Chapter 9

Odontological Indicators of Disease, Diet, and Nutrition Inadequacy

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The dentition is usually the best-preserved element of the skeleton. Hydroxyapatite, an inorganic calcium matrix, comprises approximately 97 percent of the chemical composition of enamel (Carlson 1990). This crystalline structure makes dental enamel hard and dense and useful to resist the abrasive nature of mastication. Also, as a result of their hardness, teeth are often all that remains of a long-deceased individual. The abundance of dentition in archaeological contexts has led to the intensive exploitation of teeth for information about the past. Chapters 6 and 8 of this report address the systemic effects of nutrition in dental development and of ecosystem relationships that changed dental chemistry. In addition, the relative presence or absence of pathological conditions, such as tooth loss, caries (cavities from dental decay), and associated abscesses of the alveolar bone surrounding the dental root and cervix also provide evidence of the general level of biological well-being, accessibility of dental care, and the biological effects of foods commonly eaten.

In order to further understand the diets and living conditions of individuals from the New York African Burial Ground, in this chapter we summarize traditional odontological methods for assessing the local effects of different foods within the oral cavity itself. We specifically focus on dental caries, dental abscesses, and tooth loss. Subsections include discussion of the frequencies of subadult and adult dental diseases as well as the differences found in adult males and females. Finally, comparisons of infectious dental pathologies (caries, associated abscesses, and antemortem tooth loss) will be made between the New York African Burial Ground sample and other skeletal samples that may have experienced similar life conditions. We also briefly discuss a few cases of micro- and macrodontia.

Sampling

For a variety of reasons, sample sizes for each pathological observation vary. Much of the variation centers on not only the relative state of preservation of the teeth but also the condition of the surrounding alveoli. In many cases, teeth were recovered, but the surrounding alveoli were too poorly preserved for observations of pathology. Likewise, many dentitions were part of, and encased in, cranial pedestals, often obscuring a complete side of the dental arcade in cases where teeth were too friable to remove in an observable state. Additionally, many teeth were covered with organic or diagenic staining due to the local soil conditions, water seepage and damage, and the time elapsed since interment (Figure 64). This discoloration is not to be confused with enamel hypocalcification; it often affected dental roots and the surrounding alveoli that were exposed as a result of postmortem deterioration, as well as dental enamel. Calculus deposits built up on tooth surfaces, and although these deposits were usually removed, calculus sometimes prevented pathological observations. Finally, antemortem tooth loss and traumatic fractures, especially of the molars, precluded some diagnoses, and in the cases of the 26 individuals with dental modification, along with enamel being lost due to filing/chipping, some pathology information was lost as well (see Table 1).

After the skeletal remains of each burial were cleaned and reconstructed, the dentition for each burial (permanent and/or deciduous) was cleaned, identified, assessed, and curated separately by the Laboratory Director and his assistants. Data collection was performed under the guidelines set forth in *Standards for Data Collection for Human Remains* (Buikstra and Ubelaker 1994). Pathological recordation for the

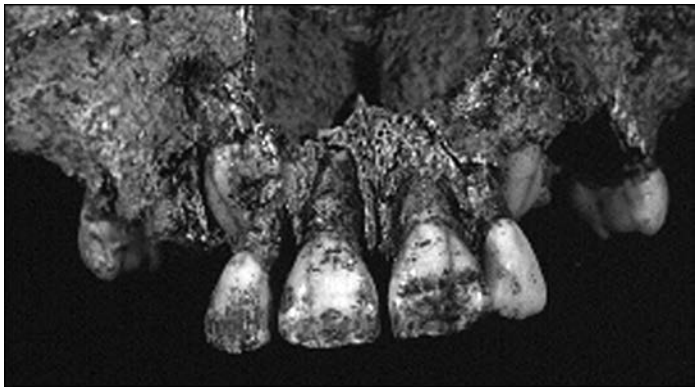

Figure 64. Diagenic staining affecting dentition in a 55–65-year-old female (Burial 241).

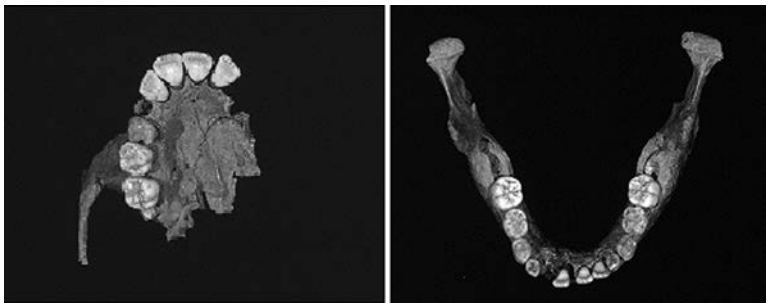

Figure 65. Examples of the photographic record (Burial 95, a subadult aged 7–12 years).

deciduous and/or permanent teeth included dental inventories and tooth loss with alveolar resorption, caries reported by surface and number of caries by tooth, abscess presence and location (buccal, lingual, or exudative), and other pathological observations (molar agenesis, dental crowding, etc.). Dental caries is defined as a progressive tooth demineralization resulting from localized fermentation of food sugars and carbohydrates by bacteria (Mandel 1979). Dental caries formation, periapical abscessing, and antemortem tooth loss are all evidence of a disease process (Larsen 1997). A complete photographic record was constructed for each tooth, the overall dentition, and the maxillary and mandibular alveoli (Figure 65).

For example, in Figure 65, the plate on the left displays the occlusal surface of the maxillary dentition and alveoli, and the plate on the right provides an occlusal view of the mandibular dentition of Burial 95. This provides photographic evidence of dental observations.

Only dentitions from individuals with known sex and age (both adult and subadult) are used for the following dental pathology analysis. For these purposes, adults were defined as 15–60+ years of age, and subadults were defined as younger than 15 years (14.99 and below). The rationale supporting these definitions and the use of only individuals with known sex and ages has been outlined above (see Chapter 7). It is a bit troublesome to have multiple definitions of "adulthood"—one for demographic purposes and another for other studies.

Infectious Pathology

Tables 38 and 39 contain, respectively for males and females, the frequencies of dental pathologies—caries and abscesses—identified in the New York African Burial Ground sample. Caries were present in all tooth types. However, as expected, the highest frequencies of caries were found in molars, followed by premolars and single-cusped incisors and canines. The highest frequencies found in males were in the lower left first molar (37.74 percent), the lower left second molar (31.03 percent), and the upper right third molar (30.43 percent). The least carious tooth was the right lower second incisor (2.67 percent). As noted, no tooth type was caries free. Whereas just 3 teeth reached caries prevalence of over 30 percent in males, 13 teeth reach a similar threshold in females, including 11 of 12 molars and 2 premolars. As it did in

Table 38. Dental Pathology Frequencies in NYABG Males, Permanent Dentition

Tooth No.	Present	Absent	Total	Absent (%)	No. Caries	Caries (%)	No. Abscess	Abscess (%)
1) RM^3	69	8	77	10.39	21	30.43	7	10.14
2) RM^2	68	9	77	11.69	17	25.00	7	10.29
3) RM^1	66	15	81	18.52	19	28.79	13	19.70
4) RP^2	71	9	80	11.25	14	19.72	8	11.27
5) RP^1	73	10	83	12.05	17	23.29	8	10.96
6) RC^1	77	5	82	6.10	11	14.29	1	1.30
7) RI^2	72	6	78	7.69	9	12.50	0	0.00
8) RI^1	70	10	80	12.50	10	14.29	1	1.43
9) LI^1	71	8	79	10.13	10	14.08	3	4.23
10) LI^2	75	8	83	9.64	7	9.33	2	2.67
11) LC^1	72	8	80	10.00	12	16.67	5	6.94
12) LP^1	64	13	77	16.88	14	21.88	4	6.25
13) LP^2	64	14	78	17.95	12	18.75	6	9.38
14) LM^1	64	14	78	17.95	12	18.75	11	17.19
15) LM^2	64	14	78	17.95	13	20.31	10	15.63
16) LM^3	66	9	75	12.00	15	22.73	10	15.15
17) LM_3	58	27	85	31.76	15	25.86	6	10.34
18) LM_2	58	25	83	30.12	18	31.03	7	12.07
19) LM_1	53	28	81	34.57	20	37.74	8	15.09
20) LP_2	72	9	81	11.11	12	16.67	0	0.00
21) LP_1	81	5	86	5.81	6	7.41	3	3.70
22) LC_1	80	5	85	5.88	8	10.00	2	2.50
23) LI_2	78	5	83	6.02	4	5.13	0	0.00
24) LI_1	70	10	80	12.50	2	2.86	1	1.43
25) RI_1	70	7	77	9.09	3	4.29	1	1.43
26) RI_2	75	7	82	8.54	2	2.67	0	0.00
27) RC_1	79	6	85	7.06	5	6.33	2	2.53
28) RP_1	79	7	86	8.14	15	18.99	2	2.53
29) RP_2	82	9	91	9.89	13	15.85	2	2.44
30) RM_1	56	31	87	35.63	11	19.64	2	3.57
31) RM_2	64	23	87	26.44	19	29.69	6	9.38
32) RM_3	63	23	86	26.74	14	22.22	3	4.76

Key: (1) RM3 = upper right third molar; (2) RM2 = upper right second molar; (3) RM1 = upper right first molar; (4) RP2 = upper right second premolar; (5) RP1 = upper right first premolar; (6) RC1 = upper right first canine; (7) RI2= upper right second incisor; (8) RI1= upper right first incisor; (9) LI1= upper left first incisor; (10) LI2= upper left second incisor; (11) LC1 = upper left first canine; (12) LP1 = upper left first premolar; (13) LP2 = upper left second premolar; (14) LM1 = upper left first molar; (15) LM2 = upper left second molar; (16) LM3 = upper left third molar; (17) LM3 = lower left third molar; (18) LM2 = lower left second molar; (19) LM1 = lower left first molar; (20) LP2 = lower left second premolar; (21) LP1 = lower left first premolar; (22) LC1 = lower left first canine; (23) LI2 = lower left second incisor; (24) LI1 = lower left first incisor; (25) RI1 = lower right first incisor; (26) RI2 = lower right second incisor; (27) RC1 = lower right first canine; (28) RP1 = lower right first premolar; (29) RP2 = lower right second premolar; (30) RM1 = lower right first molar; (31) RM2 = lower right second molar; (32) RM3 = lower right third molar.

Table 39. Dental Pathology Frequencies in NYABG Females, Permanent Dentition

Tooth No.	Present	Absent	Total	Absent (%)	No. Caries	Caries (%)	No. Abscess	Abscess (%)
1) RM^3	40	12	52	23.08	12	30.00	3	7.50
2) RM^2	48	6	54	11.11	16	33.33	3	6.25
3) RM^1	40	13	53	24.53	14	35.00	5	12.50
4) RP^2	47	9	56	16.07	13	27.66	2	4.26
5) RP^1	43	16	59	27.12	14	32.56	3	6.98
6) RC^1	55	4	59	6.78	11	20.00	2	3.64
7) RI^2	47	7	54	12.96	14	29.79	2	4.26
8) RI^1	46	4	50	8.00	11	23.91	3	6.52
9) LI^1	47	6	53	11.32	10	21.28	3	6.38
10) LI^2	49	6	55	10.91	13	26.53	2	4.08
11) LC^1	53	3	56	5.36	6	11.32	4	7.55
12) LP^1	45	11	56	19.64	11	24.44	3	6.67
13) LP^2	46	7	53	13.21	12	26.09	2	4.35
14) LM^1	41	11	52	21.15	15	36.59	7	17.07
15) LM^2	51	5	56	8.93	19	37.25	6	11.76
16) LM^3	44	11	55	20.00	15	34.09	2	4.55
17) LM_3	38	19	57	33.33	12	31.58	3	7.89
18) LM_2	41	19	60	31.67	12	29.27	7	17.07
19) LM_1	29	25	54	46.30	16	55.17	7	24.14
20) LP_2	51	7	58	12.07	8	15.69	3	5.88
21) LP_1	57	4	61	6.56	7	12.28	0	0.00
22) LC_1	59	4	63	6.35	9	15.25	2	3.39
23) LI_2	54	5	59	8.47	8	14.81	1	1.85
24) LI_1	57	4	61	6.56	1	1.75	1	1.75
25) RI_1	52	5	57	8.77	2	3.85	0	0.00
26) RI_2	56	5	61	8.20	9	16.07	1	1.79
27) RC_1	56	7	63	11.11	9	16.07	2	3.57
28) RP_1	52	5	57	8.77	20	38.46	5	9.62
29) RP_2	49	9	58	15.52	8	16.33	1	2.04
30) RM_1	32	27	59	45.76	12	37.50	6	18.75
31) RM_2	40	20	60	33.33	12	30.00	2	5.00
32) RM_3	39	17	56	30.36	15	38.46	3	7.69

Key: (1) RM3 = upper right third molar; (2) RM2 = upper right second molar; (3) RM1 = upper right first molar; (4) RP2 = upper right second premolar; (5) RP1 = upper right first premolar; (6) RC1 = upper right first canine; (7) RI2= upper right second incisor; (8) RI1= upper right first incisor; (9) LI1= upper left first incisor; (10) LI2 = upper left second incisor; (11) LC1 = upper left first canine; (12) LP1 = upper left first premolar; (13) LP2 = upper left second premolar; (14) LM1 = upper left first molar; (15) LM2 = upper left second molar; (16) LM3 = upper left third molar; (17) LM3 = lower left third molar; (18) LM2 = lower left second molar; (19) LM1 = lower left first molar; (20) LP2 = lower left second premolar; (21) LP1 = lower left first premolar; (22) LC1 = lower left first canine; (23) LI2 = lower left second incisor; (24) LI1 = lower left first incisor; (25) RI1 = lower right first incisor; (26) RI2 = lower right second incisor; (27) RC1 = lower right first canine; (28) RP1 = lower right first premolar; (29) RP2 = lower right second premolar; (30) RM1 = lower right first molar; (31) RM2 = lower right second molar; (32) RM3 = lower right third molar.

Table 40. New York African Burial Ground Total Number of Carious Teeth, by Sex

No. of Carious Teeth	Male (%)	Female (%)	Total (%)
0	27.1 (n = 26)	15.7 (n = 11)	22.3 (n = 37)
1	11.5 (n = 11)	10.0 (n = 7)	10.8 (n = 18)
2	6.3 (n = 6)	10.0 (n = 7)	7.8 (n = 13)
3	5.2 (n = 5)	5.7 (n = 4)	5.4 (n = 9)
4	6.3 (n = 6)	12.9 (n = 9)	9.0 (n = 15)
5	10.4 (n = 10)	10.0 (n = 7)	10.2 (n = 17)
6	12.5 (n = 12)	7.1 (n = 5)	10.2 (n = 17)
7	7.3 (n = 7)	2.9 (n = 2)	5.4 (n = 9)
8	2.1 (n = 2)	7.1 (n = 5)	4.2 (n = 7)
9	2.1 (n = 2)	1.4 (n = 1)	1.8 (n = 3)
10	1.0 (n = 1)	4.3 (n = 3)	2.4 (n = 4)
11	3.1 (n = 3)	1.4 (n = 1)	2.4 (n = 4)
12	1.0 (n = 1)	4.3 (n = 3)	2.4 (n = 4)
13	2.1 (n = 2)	0.0 (n = 0)	1.2 (n = 2)
14	0.0 (n = 0)	0.0 (n = 0)	0.0 (n = 0)
15	1.0 (n = 1)	1.4 (n = 1)	1.2 (n = 2)
16	0.0 (n = 0)	2.9 (n = 2)	1.2 (n = 2)
17	1.0 (n = 1)	0.0 (n = 0)	0.6 (n = 1)
18	0.0 (n = 0)	1.4 (n = 1)	0.6 (n = 1)
18+	0.0 (n = 0)	1.4 (n = 1)	0.6 (n = 1)
Total	100 (n = 96)	100 (n = 70)	100 (n = 166)

males, the lower left first molar displayed the highest frequency of caries in females (55.17 percent).

The prevalence of dental abscesses was also greatest in molars. In males, the highest prevalence of abscessing was found on the upper right first molar (19.70 percent) followed by the contralateral upper left first molar (17.19 percent). Interestingly, in females, the highest frequency of abscessing was found in the lower left first molars (24.14 percent) and right first molars (18.75 percent).

Most adults (72.9 percent of males and 84.3 percent of females) had at least one carious tooth (Table 40). Historical data show that the average diet for anyone living during the colonial period was high in carbohydrates such as corn or wheat flour and sugar, either refined, in its raw state or in the form of molasses, which often led to caries formation (see Medford, Brown, Carrington, et al. 2009b).

Some caries were so severe that the entire tooth was affected with inflammation and infection of the surrounding alveolar bone. The fact that many of the abscesses were untreated reflects the paucity of dental and overall medical care available to the individuals comprising the New York African Burial Ground sample (Figure 66). Table 41 summarizes the mean and standard deviations for the number of carious, abscessed, and lost teeth and total pathologies—that is, the total chance of having at least one of these three conditions. As was suggested by individual tooth percents in Tables 38 and 39, females had a higher average rate of carious teeth (5.2) compared to males (4.0) (see Table 41). Females also had lost more teeth than males (4.3 vs. 3.7, respectively), and thus females had higher rates of total pathology (10.9 vs.

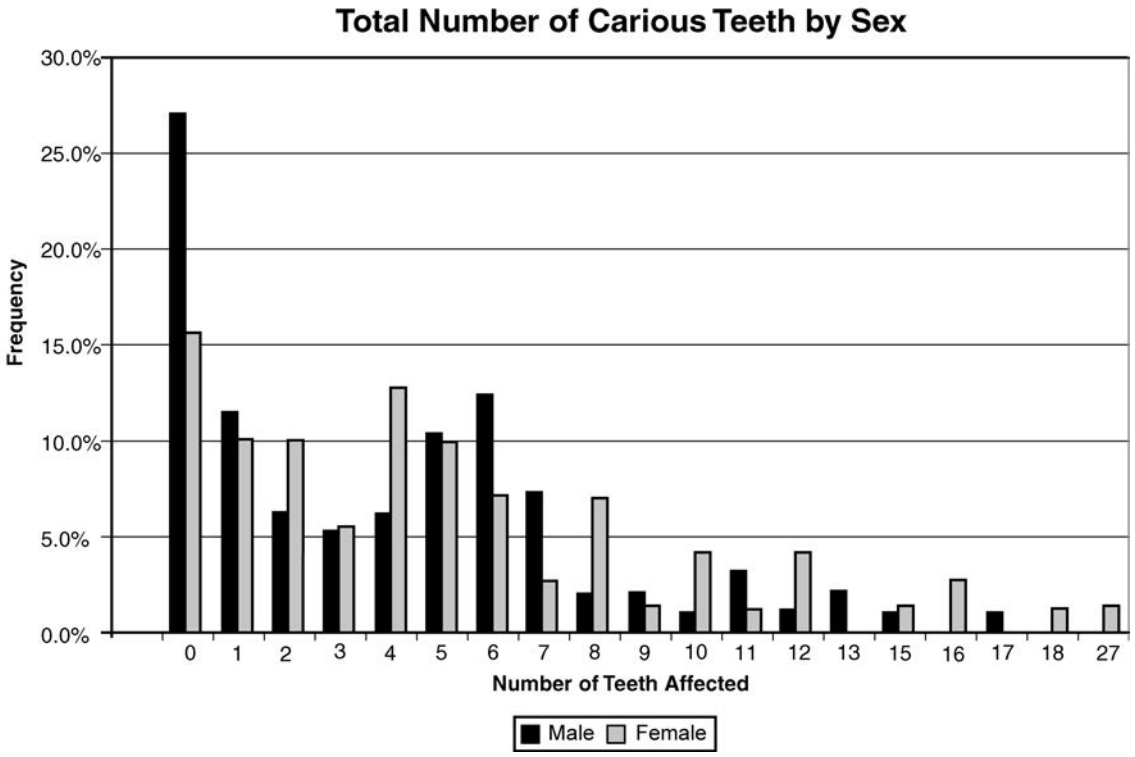

Figure 66. Total number of carious teeth by sex.

Table 41. Dental Pathology Frequency by Sex for the Permanent Dentition of Individuals from the New York African Burial Ground

Males and Females – Permanent Dentition				
Sex	**No. Teeth Lost**	**No. Caries**	**No. Abscesses**	**Total Pathology**
Males (n = 96)				
Value	3.7	4.0	1.5	9.1
Standard deviation	(5.4)	3.9	2.6	9.0
Females (n = 70)				
Value	4.3	5.2	1.4	10.9
Standard deviation	6.2	5.1	2.7	9.1
Total (n = 166)				
Value	4.0	4.5	1.4	9.9
Standard deviation	5.7	4.5	2.7	9.1

9.1 teeth). On average, nearly 10 teeth (9.9, s.d. = 9.1) per permanent dentition were either lost, carious, or abscessed (Figures 67–69).

As young children are weaned onto solid foods, they lose the immunological and nutritional advantages of mother's milk. This can be significant for marginally nourished populations for which the solid food diet is composed mainly of carbohydrates in the form of breads and cereal grains and either raw or processed sugars. Weaning and poor nutrition, coupled with little access or knowledge of dental care, initiates the disease process of caries and abscess formation, along with tooth loss (Figures 70 and 71). The frequency of dental caries and abscesses in the decidu-

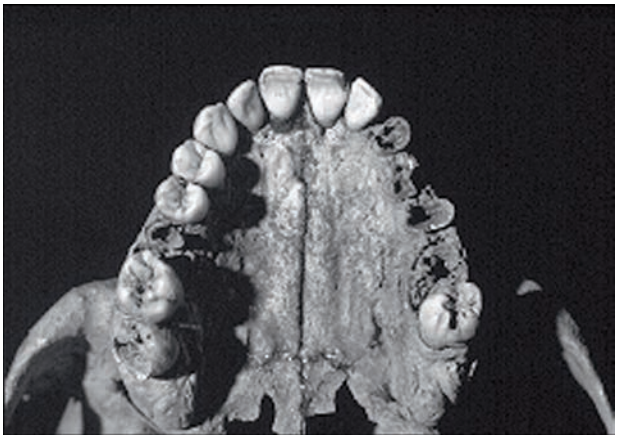

Figure 67. Molar caries in a male aged 26–35 years (Burial 101).

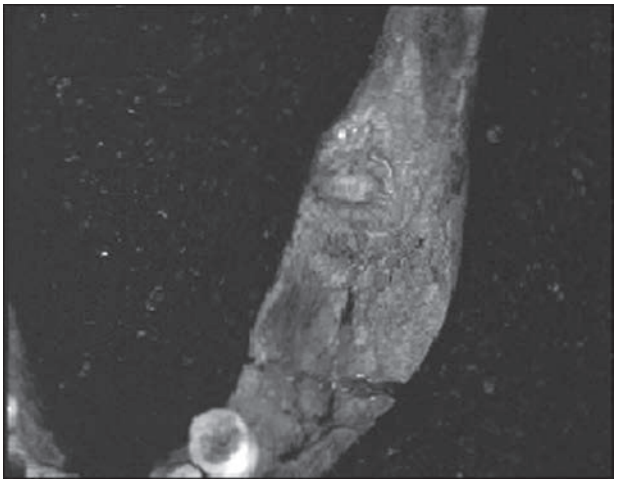

Figure 68. Abscessing in a female aged 25–35 years (Burial 266).

Figure 69. Caries formation in a female aged 35–40 years (Burial 107).

ous dentition is presented in Table 42. Because these teeth are in the mouth for a shorter length of time, the rates of dental pathology are much lower compared to the permanent teeth. For example, only two cases of dental abscessing were found. However, many teeth displayed dental cavities, including 18 percent of the upper left first deciduous molars. As with the permanent teeth, deciduous molars were more carious than single-cusped deciduous teeth.

The following section will compare dental pathologies in the New York African Burial Ground sample with other contemporary and modern samples. Tables 43 and 44 provide a comparison of the rates of dental pathologies found in the present study compared to previously published results. Statistical comparisons are not made because of variation in methods and low sample sizes. As is true for the New York African Burial Ground, the general trend appears to be greater dental pathology in females than males. Caries rates were highest in the FABC sample from Philadelphia but also high in many of these samples (see Table 43). The New York African Burial Ground results fall toward the high end of the middle of the range. Tooth loss was also highest in the FABC and free blacks from Arkansas, with the New York African Burial Ground results falling toward the middle of the range. Finally, the abscess rate was greatest in the New York African Burial Ground (see Table 43), which may be a reflection of poor dental care when compared to later populations, as well as a lack of access to any dental care due to the social inequalities.

The mean number of pathological teeth per mouth in the New York African Burial Ground versus select other samples is presented in Table 44. These data also suggest that the prevalence of dental pathologies in the New York African Burial Ground is near the average of frequencies found at other archaeological sites. New York frequencies are high compared to other eighteenth-century samples, however.

Genetic Dental Pathology

Genetic dental pathologies are inherited in the form of one or more alleles, although environmental stressors play a supporting role in their expression (Scott and Turner 1997). These include hypodontia (tooth agenesis), hyperdontia (supernumerary teeth), dental crowding, cleft palate, and abnormal tooth retention or exfoliation. Amelogenesis imperfecta, which produces distinctively severe enamel developmental defects, is

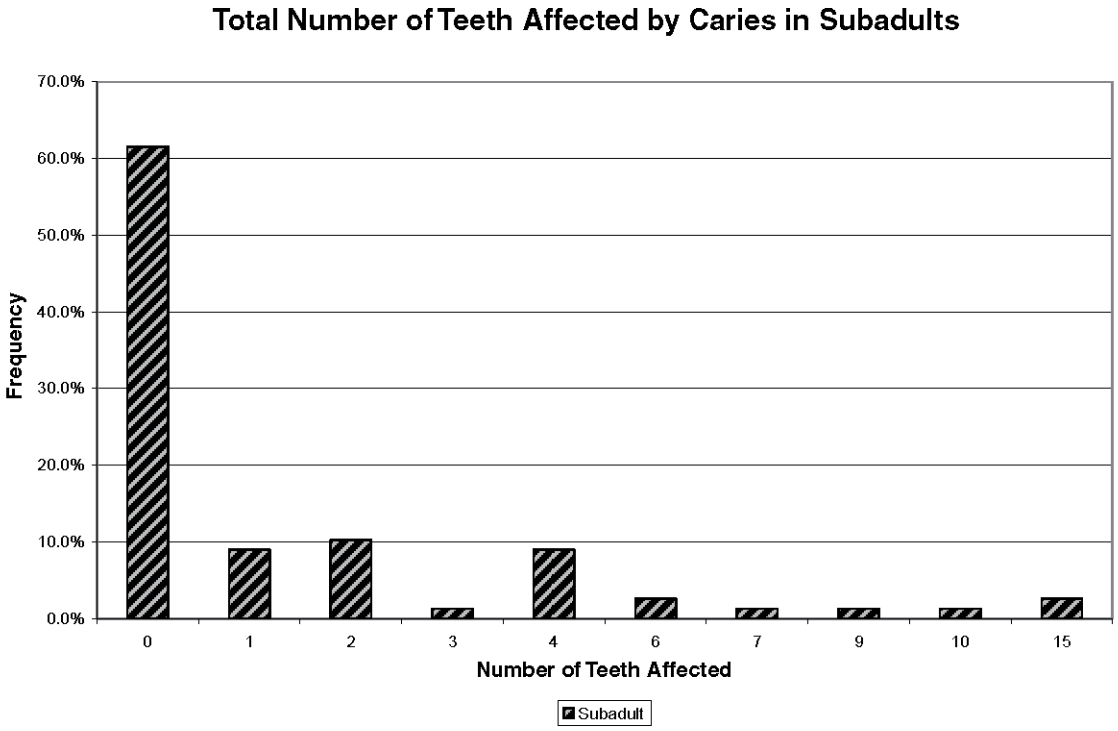

Figure 70. Total number of teeth affected by caries in subadults.

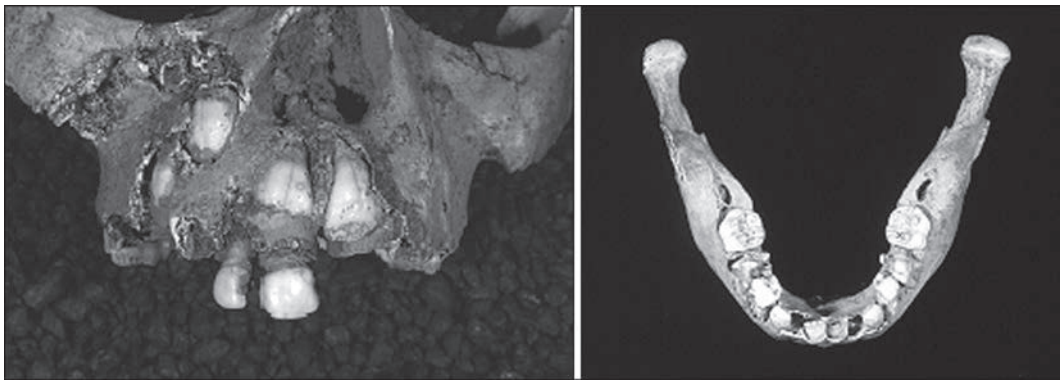

Figure 71. Caries, abscessing, and enamel hypoplasia in a subadult aged 5–7 years (Burial 39).

a form of hypoplasia and hypocalcification (see Chapter 8). The following section contains examples of dental genetic anomalies from the New York African Burial Ground, including dental hypodontia, dental crowding, and hyperdontia.

Subadult Dentition

One subadult, Burial 17, exhibited hypodontia of the deciduous left maxillary central incisor (Figure 72). Although this may be interpreted as exfoliation, there is no corroborating evidence that the tooth was ever present. This child was also afflicted with craniosynostosis, rickets, enamel hypoplasia and hypocalcification, and a cleft palate. Radiographic analysis of the maxilla and mandible also indicated substantial dental crowding of the permanent dentition.

Dental crowding is the only genetic pathology that affects subadults with any appreciable frequency (Figure 73). Among subadults with intact dental arcades, eight (9.9 percent) exhibited crowding of the deciduous teeth, especially the mandibular incisors. Additionally, radiographic observations indicated that all but one of the eight subadults affected also exhibited dental crowding of the permanent maxillary and mandibular incisors.

Table 42. Dental Pathology Frequency, Deciduous Dentition

Tooth No.	Present	Absent	Total	Absent (%)	No. Caries	Caries (%)	No. Abscess	Abscess (%)
1) rm^2	67	1	68	1.47	7	10.45	1	1.49
2) rm^1	71	2	73	2.74	9	12.68	—	—
3) rc^1	64	1	65	1.54	7	10.94	—	—
4) ri^2	62	3	65	4.62	5	8.06	—	—
5) ri^1	59	5	64	7.81	7	11.86	—	—
6) li^1	56	5	61	8.20	6	10.71	—	—
7) li^2	60	2	62	3.23	1	1.67	—	—
8) lc^1	64	—	64	—	3	4.69	—	—
9) lm^1	72	1	73	1.37	13	18.06	—	—
10) lm^2	71	—	71	—	11	15.49	—	—
11) lm_2	75	—	75	—	10	13.33	—	—
12) lm_1	83	1	84	1.19	10	12.05	—	—
13) lc_1	68	1	69	1.45	3	4.41	—	—
14) li_2	60	5	65	7.69	1	1.67	—	—
15) li_1	56	6	62	9.68	—	—	—	—
16) ri_1	52	6	58	10.34	—	—	—	—
17) ri_2	57	5	62	8.06	2	3.51	—	—
18) rc_1	63	2	65	3.08	4	6.35	—	—
19) rm_1	78	1	79	1.27	11	14.10	1	1.28
20) rm_2	80	—	80	—	12	15.00	—	—

Key: (1) RM^2 = upper right second molar; (2) RM^1 = upper right first molar; (3) RC^1 = upper right first canine; (4) RI^2 = upper right second incisor; (5) RI^1 = upper right first incisor; (6) LI^1= upper left first incisor; (7) LI^2= upper left second incisor; (8) LC^1 = upper left first canine; (9) LM^1 = upper left first molar; (10) LM^2 = upper left second molar; (11) LM_2 = lower left second molar; (12) LM_1 = lower left first molar; (13) LC_1 = lower left first canine; (14) LI_2 = lower left second incisor; (15) LI_1 = lower left first incisor; (16) RI_1 = lower right first incisor; (17) RI_2 = lower right second incisor; (18) RC_1 = lower right first canine; (19) RM_1 = lower right first molar; (20) RM_2 = lower right second molar.

Adult Dentition

Observable genetic dental pathologies were extremely rare in adults. Only one adult exhibited hypodontia; Burial 176, a 20–24-year-old male, exhibited alveolar resorption, and his relatively young age, with no tooth loss or caries formation, confirms the assessment of tooth agenesis (Figure 74).

Only two individuals exhibited hyperdontia. Burial 12, a 35–45-year-old female, had a supernumerary tooth at the location for the mandibular right first premolar, thereby obstructing its eruption (Figure 75). Burial 176, a 20–25-year-old male, had a supernumerary tooth adjacent to lingual side of the maxillary left second premolar. The only other genetically caused dental pathology present in adults was dental crowding. Dental crowding was exhibited in five (0.5 percent) of the adults, specifically in the mandibular incisors.

Conclusions

Overall, we found a high rate of tooth loss, caries, and abscessed teeth. The rates of pathology, especially of dental abscesses, were high in comparison to other

Table 43. New York African Burial Ground Dental Pathology Mean Comparison with other Eighteenth- and Nineteenth-Century Samples (Rathbun and Steckel 2002)

Site/Sex	No. Teeth Lost	No. Carious Teeth	No. Abscesses
African Burial Ground, New York			
Male	4	4	1.5
Female	4	5	1.4
Remley Plantation, South Carolina			
Male	7	2	0.5
Female	12	4	0.1
Belleview Plantation, South Carolina			
Male	5	6	—
Female	6	3	0.3
Charleston elites, Charleston, South Carolina			
Male	—	—	0.3
Female	2	1	1.0
FABC, Philadelphia, Pennsylvania			
Male	7	7	1.0
Female	5	9	1.0
Black soldiers, South Carolina			
Male	1	2	1.0
Blacks, Arkansas			
Male	6	5	0.6
Female	8	4	0.4
Blacks, Texas			
Male	3	4	0.1
Female	3	4	0.1
Rochester Poorhouse, New York			
Male	5	5	1.0
Female	5	6	0.9

groups of the same period. Females generally had a higher rate of dental pathologies than males.

In addition to other hardships, it appears that individuals from the New York African Burial Ground had to endure the pain of dental pathologies and possibly changes in diet because of their decreased ability to masticate. The overall high rate of dental pathology may reflect deficiencies in diet and dental hygiene. These results provide additional evidence of poor dietary regimens, unhealthy living conditions, and lack of dental care that characterized the quality of life for the majority of those who lived in bondage.

Table 44. New York African Burial Ground Dental Pathology Mean Comparison with Other Eighteenth- and Nineteenth-Century Samples (modified from Kelley and Angel 1987:204)

Sex	Dental Pathologies per Mouth per Individual				
	Eighteenth Century	Catoctin	Nineteenth Century	Forensic Twentieth Century	NY African Burial Ground
Female	11.8 (9.8) (n = 12)	11.0 (9.6) (n = 8)	9.1 (11.3) (n = 16)	10.3 (8.5) (n = 27)	10.9 (9.1) (n = 70)
Male	8.0 (7.7) (n = 16)	14.4 (10.0) (n = 7)	9.6 (8.4) (n = 25)	14.1 (7.8) (n = 46)	9.1 (9.0) (n = 96)
Male and female	9.6 (n = 28)		9.4 (n = 41)	12.8 (n = 73)	9.9 (n = 166)

Note: Standard deviations are in parentheses.

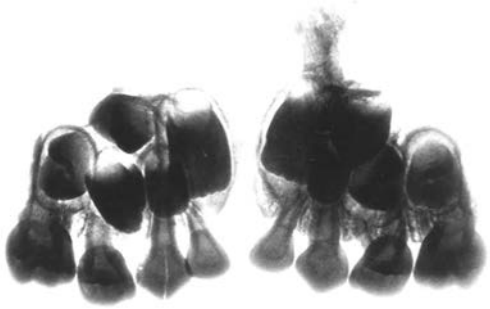

Figure 72. Radiograph of incisor hypodontia in a subadult aged 4–6 years (Burial 17).

Figure 73. Dental crowding in a subadult aged 5–7 years (Burial 39).

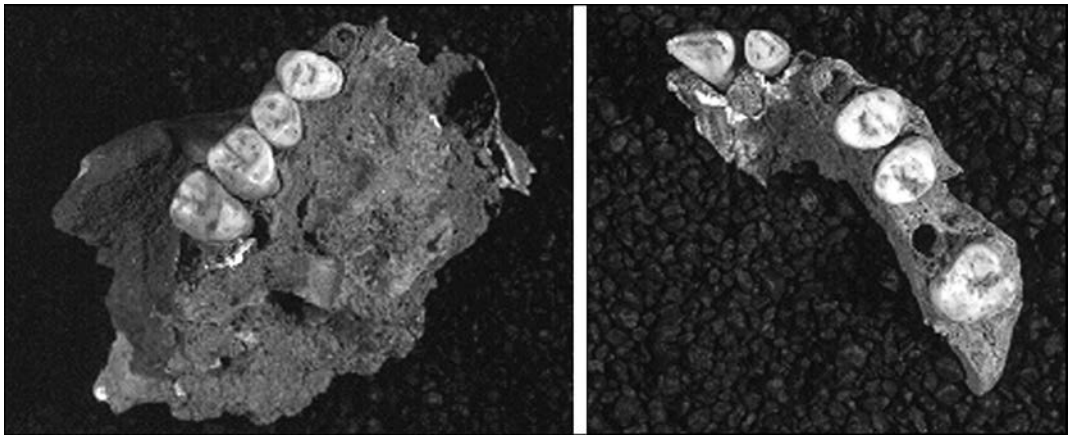

Figure 74. Maxillary molar agenesis in a male aged 20–24 years (Burial 176).

Figure 75. An example of a supernumerary tooth in a female aged 35–45 years (Burial 12).