good Contamination	Young adult Adolescent	Male	4					
492		D4	14.624	14.044	Kamekan		Bad Not bad	Young adult Middle adult	Female	5					
493		E4	14.402	14.052	Hayaoke		Bad Bad	Young adult Infant	Male	6					
494		E4·5	14.551	14.291	Square wooden coffin	←327	Not bad Bad	Middle adult Adult?	Male	13 3					
495		D3	14.896	14.616	Square wooden coffin		Good Contamination	Old adult Old adult	Female	11					
496		E5	14.729	14.218	Hayaoke		Bad Contamination	Old adult Middle adult	Female	5					
497		D3	14.571	14.351	Square wooden coffin		Good Contamination	Old adult Middle adult	Female	13 13					
498		E·F5·6	14.783	14.163	Kamekan	←478	Good Contamination	Old adult Good	Female	5					○
499		E·F6	14.320	13.720	Kamekan	←500·503	Bad Contamination	Old adult Infant	Male	12					○
500		F6	14.350	14.020	Kamekan	→499·503 ·534c	Bad Good	Old adult Middle adult	Male	5					○
501		F6	14.668	14.505	Earthenware coffin		Bad Bad	Infant Middle adult	Male	13					○
502		E5	14.724	14.584	Square wooden coffin	←500·→499	Bad Bad	Infant Middle adult	Female						
503		F6	14.340	14.020	Hayaoke		Good Bad	Infant Middle adult	Male	13 4					○
504		E·F6	14.361	13.741	Square wooden coffin		Bad Bad	Adult? Child	Female						○
505		E5	14.775	14.615	Square wooden coffin	←430	Bad Bad	Adult? Infant	Male						
506		E·F5	15.067	14.647	Hayaoke	→519	Contamination Good	Adolescent Bad	Female	13					
507		E·F5	14.675	14.125	Square wooden coffin	→535a	Bad	Adult? Infant	Male	5					

Table 1. Continued

Table 1. Continued

Number	Branch N.	Grid	Level Upper	Level Lower	Burial style	Cutting	Conditions	Age-at-death	Sex	Cranium N. of Measurable	Humerus Length	Mandible N. of Measurable	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
534	a	E-F5	14.271	14.051	Secondary burial		Bad	Middle adult	Male	12	5	0	0	0	0	0	
534	b	E-F5	14.271	13.741	Hayaoke		Bad	Old adult	Male	12	5	0	0	0	0	0	
534	c	F6	14.222	13.792	Kamekan	←500	Bad	Child	Female	13	5	0	0	0	0	0	
535	a	E-F5	14.436	14.006	Square wooden coffin	←507	Good	Adult?	Male	3	5	0	0	0	0	0	
535	b	E5	14.334	13.884	Hayaoke	→538	Bad	Middle adult	Male	3	5	0	0	0	0	0	
536		E4	14.271	13.841	Kamekan		Bad	Old adult	Female	12	5	0	0	0	0	0	
537		E-F5	14.356	13.806	Hayaoke	←524	Bad	Child	Infant	12	5	0	0	0	0	0	
538		E4-5	14.386	13.886	Hayaoke	←533b	Good	Old adult	Female	12	5	0	0	0	0	0	
540		F7	13.643	13.213	Kamekan		Bad	Adult?	Male	12	4	0	0	0	0	0	
541		F7	13.160	12.800	Cinerary urn		Burned	Middle adult	Male	13	5	0	0	0	0	0	
542		E3	14.014	13.604	Hayaoke		Good	Middle adult	Male	12	4	0	0	0	0	0	
543		E7-8	15.209	14.709	Hayaoke		Good	Middle adult	Male	13	5	0	0	0	0	0	
544	a	E3	13.841	13.631	Cinerary urn		Contamination	Burned	Infant	12	5	0	0	0	0	0	
544	b	E3	13.627	13.427	Cinerary urn		Burned	Burned	Adult?	Male	12	4	0	0	0	0	0
544	c	E3	13.484	13.284	Cinerary urn		Burned	Burned	Infant	12	5	0	0	0	0	0	
544	d	E3	13.484	13.284	Cinerary urn		Burned	Burned	Adult?	Male	12	5	0	0	0	0	0
545	E3	14.140	13.790	Hayaoke	→546	Bad	Contamination	Burned	Infant	12	5	0	0	0	0	0	
546	E3	14.227	13.577	Kamekan	←545	Good	Middle adult	Male	12	5	0	0	0	0	0	0	
547	E3	14.045	13.785	Hayaoke	→260	Bad	Young adult	Male	13	5	0	0	0	0	0	0	
548	E3	13.850	13.360	Hayaoke		Good	Contamination	Young adult	Male	13	5	0	0	0	0	0	
549	E4	13.831	13.331	Hayaoke		Good	Young adult	Male	13	5	0	0	0	0	0	0	
560	E3	14.267	13.867	Hayaoke	→565	Bad	Infant	Male	12	5	0	0	0	0	0	0	
561	E4	13.931	13.431	Hayaoke		Good	Middle adult	Male	13	5	0	0	0	0	0	0	
562	E3	13.938	13.708	Square wooden coffin		Bad	Young adult	Male	13	5	0	0	0	0	0	0	
563	E3	13.919	13.489	Hayaoke		Good	Young adult	Female	12	5	0	0	0	0	0	0	
564	E3	14.276	13.936	Hayaoke		Bad	Young adult	Female	12	5	0	0	0	0	0	0	
565	E3	13.917	13.517	Hayaoke	←560	Good	Middle adult	Male	13	5	0	0	0	0	0	0	
566	E3	13.854	13.654	Cinerary urn		Contamination	Burned	Infant	12	5	0	0	0	0	0	0	
567	外 内 外 内 外	E3	13.295	13.065	Cinerary urn		Burned	Burned	Adult?	Male	12	5	0	0	0	0	0
569		C4	14.287	13.777	Kamekan		Bad	Middle adult	Male	12	5	0	0	0	0	0	
571		E-F6	13.380	12.700	Kamekan		Contamination	Bad	Adult?	Male	12	5	0	0	0	0	0
572		E7-8	14.730	14.100	Square wooden coffin	←573	Bad	Young adult	Male	12	5	0	0	0	0	0	

Table 1. Continued

Branch N. Number	Grid N.	Level Upper Lower	Burial style	Cutting Conditions	Age-at-death	Sex	Cranium		Mandible Length	Radius Length	Ulna Length	Femur Length	Tibia Length	Fibula Length
							N. of Measurable	N. of Measurable						
573	E7-8	14.730	14.720	Square wooden coffin	→572	Male	5	5						
577	E-F7	14.580	13.930	Kamekan	Good	Young adult	13	5	○	○	○	○	○	○
578	F7-8	14.730	14.170	Hayoake	→579	Middle adult	11	5	○	○	○	○	○	○
579	F7-8	—	—	Kamekan	Good	Middle adult	11	5	○	○	○	○	○	○
580	E8	14.680	14.580	Square wooden coffin	←578	Female	11	5	○	○	○	○	○	○
581	E8	14.680	14.480	Square wooden coffin	←581	Female	11	5	○	○	○	○	○	○
582	F7	12.880	12.560	Hayoake	Bad?	Adult?	6	6	○	○	○	○	○	○
584	F7	15.180	—	Hayoake	Burned	Middle adult	6	6	○	○	○	○	○	○
585	F7	14.180	13.999	Cinerary urn	Not bad	Middle adult	6	6	○	○	○	○	○	○
586	F7	12.880	12.710	Cinerary urn	Burned	Female	6	6	○	○	○	○	○	○
588	D2-3	13.280	—	Kamekan	Good	Middle adult	11	5	○	○	○	○	○	○
589	D2	13.780	12.980	Kamekan in wooden burial chamber	Good	Middle adult	13	5	○	○	○	○	○	○
590	C3	13.880	—	Kamekan	→591	Young adult	13	5	○	○	○	○	○	○
591	C3	13.750	13.550	Cinerary urn	Burned	Contamination	13	5	○	○	○	○	○	○
592	D2	14.320	13.540	Kamekan	Good	Middle adult	13	5	○	○	○	○	○	○
597	C3	14.780	14.280	Hayoake	→600	Old adult	8	3	○	○	○	○	○	○
598	C3	14.100	13.780	Hayoake	Bad?	Middle adult	2	2	○	○	○	○	○	○
602	C3	12.920	12.620	Cinerary urn	Contamination	Adult?	Male?	Male?	○	○	○	○	○	○

Table 2. Number of individuals with 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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