ABSTRACT

Dental Caries and Restorations in Undocumented Border Crossers

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Dental caries are among one of the most common diseases found in humans and
the prevalence and frequency of the occurrence of these lesions often depends on the
health and diet of the local population. An individual's socioeconomic status can indicate
if the lesion is ever treated or what type of dental restoration is used. The purpose of this
study is to observe the carious lesions and dental restorations of unidentified
undocumented border crossers that have died during migration across the Texas-Mexico
border region, specifically those whose remains were recovered in Brooks, Starr, Val
Verde, and Jim Hogg counties by the Reuniting Families Project at Baylor
University. Of the individuals examined 81.60% had at least one observable occurrence
of either a carie or restoration, 64.37% had at least one untreated carie, and 40.23% had at
least one dental restoration. This population's caries prevalence is similar to American
populations, but the prevalence of untreated caries is much higher than any comparison
populations.

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DENTAL CARIES AND RESTORATIONS IN UNDOCUMENTED BORDER

CROSSERS

A Thesis Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the Requirements for the

Honors Program

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CHAPTER 1

Introduction

The deaths of undocumented migrants across the southern border of the United States have been an issue for decades and has become more serious in the past ten years. The number of deaths has risen in recent years because of increased border security measures. Instead of crossing in areas that are more populated, the primary routes that migrants take have shifted to those more desolate areas with lower security. This has led to a stark increase of those crossing the Texas-Mexico border, which is covered in ranch land with little water to speak of. As the number of deaths, increase there is a greater need for these individuals to be identified and returned to their families and country of origin. There is also a need to investigate the conditions that are causing them to make this long track over the desolate terrain that covers the southern border. Oftentimes only skeletal remains are recovered, and it is necessary to properly analyze these remains to determine the individual's identity.

The human skeleton is able to provide an anthropologist with a large amount of information that could be useful in making an individual identification. It can provide information about the person's ancestry, age, stature, and activity level. In addition to the characteristics that can provide a good view, other features can be observed to provide a more individualistic approach. The dentition in particular, provides valuable insight into an individual's daily life. Teeth are the only bones in the human body that are in constant

and direct contact with the individual's environment. This allows anthropologists to analyze a number of characteristics about the person being observed, particularly their diet, healthcare maintenance, access to dental care, and habits such as smoking and tooth grinding. The presence or absence of dental restorations can give hints as to the quality of care given and the individual's socioeconomic standing. All of this information could be helpful in the case of an unidentified individual. In this study, the individuals examined are unidentified persons found on or near the Texas-Mexico border. These features could reveal a clue as to the identity of the individual and the conditions that they were subject to in their native country.

The purpose of this study is to observe the carious lesions and dental restorations of those undocumented border crossers that have died in their migration across the Texas-Mexico border region. The remains used in this study were recovered by the Reuniting Families Project (RFP) from Brooks, Starr, Val Verde, and Jim Hogg counties. This study will observe the frequency, location, and restoration materials used on the carious lesions of each individual and the projected rate of antemortem losses due to tooth decay to draw conclusions about the conditions surrounding this population. The figures that are obtained from the analysis of the data will be compared to other relative populations to reveal any potential differences in daily habits that could contribute to the rate of caries occurrence and their treatment or lack thereof.
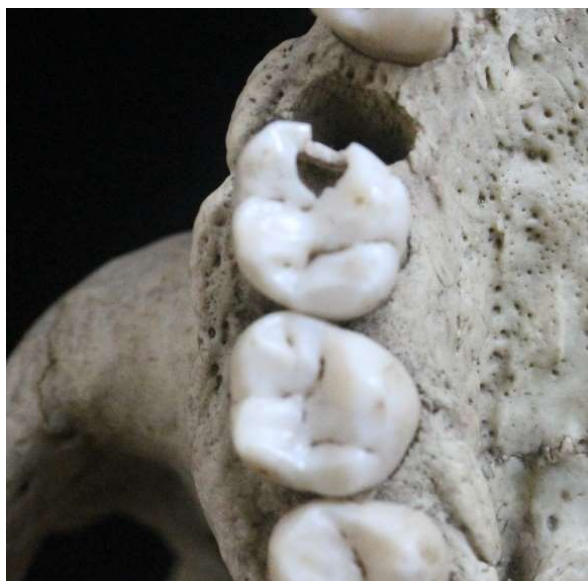
Figure 1: Typical carious lesion on skeletal remains

Carious Lesions

Dental caries, commonly referred to as cavities, are one of the most common diseases shared among populations worldwide. In the twentieth century it could be found in the vast majority of the world's population, however in more recent decades its prevalence has declined in the wake of widespread public health measures. A typical carious lesion can be seen in Figure 1. These lesions are the result of a pH imbalance in the mouth's environment. In a healthy human mouth, the pH environment fluctuates throughout the day in response to a variety of conditions the most obvious of which is the intake of certain foods. Those foods that are rich in carbohydrates trigger a response in the bacteria within the mouth which causes the pH environment to become acidic. Carbohydrates and other substances are later cleared from the mouth and saliva acts as a buffer that brings the pH environment to a more neutral state. During this period when the environment becomes more acidic, the organic acids that have been produced by

plaque bacteria in the mouth begin to dissolve the hard mineral component that covers the enamel, the white outer layer, of the tooth. When the environment returns to its neutral pH, the high concentration of calcium and phosphate ions within saliva are able to help this hard mineral component, which is calcium phosphate, reform (Irish 2008; Karpinski 2013). When this cycle is interrupted, causing the mouth to be more acidic more often, the result is a net loss of enamel. As this process continues a carious lesion is formed.

The mechanism that triggers this acidic shift in pH environment is caused by the byproduct of the bacteria found in plaque. Some common strains include *Streptococcus mutans, Lactobacillus,* and low-pH non-*mutans* streptococci (Irish 2008; Karpinski 2013). These are low-pH loving bacteria that flourish in environments rich in low molecular weight carbohydrates, like sucrose and glucose, that they are able to ferment more efficiently than other strains. Once these bacteria achieve dominance they are able to produce their acid byproduct at a more rapid rate, resulting in more instances of caries in the dentition (Irish 2008; Wols 2004; Karpinski 2013).

Due to this association between sugars and acidity in the mouth, individuals with a diet high in carbohydrates, namely simple carbohydrates, have been shown to have a higher instance of caries than those who tend to ingest more complex carbohydrates or have a lower overall carbohydrate intake (Irish 2008; Sopher 1978; Phinney 2000). Sucrose, a wide spread component of refined sugar in most food products, has been highly correlated to the frequency of lesions because of its low molecular weight and structure as a disaccharide (Irish 2008; Moreira 2012).

Another factor that can heavily impact the mouth's pH environment, and by association, caries rates, is a low concentration of saliva secretions. Saliva acts as a

liquid buffer that bathes the entire mouth and clears some carbohydrates in order for the mouth to return to a more neutral pH (Irish 2008; Karpinski 2013). Without this buffering effect, the organic acids in the mouth are not neutralized and continue to dissolve the mineral component surrounding the tooth. The location of plaque deposits and lesions is often associated with the balance of saliva. Because of the submaxillary and sublingual salivary glands' location under the tongue, the lingual surface of the mandibular canines and incisors have a substantially lower rate of carious lesions. On the other hand, those individuals who suffer from xerostomia or other forms of dry mouth are often more susceptible to caries.

Previous dental health conditions can also contribute to the presence of caries, such as enamel hypoplasia and periodontal disease (Irish 2008, Pascoe 1994, Moreira 2012), both of which are observed in this sample. Several studies have found that the correlation between enamel hypoplasia and dental caries is statistically significant in children (Pascoe 1994; Hong 2009). This is mostly due to the fact that the growth lines that accompany hypoplasia are often less reinforced with mineral component and are more susceptible to plaque buildup than a healthy tooth. As a result, organic acids have fewer barriers to breach in order to reach the tooth's inner dentin. It has also been found that periodontal disease and carious lesions more often than not, occur together as the roots are exposed to more bacteria, which will eat away at the root's surface due to the fact that it has no mineral component to act as protection for the dentin (Merchant 2012).

Fluoride ions have been found to have a strong protective affect against the development of carious lesions (Irish 2008; Phinney 2000). Fluoride lowers the pH point at which there is a net loss tooth mineral, so the acid byproduct of plaque bacteria does

not have as profound an effect as it would under normal conditions (Irish 2008). As a response to high rates of caries, water treatments, toothpaste, and mouthwash have been made containing fluoride. These efforts have effectively lowered the rate of caries of the populations consuming these products. In 1987, Eklund and collegues observed that populations regularly drinking water from a source higher in fluoride developed fewer caries than those at a lower optimum level. Despite the controversy surrounding the fluoridation of water, it is still able to help lower the rate of caries in a treated population as long as it is sufficiently monitored. A higher frequency of lesions could be affected by lack of resources containing fluoride available to a population. This could be an indication as to the individual's original location.

Dental Restorations

The purpose of dental restorations is to restore the integrity, function, and morphology of a tooth that has been otherwise disrupted by either external trauma or dental caries. Restorations are installed by removing the decayed portion of the tooth and filling the hole that is left behind with one of several materials to reform the morphology that was lost. There are many materials that are used for these restorations including amalgam, gold alloy, silver, porcelain, and composite materials. Each material has its own set of benefits and downfalls, mostly including cost and functionality. The most common restoration materials observed in this sample were amalgam and composite.

Figure 2: Amalgam dental restoration

Dental amalgam is a mixture of metals with no specific formula, which commonly contains approximately 50% elemental mercury by weight (Figure 2). This material is both durable and the least expensive restorative material, as it does not have a set formula to follow in its production. It has also been shown to have a significantly lower risk of microleakage when compared to composite and zirconomer fillings, leading to a lower rate of marginal staining on the surrounding enamel and secondary caries that can occur around the restoration if the pulp is not properly sealed off from the outer environment (Patel 2015). However, due to the presence of mercury within the mixture, amalgam fillings also have potential health risks concerning the brain and kidneys (FDA 2015). It is also more difficult to diagnose secondary caries that have developed in comparison to the ease of diagnosis in composite restoration sites (Noman 2013). This could be the reason that the rate of secondary caries is projected as being very low in comparison with other materials. It is more commonly seen on the posterior teeth because of its stark blue/silver coloring against enamel. Today's stress on aesthetics has

also caused this material to lose popularity and an increase in the use of composite

materials has been shown.

Figure 3: Composite restoration

Composite fillings are a mixture of tooth-colored plastics and glass that are used

both for dental carie restoration and for the cosmetic purpose of covering stains and tooth

malformations (Figure 3). The main benefit of composite restorative materials is

aesthetic appearance, but it also allows for more of the tooth's structure to remain intact,

where much of the surrounding tooth must be removed in the installation of an amalgam

filling and shows a higher amount of plasticity than other materials (Patki 2013). Its

disadvantages are the higher rate of leakage and shrinkage, less durability, and the fact

that they must be replaced more often than amalgam restorations (Nomann 2013; Patki

2013). Thus far, no major health concerns have been voiced. Composite material is

mostly used on anterior teeth due to its more natural appearance. It is also more

expensive than an amalgam filling for both cosmetic and functional purposes, so it is not

as widely used in lower income populations.

CHAPTER 2

Materials and Methods

This study examined 105 unidentified deceased individuals presumed to be undocumented migrants. These individuals were recovered from the areas surrounding the Texas-Mexico border between 2012 and 2015 by the Reuniting Families Project at Baylor University from Brooks, Starr, Vel Verde, and Jim Hogg counties. Many of these cases are still undergoing analysis of sex, age, and ancestry, therefore, this information will not be provided. The teeth in these cases were numbered according to the universal system (Figure 4). All dentition observed was from the physical remains, and no casts or pictures were used as primary sources in obtaining data. Each case is recorded in Appendix A.
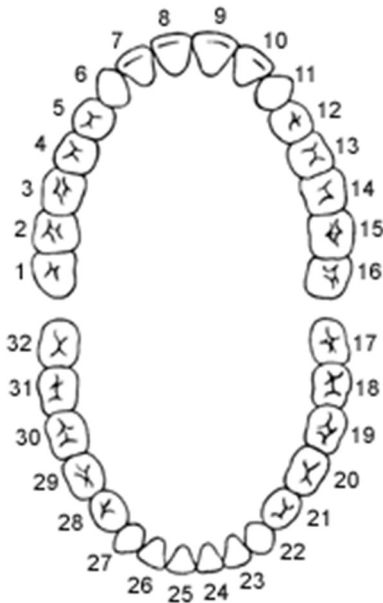
Figure 4: Universal dental tooth numbering system

Only 87 of these individuals' remains contained either a mandible or maxilla with observable dentition, and no dentition could be observed for the remaining 17 cases. Of these 17 cases, 4 had full dentures, 10 either had no recovered skull or no mandible or maxilla, and 3 could not be charted due to extensive postmortem damage. In 32 of the cases there was no mandible recovered, in 3 cases no maxilla was recovered, and in 3 cases the dental arcade was damaged in various locations, resulting in only a partial chart.

Carious Lesions

This study focused on the presence or absence of a lesion on the tooth rather than the severity or size of the carie. In order to determine the frequency of caries in the dentition of these individuals, each tooth was examined for any definable pits (Griffin 2014; Wols 2004) (Figure 1). They were not recorded as caries if only discoloration of the tooth's enamel surface was present, as they were in studies Da-Gloria 2014 and Dewitte 2009. These discolorations of the enamel surface were not classified as carious lesions in this study due to the high frequency of staining that was seen on the occlusal surfaces of these teeth that could otherwise be classified as a carie. A discoloration of the enamel did not have to be present for an abnormal pit to be classified as a lesion. The presence of an abnormal pit in the enamel indicates that the location has been degraded by organic acids regardless of whether or not a stain is present. A dental probe was used to determine the presence of a pit within a stain on the enamel surface to ensure that it was in fact a carious lesion. Normal pits were differentiated from abnormal pits due to location or depth of the depression. Any pits that were found with signs of preparation where a dental restoration may have been lost at some point postmortem were not classified as caries, but instead as dental restorations.

Each lesion was recorded in terms of its location on the tooth's surface (mesial, distal, labial, lingual, or occlusal). The number of lesions discovered on each tooth was recorded as well. They were also counted according to tooth classification (molar, premolar, canine, incisor), dental arcade (mandibular, maxillary), and location in the universal dental numbering system in order to discover any patterns among this population. When a single lesion that affects multiple surfaces of the tooth was observed, in which the original location of the carie is indistinguishable, it was classified as a completely decayed tooth. If the crown of the tooth is lost postmortem, then a carie can be defined by the discoloration's proximity to the pulp of the tooth. A discoloration that is able to penetrate the dentin of the tooth indicates that organic acids have been able to dissolve the overlaying enamel, forming a carie. If the crown is declared a postmortem loss and no defined discoloration was present, it was classified as a healthy tooth.

Dental Restorations

Restorations were identified by the presence of a foreign material within the tooth that attempts to restore the function, morphology, or integrity of the tooth in which it is located. Each filling was classified by its location on the tooth (mesial, distal, occlusal, labial, lingual) and the material used in the restoration. These materials may include amalgam, composite resin, porcelain, or gold alloy. Due to the fact that amalgam uses a mixture of metals that are not clearly defined by any set standard, any unidentifiable metallic filling material was classified as an amalgam restoration. The presence or absence of a filling within a lesion was noted as well. Crowns and dentures were not factored in as a restoration or location of possible caries because of the uncertainty of the reason for the fixture.

These restorations were then translated into their equivalent caries. A mesio-occlusal (MO), disto-occlusal (DO), or multisurface filling was defined as being equal to one carious legion. It is common practice to treat interproximal cavities using a wedge procedure which would include both the occlusal and interproximal surfaces for anchoring reasons to ensure that the restoration is securely in place, particularly when a heavy material such as amalgam is used (Black 1920; Phinney 2000) (Figure 5). For consistency, any single filling that extended from the occlusal surface to a vertical surface of the tooth was equated to a single carie on the interproximal surface due to this similar procedure. The carious lesion associated with each of these types of fillings was recorded as a multisurface restoration. Mesial-occlusal-distal (MOD) fillings were defined as two separate caries, one on each interproximal surface of that tooth involved in the restoration. Occlusal fillings were defined as one carie. If two or more separate restorations were located on the same tooth, each filling was counted as an individual carie. Teeth with both restorations and untreated lesions were noted. After equating each filling to its subsequent carie in both number and location, they were defined using the same method as an untreated lesion. Teeth that were observed to have both a restoration and an untreated carie were noted as well.
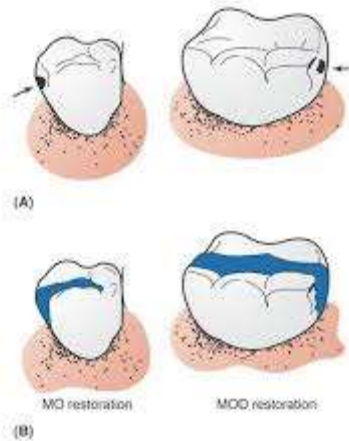
Figure 5: Wedge Filling procedure for interproximal filling

Missing Teeth
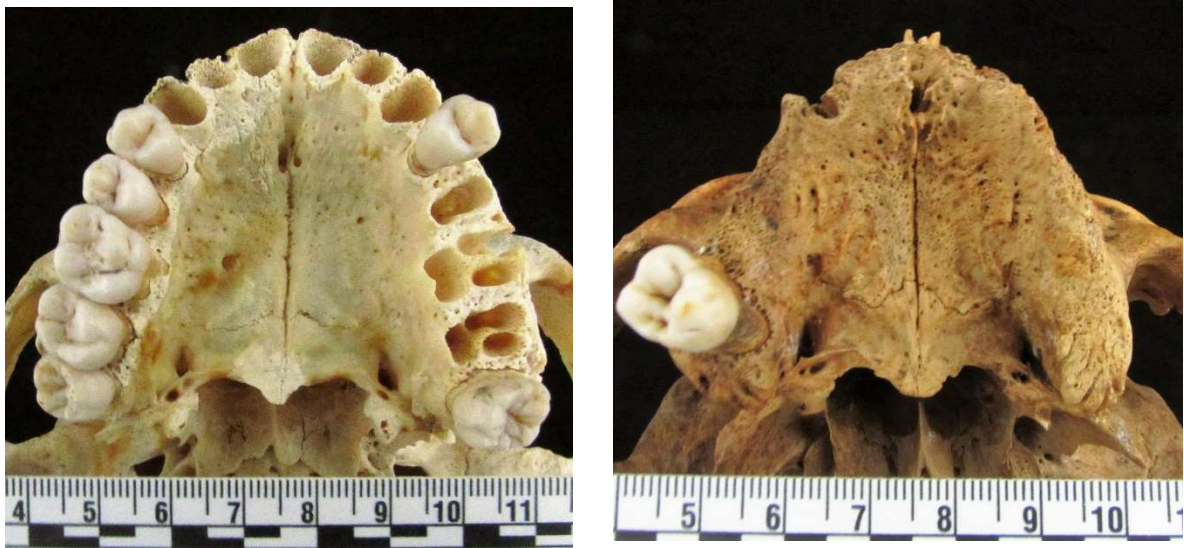
Figure 6: Left (a): All teeth not present were lost postmortem, which can be determined from the open socket left behind. Right (b): Almost all teeth absent were lost antemortem, which can be determined by a closed socket, indicating that it has healed over time.

Missing teeth were recorded as either a postmortem loss or an antemortem loss

(Figure 4). A postmortem loss indicates that the tooth was lost after death, while a tooth

that is lost or extracted during the lifetime of the individual is considered to be

antemortem. Postmortem losses were defined by the presence of an open, unhealed

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socket within the dental arcade (Figure 4a). Any locations in the dental arcade with a completely closed socket or partially closed socket that shows signs of extensive healing in the form of a porous surface was deemed an antemortem loss (Figure 4b). Several teeth that were lost postmortem were recovered with the individual's remains. Any loose teeth recovered with remains were not included in the count of postmortem losses because their condition is observable.

One of the most common causes of antemortem tooth loss is dental decay, therefore antemortem losses excluding the third molar, which is normally extracted according to modern dental practices, were taken into account when calculating possible losses due to carious lesions. The rate of caries in a tooth is highly dependent on its location within the mouth. The posterior teeth, especially the molars, have been found to have a substantially higher rate of caries than the incisors. Because of this trend, it is necessary to take this fact into account when applying caries rates to antemortem losses. The number of teeth lost antemortem were used to formulate a corrected caries frequency used by Duyer and Erdal (2003). This method used the frequency of tooth loss due to caries for anterior and posterior dentition separately rather than as a single entity. This allows for a more accurate prediction as to how many teeth were affected by lesions before their extraction.

The proportion of caries-induced pulp exposure (d) is calculated separately for anterior and posterior teeth:

d = Number of caries-induced pulp exposures/ Total pulp exposure number

Caries-induced pulp exposure is basically a tooth with a carious lesion. When calculating total pulp exposure any exposure of tooth tissues beyond the enamel due to attrition or other types of wear that occurred antemortem must be added to the number of caries-induced pulp exposures.

From here, the estimated number of teeth lost due to caries (e) is calculated using the proportion of caries-induced pulp exposure (d) multiplied by the number of antemortem losses (c):

$$e = d \text{ x } c$$

The corrected total caries number (f) is then calculated from the carious tooth number (b) added to the estimated number of teeth lost due to caries (e):

$$f = b + e$$

The total number of original teeth in the dentition (g) for either the anterior or posterior teeth can be calculated by adding the number of teeth observed (a) to the number of teeth lost ante mortem (c):

$$g = a + c$$

Lastly the corrected cares rate (h) was calculated using the corrected total caries number (f) and the total number of original teeth (g):

$$h = (f/g) \text{ x } 100$$

The corrected total caries number and corrected caries rate for both anterior and posterior teeth were calculated and are reported in the results. These numbers were used

to find the skeletal equivalent of DFMT (Decayed, Filled, Missing teeth) in the observed

population.

CHAPTER 3

Results

Carious lesions were recorded for 87 individuals with observable dentition, of these individuals 71 (81.60%) had at least one carie or restoration. When antemortem losses with the exception of third molars were considered, 78 (89.66%) of these individuals had possible carious lesions. Out of the 71 individuals with observable instances of caries, 11 (15.49%) had only one occurrence, and 47 (66.20%) had three or more occurrences. Nineteen (26.76%) individuals had both untreated caries and restorations in their dentition.

Of 1321 observable teeth, 148 (11.20%) had at least one restoration and 190 (14.38%) had at least one untreated carie. Three hundred twenty-three (24.45%) had at least one of either occurrence. Overall, the average number of teeth decayed, missing antemortem, or filled was 5.50 per mouth.

Carious Legions

Fifty-six (64.37%) of the 87 individuals with observable teeth had at least one untreated carious lesion, 36 (41.37%) had only untreated lesions, and 32 (36.78%) individuals did not have an untreated lesion. Of these 56 individuals with a lesion, 12 (21.43%) only had one lesion and 44 (78.57%) had three or more. When observing the 1321 teeth present, 190 (14.38%) were found to have at least one lesion and 135

(71.05%) of these teeth had only one carie. Fifty-six (29.63%) teeth had two or more

lesions.

Most of the tooth classifications had at least one occurrence of untreated caries,

the exceptions being right maxillary canines (6), mandibular first premolars (21 and 28),

mandibular canines (22 and 27), and mandibular incisors (23-26). The locations of these

exceptions were consistent with the location of the submaxillary and sublingual salivary

glands. Rates of untreated caries in those tooth types affected ranged from 1.45% in left

maxillary canines (11) to 40% in right mandibular first molar (30). Caries were far less

prevalent on the anterior dentition (incisors and canines) than on the posterior dentition

(premolars and molars) which was expected from the results of previous studies (Da-

Gloria 2014; Phinney 2000; Griffin 2014). The mandibular molars are particularly

suseptable to lesions because of the effects of gravity and the lack of saliva pooling in

those areas of the mouth.
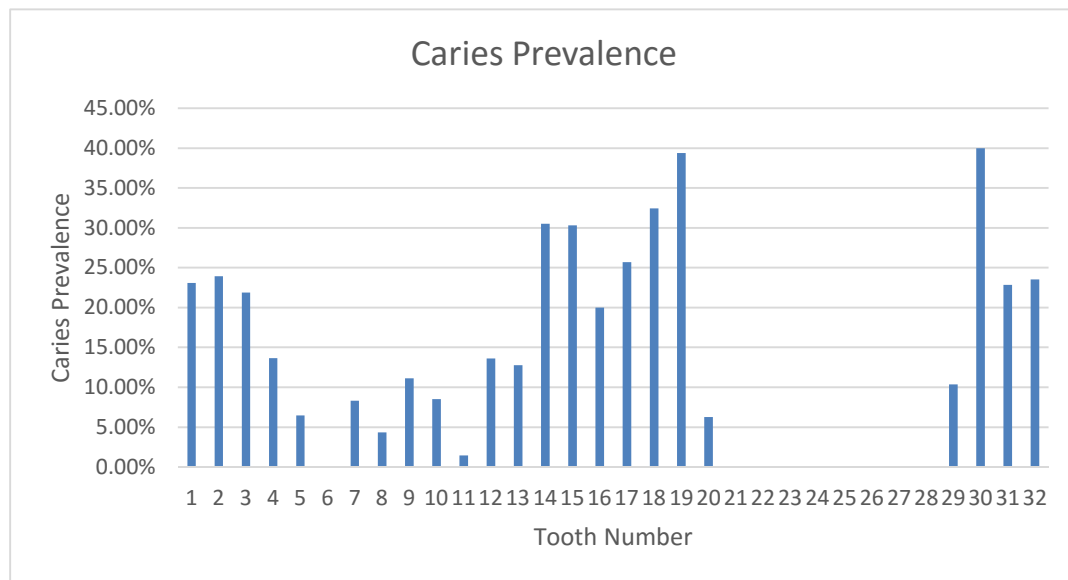
Table 1: Teeth numbered according to the universal dental numbering system are
compared by the prevalence of untreated carious lesions.

Similar to what past studies have also indicated (Phinney 2000; Irish 2008; Griffin 2014), the occlusal surface of the tooth was observed to have the highest prevalence of legions. Of the 190 teeth with lesions, 120 (63.16%) of these had an occlusal carie. The surface with the lowest prevalence of untreated caries was the mesial surface, having been observed in 20 (10.58%) of those teeth with untreated lesions. Three teeth were found to have such large lesions that the origin of the carie could not be speculated. One of these instances was the remnants of a rotted root canal, while the other two appeared to be broken antemortem which might have accelerated the process of tooth rot.

Dental Restorations

Thirty-five (40.23%) of the 87 individuals with observable teeth had at least one dental restoration, 52 (59.77%) had no restorations, and 15 (17.24%) had only restorations and no untreated lesions. Among those 35 individuals with restorations, 9 (25.71%) had only one filling present and 19 (54.29%) were observed to have three or more. Similar to the observation of untreated caries, 1321 individual teeth were examined and 148 (11.20%) were found to have at least one restoration. Of these, 115 (77.70%) of these only had one restoration and 33 (22.30%) had two or more.

Also, like the observation of the caries in this sample, restorations were seen in all tooth types excluding 6, 21-28, and the left maxillary central incisor (9). The rates of restorations were lower than that of caries, but showed a similar distribution as they were more prevalent in posterior teeth when compared to anterior teeth. The tooth with the greatest prevalence of restorations was the left mandibular second molar (18) at 29.73%, while the lowest was surprisingly the left maxillary third molar (16) at 2.50%. However,

given the fact that the 3rd molars are often extracted this result does not have much potential for significance.

Once again similar to the results of untreated caries, the occlusal surface had the highest prevalence of fillings at 68.92% while only a single distal filling was observed. Due to the fact that most interproximal caries are restored using the wedge procedure mentioned earlier, which uses the occlusal surface as an anchor, it was expected that the number of distal and mesial fillings would be extremely low.

A few individual teeth had both restorations and untreated lesions, only one of which look to be the result of leakage around the existing filling. This was observed in 11 individuals and a total of 18 teeth.

The only substantial restorative materials observed in the sample were composite and amalgam. Amalgam was far more frequently used; 109 (73.65%) of the 148 restored teeth were treated with amalgam, while 40 (27.03%) were restored with composite material. The scarce use of composite fillings was more commonly used in the anterior dentition as many studies have mentioned (Nomann et al. 2013; Patel 2015). Fifteen (42.85%) of those individuals with restorations had at least one composite restoration, and only 6 (17.14%) individuals had only composite restorations. In one individual, a site of a filling was observed in which the filling had already degraded, and it was defined as a temporary filling material.
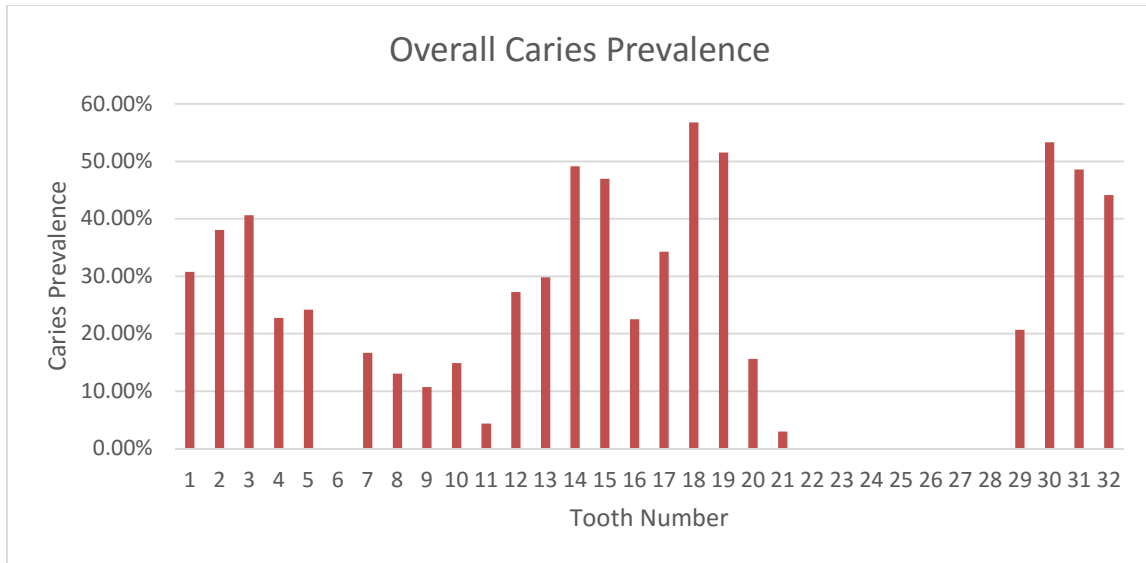
Table 2: Both dental restorations and untreated caries were taken into account to determine the overall caries prevalence for individual teeth with in the dentition.

Restorations were then converted into their equivalent number of carious lesions on each tooth and its surface and were included with the number and location of untreated lesions. The prevalence of lesions among individual teeth increased to 323 (24.45%) of 1321. Two hundred nineteen (67.80%) of these 323 individual teeth only had one occurrence and 106 (32.92%) had two or more. Occurrences were observed on all teeth excluding 6 and 21-28. The highest prevalence was observed on the right mandibular second molar (18) (56.76%) and the lowest at (2.94%) on the right mandibular first premolar (21). The most affected surface was still the occlusal surface in which 220 (68.11%) of 323 teeth were affected. The least affected individual surface was the mesial side in which 22 (6.81%) of 323 were observed with this feature.

This population had a large number of teeth lost either post or antemortem. In the case of postmortem losses this prevented the observation of 583 teeth and their contribution to the data set. Using the corrected caries formula from Duyar and Erdal (2003), the number and rate of antemortem tooth loss due to caries was calculated. Caries data used in the formula came from the combined numbers of untreated caries and dental restorations.
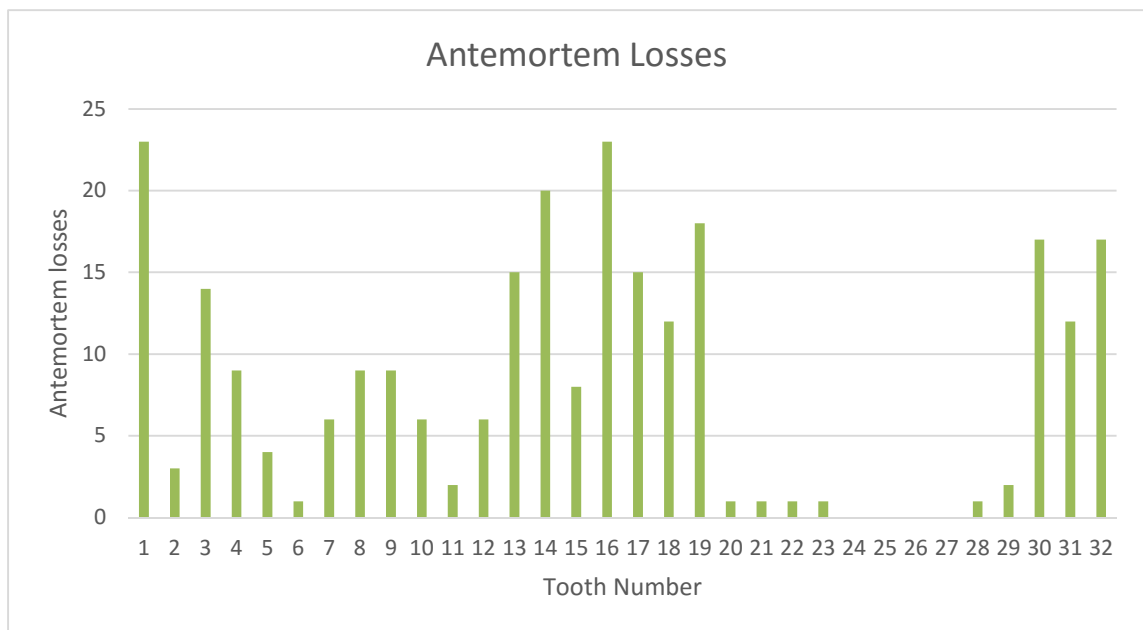
Table 3: Teeth are counted according to the universal dental numbering system to observe the number of antemortem losses for each individual tooth number.

Two hundred fifty-six teeth were recorded as antemortem losses and of these 35 were from the anterior dentition and 221 were from the posterior dentition. It was determined that 27.65 of the 35 anterior losses and 196.69 of the 221 posterior losses were due to caries. The corrected total caries number was 49.65 for anterior teeth and 496.69 for posterior teeth. After calculating the corrected caries rate, the rate for both

dentitions increased. The average caries rate for observable anterior teeth was 10.06% and increased slightly to 10.68% when antemortem losses were factored in. The caries rate of posterior dentition similarly increased from an average of 33.06% to 45.07% when corrected for antemortem losses.

Additional Findings

In addition to the untreated caries and dental restorations observed in this population, a number of dental features and devices were seen that were not factored into the prevalence of carious lesions. In 6 individuals, a total of 10 metallic crowns were observed, all of which were located in the maxillary dental arcade. A traditional bridge spanning the maxillary central incisors was observed in 2 individuals. Another case had evidence of a preparatory procedure for a similar bridge, but the appliance was not recovered. Full dentures were recovered with the remains of 3 individuals and a forth individual showed signs of once having full dentures. One case was only recovered with a lower denture and only 3 of these 4 individuals were discovered with skulls. One individual who was only recovered with their maxillary dentition was found with both upper and lower partial dentures. Two cases showed signs of a possible triage procedure, one in the form of a temporary filling and another as a crude traditional bridge for all four maxillary incisors. Two cases showed signs of orthodontic work. Sealant was found on the posterior dentition of 5 individuals.

Of those 87 individuals with observable dentition 23 (26.44%) showed signs of periodontal disease and 7 (8.05%) showed signs of enamel hypoplasia.

CHAPTER 4

Discussion and Conclusion

Caries Prevalence vs. Untreated Lesions in Various Populations
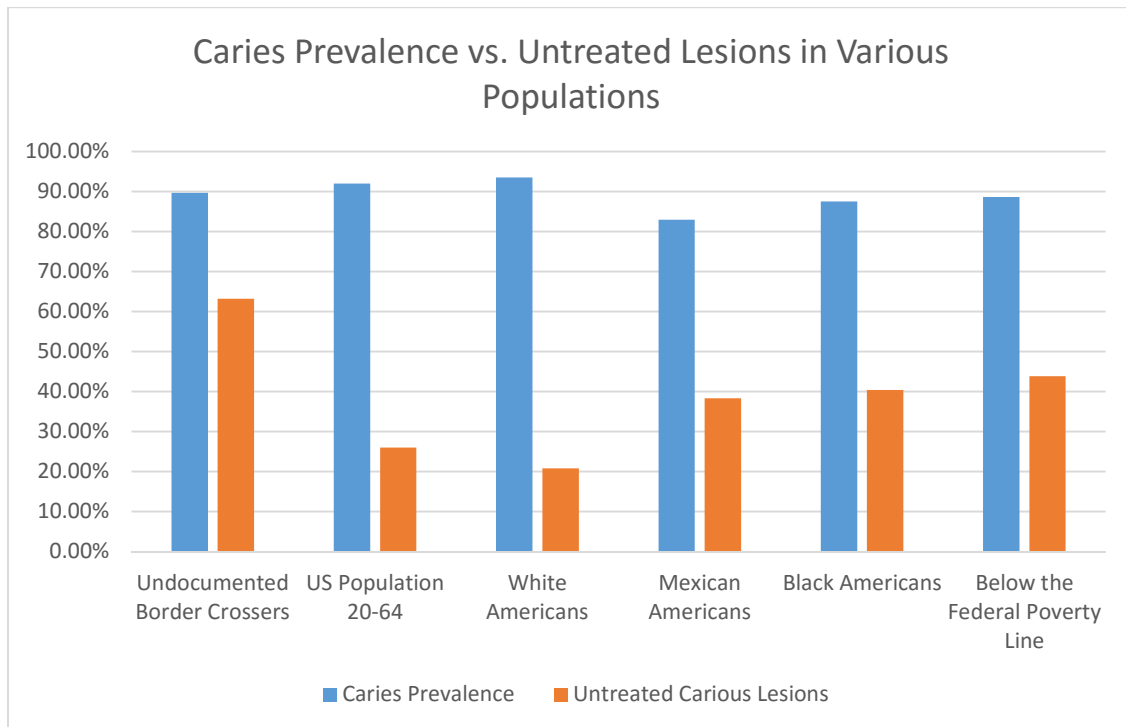
Table 4: Data gathered on the US population's caries prevalence and untreated carious lesions by the NHANES between 1999 and 2004 is compared to that of undocumented border crossers

When analyzing the results of this migrant population there are two statistics that merit attention in comparison to other populations: the prevalence of caries and the high rate of untreated lesions. These comparisons can be observed in Table 4.

The National Health and Nutrition Examination Survey (NHANES) collected information between 1999 and 2004 that indicated that the overall prevalence of dental

caries (decayed, filled, or missing) in the permanent dentition of American adults ages 20-64 is about 92%. When this statistic is divided between populations, White Americans have the highest prevalence at 93.49%, and Black and Mexican Americans have a lower number at 87.51% and 82.97% respectively. This population of undocumented border crosser's prevalence at 89.66% is not vastly different. This sets the sample population within the margin of variation found in American populations.

When you compare this population to different levels of poverty in the United States, there is a similar pattern. Of those who are living below the Federal Poverty Level, 88.69% of individuals have dental caries in their permanent dentition. 88.91% of those at or slightly above the poverty level had dental caries, and 93.05% of those making two or more times greater than the salary of those on the poverty level had dental caries.

When observing this population in relation to other Hispanic countries, they fall on the upper part of the spectrum. A study done by the World Health Organization (WHO) in the Americas revealed that 12 year olds in 40 countries had an average DMFT index (Decayed, Missing, Filled Teeth) of 2.4 with a range from 0.60 to 6.3 (Moreira 2012). The equivalent in this population is 5.75 which would make it second only to Ecuador whose DMFT index is 6.3.

The most telling of these statistics is the rate of untreated caries within this population. The rate of untreated lesions in adults in the United States ages 20-64 is 26%. The populations of Mexican and Black Americans have a higher rate at 38.35% and 40.45% respectively. These are significantly lower than the sample's rate at 64.37%. Even when comparing the sample's untreated caries rate to those living under the Federal Poverty Level (43.88%), it still is significantly higher.

If these comparisons are only viewed singularly and not together as one entity, the entire picture of this population's conditions cannot be analyzed. This combination of results and comparisons can provide valuable insight as to how these undocumented migrants lived.

It is a standard assumption that in a population with a high prevalence of caries that the average intake of simple carbohydrates is higher than those regions with a lower prevalence. This assumption is true concerning the United States, however this population is also subject to a number of effective public health measures, such as water fluoridation, relatively easy access to dental care, and campaigns for dental health awareness. Higher carbohydrate diets are often seen in most populations around the world, but at a lesser extent, the main issue that this migrant population seems to be affected by is poor access to care and a lack public health measures put in place by their respective governments.

The combination of the migrant population's caries prevalence in comparison to other relative groups like Central and South America and the United States' population creates a unique set of conditions to be observed. This study's sample population has come from a variety of locations that may be subject to a number of hard conditions that have resulted in similarly harmful effects on their dentition. While the rate of caries occurrence is comparable to the United States population, the number of untreated lesions is abnormally high when compared to any other group. These observations in conjunction with the large number of individuals that also had dental wear, impacted second and third molars, and unextracted third molars is a blatant indicator of a lack of access to dental care that this population was subject to.

Socioeconomic status has been found to have an inverse relationship with the prevalence of caries (Petersen 2005). Those crossing the border through these desolate areas are desperate to escape their current situation, oftentimes severe poverty is one of their afflictions. This means that they are unable to afford dental care in their native country and as a result they have no way of preventing the formation of carious lesions. When a lesion finally forms there is no way for the individual to have the decayed tooth restored without paying for a procedure to be done. As a result of their inability to pay for a restoration, caries are left to become more severe. Once plaque bacteria like *Streptococcus mutans*, *Lactobacillus,* and low-pH non-*mutans* streptococci become dominant in the mouth, they can produce their organic acid byproduct at a faster rate. This causes even more dental caries to form shortly after the first. This could be why 80% of the sample had more than three caries present in the same dentition as well as the high severity of the caries observed. If the mouth is left in this state for a long period of time, the dental caries obtained can become severe enough that tooth extraction would be necessary to combat any health issues, resulting in a large amount of antemortem tooth loss. As individuals within this population age, their dentition would become even further deteriorated. However, a large number of these individuals have been observed with still emerging or slightly impacted wisdom teeth, which could be an indicator of younger population.

The fact that over a fourth of the individuals examined had both restorations and fillings could be an indication of some access to medical care, but inability to have constant access for various reasons. The 23 cases with possible periodontal disease and numerous others with plaque buildup, even when dental restorations were present, and

the fact that 62.07% of these individuals still had at least two third molars remaining in their dentition, serve to buttress this conclusion. A further examination into the progression of worsening of economic conditions in this population as well as cultural dynamics could shed some light onto why the dental health of these individuals is not regularly addressed. Although some possible reasons could be that they only seek out care when they have the economic means to do so or when they have little choice but to address the condition in order to prevent further problems. When restorations were present, an overwhelming majority (73.65%) of them were amalgam, which is the much less expensive option of the two materials observed and is a much more viable option for those of low socioeconomic standing.

The infrastructure of Central and South American countries also does not have many of the preemptive measures concerning public health available for the majority of their population. Policies such as water fluoridation and the promotion of dental health, which are common in the United States and other developed countries, cannot be found in these areas, least of all for those who are not in the socioeconomic state to seek out care on their own. As mentioned before, this is a possible contributor to the migrant population's high prevalence of caries even if they have a lower average intake of simple carbohydrates than those living in the United States.

Another possibility which would need to be further researched is the genetic factors that are involved in the development of carious lesions of certain populations. Past studies have discovered that there is some genetic component in the susceptibility to caries (Bretz et al. 2003; Morrison et al. 2015; Tannure et al. 2012). In a study conducted by Ismail et al. Mexican Americans were shown to be more prone to the development of

carious lesions as well as periodontal disease, however no other studies could be found with sufficient support for this conclusion. Thus far this heritable risk has shown little noticeable influence on the rate of caries in individuals or populations, but the genetic influence on permanent dentition has not been widely investigated. Future studies may shed more light on this subject, but currently there is not enough support for dental caries to be considered partially dependent on genetics.

When all of these factors are considered, even if those in severe poverty do not have the same carbohydrate rich diet that more affluent members of society have access to, the combined effects of dental wear, poorly treated water sources, and lack of dental care access have caused the rate of carious lesions to become much higher than their average local population.

Conclusion

The undocumented migrants from this sample were found to have a high prevalence of caries when examining individuals for dental restorations, antemortem tooth loss, and untreated lesions. The distribution of these caries on certain tooth classifications and surfaces was found to be consistent with past studies. The most prominent of these statistics was the rate of untreated lesions among the individuals examined. This rate was found to be almost 20% higher than that observed in the most afflicted population within the United States. The combination of these conclusions indicate a distinct lack of dental care and maintenance that is available for impoverished individuals and possibly the general population.

Those migrants crossing the border in a desperate attempt to reach the United States have done so to escape the conditions that they are subject to in their native country. The lack of healthcare access is one of a long list of socioeconomic struggles that they have dealt with before attempting to cross into the United States. Future studies on other aspects of this populations health status would create a much clearer picture of the conditions that they face and how it differs from those impoverished individuals who live in a developed country such as the United States, which has the infrastructure to provide some care for their general population.

APPENDICES

APPENDIX A

Individual Cases

Key

N = Natural Tooth   P = Postmortem Loss   A = Antemortem Loss

/ = Not Applicable   C = Carious Lesion   1A = Amalgam Restoration

1B =Composite Restoration   R = Cap or Crown   T = Bridge

O = Occlusal   Li = Lingual   La = Labial

M = Mesial   D = Distal   Multi = Multiple Surfaces

MO = Mesio-occlusal   DO = Disto-occlusal

Case #0352: Right half of Maxillary Dental Arcade

Left half of Mandibular Dental Arcade

Left portion of Mandibular Dental Arcade containing 17-20

Right portion of Mandibular Dental Arcade containing 32

3 unassigned teeth from unchartable portion of mandible (left: incisor; middle: canine; right: premolar)

Notes:

- Maxilla and Mandible are fragmentary
    - Both halves of maxilla recovered and separated from cranium
    - Mandible split with middle portion missing (21-31)
- 3 loose teeth from uncharable portion of mandible recovered
- Possible periodontal disease
- Heavy calculus

Dental Inventory of Case #0352	
Tooth #	Condition
1	N
2	N
3	N
4	N
5	N
6	N
7	N
8	P
9	P
10	P
11	N
12	N
13	A
14	N
15	N
16	P
17	N
18	N
19	N
20	N
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	N

Case #0354

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Possible Periodontal Disease
- 17: Amalgam filling is broken, surrounded by post and antemortem breakage
- Autopsy performed before

Dental Inventory of Case #0354	
Tooth #	Condition
1	A
2	1A: 1O; 1B: La
3	A
4	P
5	P
6	P
7	A
8	A
9	A
10	A
11	1A: 1Li; C: 1M
12	P
13	A
14	1A: 1MO
15	A
16	A
17	1A: 1Multi
18	A
19	A
20	N
21	1A: 1MO
22	N
23	N
24	P
25	P
26	P
27	P
28	P
29	A
30	A
31	1A: 1O; C: 2La
32	A

Case #0355

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Juvenile skeleton
- Third molars are not yet erupted
- Shoveled incisors

Dental Inventory of Case #0355	
Tooth #	Condition
1	N
2	N
3	N
4	N
5	P
6	N
7	P
8	P
9	P
10	C: 1M
11	N
12	P
13	P
14	C: 1Li
15	N
16	N
17	N
18	C: 1La
19	N
20	P
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	P
30	N
31	C: 1La
32	N

Case #0356

Maxillary Denture

Mandibular Denture

Notes:

- No skull recovered
- Full dentures
  - Third molars not present
  - 10, 11 colored gold
  - 13 lost

Maxillary Dental Arcade

Notes:

- No mandible recovered
- 1-13, 16: Show various amounts of postmortem breakage
- Possible Periodontal Disease

Dental Inventory of Case #0358	
Tooth #	Condition
1	N
2	N
3	N
4	N
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	N
13	N
14	C: 1O
15	C: 1Li
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0359

No skull recovered with remains

Case #0360
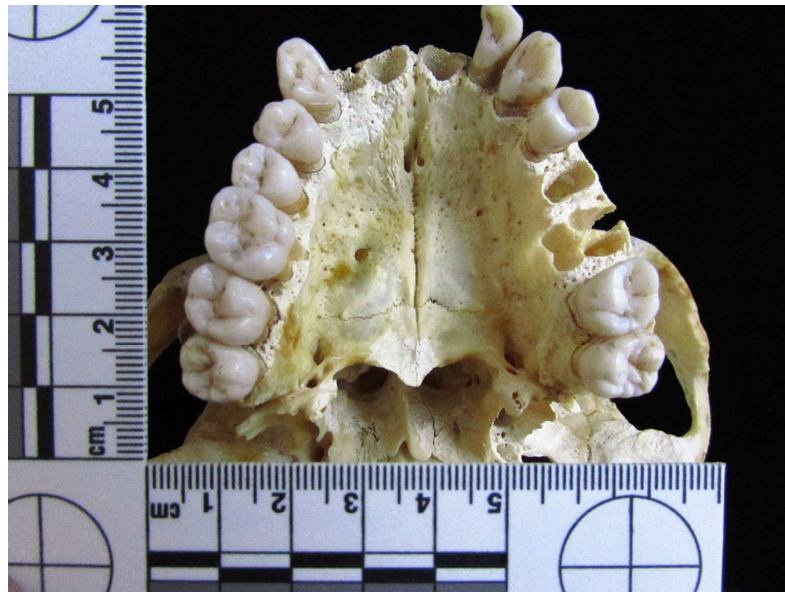
Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Possible Periodontal Disease
- Trace Shoveling

Dental Inventory of Case #0360	
Tooth #	Condition
1	C: 2O
2	N
3	N
4	N
5	N
6	N
7	P
8	P
9	P
10	N
11	N
12	N
13	P
14	P
15	N
16	N
17	C: 1O
18	1A: 1Multi
19	1A: 1Multi
20	N
21	N
22	N
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	A
31	1A: 1Multi
32	C: 1La

Case #0361

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Third molars emerging

Dental Inventory of Case #0361	
Tooth #	Condition
1	N
2	N
3	N
4	P
5	P
6	P
7	P
8	P
9	P
10	P
11	N
12	P
13	P
14	N
15	N
16	N
17	N
18	N
19	N
20	P
21	P
22	P
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	P
31	N
32	N
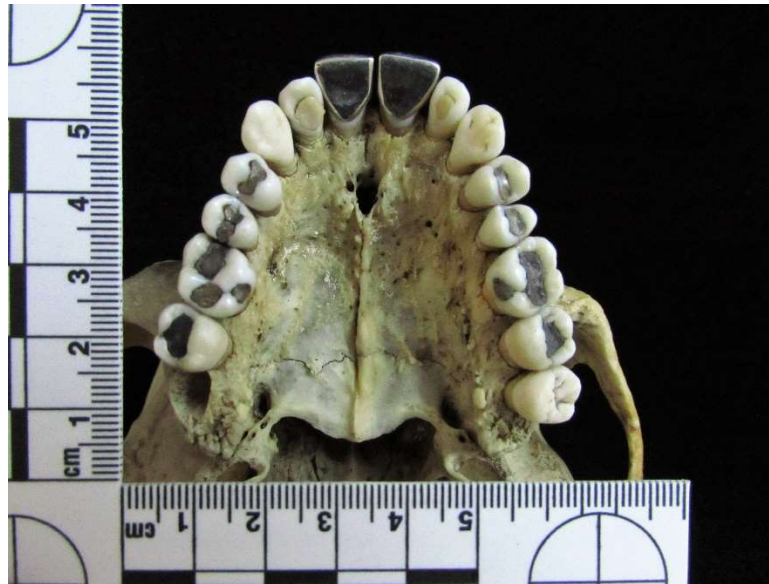
Maxillary Dental Arcade

Notes:

- 8, 9: Metallic caps with labial surface exposed

Dental Inventory of Case #0362	
Tooth #	Condition
1	P
2	1A: 1O
3	1A: 2O, 1Li
4	1A: 1DO; 1D
5	1A: 1O; 1D
6	N
7	1B: 1Li, 1La; 1D
8	C: 2D
9	C: 2D
10	1B: 1Li
11	N
12	1A: 1O
13	1A: 1O
14	1A: 1O, 1Li
15	1A: 1O
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0363

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0363	
Tooth #	Condition
1	A
2	C: 2O
3	N
4	P
5	N
6	N
7	P
8	P
9	P
10	P
11	N
12	N
13	P
14	N
15	N
16	A
17	A
18	N
19	A
20	P
21	N
22	N
23	N
24	N
25	P
26	N
27	N
28	N
29	P
30	A
31	P
32	A

Case #0364

No skull recovered with the remains

Case #0365

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 17, 32: Emerging
  - 17: Impacted with 18
- Shoveled incisors
- Possible Enamel Hypoplasia

Dental Inventory of Case #0365	
Tooth #	Condition
1	A
2	N
3	N
4	P
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	N
13	N
14	N
15	N
16	P
17	N
18	C: 1O
19	N
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	P
30	P
31	P
32	N

Case #0366

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Partial dentures
- Severe bone and root resorption; Possibe Periodontal Disease
- Severe attrition

Dental Inventory of Case #0366	
Tooth #	Condition
1	A
2	A
3	A
4	A
5	C: 1D
6	N
7	C: 1La
8	A
9	A
10	N
11	N
12	N
13	A
14	A
15	A
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0367

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Third molars emerging
- Trace shoveling
- Possible Periodontal Disease
- 27: Glued tooth

Dental Inventory of Case #0367	
Tooth #	Condition
1	N
2	N
3	N
4	P
5	N
6	N
7	P
8	P
9	N
10	N
11	N
12	C: 1O
13	N
14	N
15	N
16	N
17	N
18	N
19	N
20	N
21	N
22	P
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	C: 1La
31	N
32	N

Case #0368

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Periodontal Disease

Dental Inventory of Case #0368	
Tooth #	Condition
1	C: 1O
2	C: 1O
3	N
4	P
5	C: 1D
6	N
7	P
8	P
9	P
10	P
11	N
12	C: 1O
13	A
14	N
15	C: 1O
16	N
17	N
18	N
19	1A: 1O
20	P
21	P
22	P
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	1A: 1O
31	A
32	A

Case #0369

No splanchocranium recovered with remains

Case #0370

Maxillary Dental Arcade

Notes:

- Trace shoveling
- Possible Enamel Hypoplasia

Dental Inventory of Case #0370	
Tooth #	Condition
1	N
2	N
3	1A: 1MO
4	P
5	1A: 1D
6	N
7	N
8	P
9	P
10	A
11	P
12	P
13	N
14	A
15	N
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0371

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Enamel Hypoplasia
- Overbite

Dental Inventory of Case #0371	
Tooth #	Condition
1	A
2	N
3	A
4	N
5	N
6	N
7	N
8	C: 1D, 1M
9	C: 1D, 1M
10	C: 1La, 1M, 1D
11	N
12	N
13	N
14	C: 1O, 1Li
15	N
16	A
17	A
18	A
19	A
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	P
30	A
31	A
32	A

Maxillary Dental Arcade

Notes:

- Periodontal Disease

Dental Inventory of Case #0372	
Tooth #	Condition
1	C: 1Li
2	N
3	N
4	P
5	P
6	N
7	N
8	1B: Multi
9	P
10	P
11	N
12	C: 1D
13	C: 1D, 1M
14	C: 1M
15	A
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- No mandible recovered with remains

Dental Inventory of Case #0373	
Tooth #	Condition
1	1A: 1O
2	1A: 1O
3	1A: 1Multi, 1O, 1Li
4	P
5	1A: 1O
6	N
7	N
8	P
9	P
10	N
11	N
12	1A: 1O
13	1A: 1O
14	1A: 1Multi, 1O, 1Li
15	1A: 1O
16	1A: 1O
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0374

Unable to chart due to extensive postmortem damage

Case #0375

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 1, 16, 17: Emerging

| Dental Inventory of Case #0375 ||
Tooth #	Condition
1	N
2	N
3	N
4	1A: 1M
5	P
6	P
7	P
8	P
9	P
10	P
11	P
12	P
13	A
14	A
15	N
16	N
17	N
18	N
19	N
20	N
21	P
22	P
23	P
24	P
25	P
26	P
27	P
28	P
29	N
30	N
31	N
32	Temp: Multi

Maxillary Dental Arcade

Dental Inventory of Case #0376	
Tooth #	Condition
1	P
2	N
3	N
4	N
5	N
6	N
7	A
8	N
9	N
10	A
11	N
12	A
13	N
14	N
15	P
16	P
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- Periodontal Disease

Dental Inventory of Case #0377	
Tooth #	Condition
1	C: 1M
2	N
3	N
4	N
5	N
6	P
7	N
8	P
9	N
10	N
11	N
12	N
13	N
14	N
15	N
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0378

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Periodontal Disease

Dental Inventory of Case #0378	
Tooth #	Condition
1	A
2	P
3	A
4	A
5	1B: 1MO
6	P
7	P
8	P
9	N
10	N
11	P
12	A
13	A
14	A
15	C: 1O
16	C: Complete
17	A
18	A
19	A
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	A
31	A
32	A

Case #0380

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Upper and lower lingual holding arches
  - 6-11 and 22-27
- Shoveled incisors
- 13, 14: Composite material for orthodontic work on lingual surface

Dental Inventory of Case #0380	
Tooth #	Condition
1	P
2	N
3	A
4	P
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	1A: 1DO
13	1A: 1DO
14	1A: 1DO
15	N
16	N
17	N
18	1B: 1Multi
19	N
20	N
21	N
22	N
23	N
24	N
25	P
26	N
27	N
28	P
29	N
30	N
31	N
32	A

Case #0382

No skull recovered with remains

Case #0388

Unable to chart due to extensive postmortem damage

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0393	
Tooth #	Condition
1	N
2	N
3	N
4	N
5	N
6	N
7	N
8	P
9	C: 1D
10	N
11	N
12	N
13	A
14	A
15	N
16	N
17	N
18	N
19	C: 1O
20	N
21	P
22	N
23	N
24	P
25	P
26	P
27	N
28	N
29	N
30	C: 1La
31	N
32	C: 1La

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0394	
Tooth #	Condition
1	N
2	N
3	N
4	P
5	P
6	N
7	P
8	P
9	P
10	P
11	N
12	A
13	A
14	A
15	A
16	A
17	N
18	P
19	P
20	P
21	P
22	P
23	P
24	N
25	P
26	P
27	P
28	P
29	P
30	N
31	N
32	N

Case #0402

Unable to chart due to extensive postmortem damage

Case #0404
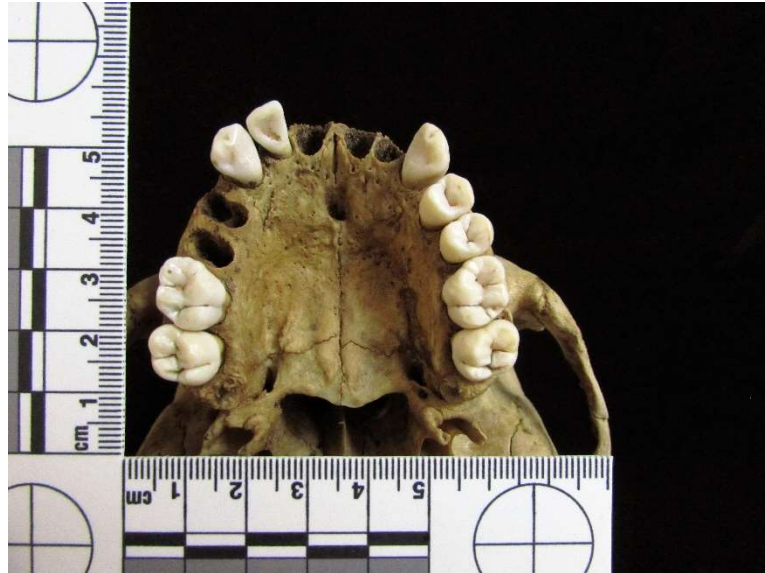
Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Trace shoveling
- Possible Enamel Hypoplasia

Dental Inventory of Case #0404	
Tooth #	Condition
1	A
2	C: 3O
3	C: 1Li
4	P
5	P
6	N
7	N
8	P
9	P
10	P
11	N
12	N
13	N
14	C: 1O, 1Li
15	C: 2O, 1Li
16	A
17	A
18	C: 1O
19	C: 1La
20	P
21	N
22	N
23	N
24	P
25	P
26	P
27	N
28	N
29	N
30	C: 1La
31	C: 1O
32	A

Case #0405

Maxillary Dental Arcade

Notes:

- No mandible recovered with remains

Dental Inventory of Case #0405	
Tooth #	Condition
1	C: 2O
2	N
3	N
4	N
5	N
6	N
7	A
8	A
9	A
10	A
11	N
12	P
13	N
14	C: 1O, 1Li
15	C: 2O
16	C: 2O
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0406

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0406	
Tooth #	Condition
1	A
2	N
3	N
4	N
5	N
6	N
7	P
8	N
9	N
10	N
11	N
12	N
13	N
14	N
15	N
16	P
17	C: 1O
18	N
19	N
20	N
21	N
22	N
23	N
24	P
25	P
26	N
27	N
28	N
29	1B: 1O
30	N
31	N
32	A

Case #0407

No splanchnocranium was recovered with the remains

Case #0408

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 15, 18: Prepped for restoration
- Periodontal Disease

Dental Inventory of Case #0408	
Tooth #	Condition
1	P
2	1A: 1O
3	A
4	N
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	1B: 1O
13	1B: 1O
14	1A: 1O; 1B: 1Li
15	1A: 1O; C: 1Li
16	P
17	1B: 1O
18	1A: 1O; C: 1La
19	A
20	P
21	P
22	P
23	P
24	P
25	P
26	P
27	N
28	N
29	1B: 1O
30	A
31	1A: 1O
32	1B: 1La

Mandibular Dental Arcade

Notes:

- Maxilla missing from cranium

Dental Inventory of Case #0410	
Tooth #	Condition
1	/
2	/
3	/
4	/
5	/
6	/
7	/
8	/
9	/
10	/
11	/
12	/
13	/
14	/
15	/
16	/
17	P
18	A
19	A
20	1B: 1MO
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	P
29	P
30	A
31	A
32	A

Case #0411

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 3: Aluminum cap
- Periodontal Disease

Dental Inventory of Case #0411	
Tooth #	Condition
1	A
2	C: 1Li
3	R
4	C: 1O
5	N
6	N
7	P
8	P
9	N
10	N
11	N
12	N
13	P
14	A
15	C: 1D
16	P
17	A
18	C: 1La
19	C: 1La, 1D, 1M
20	N
21	N
22	N
23	P
24	P
25	P
26	P
27	N
28	N
29	P
30	P
31	N
32	C: 1Multi

Case #0418

Maxillary Dental Arcade

Mandibular Dental Arcade

Recovered tooth fragments (left: 11; middle: unassigned; right: 10)

Dental Inventory of Case #0418	
Tooth #	Condition
1	N
2	N
3	C: 1O
4	P
5	N
6	N
7	P
8	P
9	P
10	N
11	N
12	N
13	P
14	N
15	N
16	N
17	C: 1O, 1La
18	N
19	C: 1O
20	P
21	N
22	P
23	N
24	P
25	P
26	N
27	P
28	N
29	N
30	C: 1La
31	C: 1La
32	N

Case #0419

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 10: Malformation on lingual surface

Dental Inventory of Case #0419	
Tooth #	Condition
1	N
2	N
3	N
4	N
5	1A: 1MO
6	N
7	N
8	P
9	P
10	N
11	N
12	N
13	N
14	1A: 1O
15	1A: 2O
16	N
17	P
18	1A: 1MO
19	A
20	P
21	N
22	N
23	N
24	N
25	N
26	P
27	N
28	N
29	N
30	N
31	N
32	N

Case #0420

Maxillary Dental Arcade

Notes:

- Black/ brown staining on teeth due to possible burns
- Shoveled incisors

Dental Inventory of Case #0420	
Tooth #	Condition
1	A
2	N
3	C: 1Li
4	P
5	N
6	N
7	N
8	P
9	P
10	N
11	N
12	P
13	P
14	C: 2Li
15	N
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0422

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Maxilla separated from cranium
- Palate glued together postmortem

Dental Inventory of Case #0422	
Tooth #	Condition
1	P
2	P
3	A
4	P
5	P
6	P
7	P
8	P
9	P
10	P
11	N
12	N
13	P
14	A
15	C: 1O
16	P
17	C: 1O
18	P
19	A
20	P
21	P
22	P
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	C: 2O
31	P
32	A

Maxillary Dental Arcade

Notes:

- Damage to maxilla postmortem (1, 2, 9, 10)

Dental Inventory of Case #0424	
Tooth #	Condition
1	P
2	P
3	N
4	N
5	N
6	N
7	N
8	P
9	P
10	P
11	N
12	P
13	P
14	N
15	N
16	P
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Mandibular Dental Arcade

Metallic cap for upper incisor

Notes:

- Cap recovered with remains from upper incisor
- Peg-like addition on the mesial side of 11, metallic material
- Enamel Hypoplasia on lower canines

Dental Inventory of Case #0431	
Tooth #	Condition
1	P
2	N
3	N
4	N
5	N
6	N
7	P
8	N
9	N
10	P
11	R
12	N
13	P
14	C: 1M
15	N
16	N
17	A
18	N
19	C: 1La
20	P
21	P
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	1A: 1O, 1La
31	P
32	C: 2O

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0432	
Tooth #	Condition
1	P
2	N
3	N
4	N
5	P
6	N
7	N
8	P
9	P
10	P
11	P
12	N
13	N
14	N
15	P
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0435

Maxillary Dental Arcade

Mandibular Dental Arcade

Tooth crown fragments (left: 27; right: unassigned)

Notes:

- Deep shoveling
- Fragment of 27 recovered with remains

Dental Inventory of Case #0435	
Tooth #	Condition
1	N
2	N
3	P
4	A
5	1A: 1DO
6	N
7	1B: 1La
8	1B: 1Li
9	P
10	1B: 1Li
11	N
12	N
13	A
14	A
15	1A: 2O
16	N
17	N
18	1A: 1O, 1La
19	N
20	N
21	N
22	N
23	N
24	N
25	P
26	N
27	N
28	N
29	N
30	N
31	1A: 1O, 1La
32	1A: 1O

Case #0436

Maxillary Dental Arcade

Left Portion of Mandibular Dental Arcade containing 17-19

Right Portion of Mandibular Dental Arcade containing 20-32

Notes:

- Mandible broken postmortem

Dental Inventory of Case #0436	
Tooth #	Condition
1	N
2	N
3	A
4	P
5	P
6	P
7	P
8	P
9	N
10	N
11	N
12	N
13	P
14	N
15	N
16	P
17	N
18	N
19	N
20	P
21	P
22	P
23	P
24	P
25	P
26	P
27	N
28	N
29	N
30	N
31	N
32	N

Case #0438

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0438	
Tooth #	Condition
1	A
2	N
3	N
4	N
5	P
6	N
7	P
8	P
9	P
10	P
11	N
12	N
13	N
14	N
15	N
16	P
17	N
18	N
19	N
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	N
31	N
32	N

Case #0440

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Broken mandible, 29-32 lost
- Deep shoveling
- Heavy calculus
- 7, 8: Supernumerary teeth found

Dental Inventory of Case #0440	
Tooth #	Condition
1	A
2	N
3	C: 1Li
4	N
5	N
6	N
7	C: 1Li
8	A
9	N
10	P
11	N
12	N
13	N
14	C: 1O, 1Li
15	C: 1O
16	A
17	C: 1O
18	C: 1La
19	C: 1O, 1La
20	N
21	N
22	N
23	N
24	N
25	P
26	N
27	P
28	N
29	/
30	/
31	/
32	/

Case #0442

Maxillary Dental Arcade

Mandibular Dental Arcade

Loose molars from maxillary dental arcade

Notes:

- Heavily damaged by plant growth
- Part of left maxilla and right mandible lost

Dental Inventory of Case #0442	
Tooth #	Condition
1	P
2	N
3	N
4	N
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	N
13	N
14	A
15	N
16	N
17	N
18	A
19	A
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	N
31	N
32	N

Right Maxillary Dental Arcade

Left Portion of Maxilla containing 9-12

Loose molars and premolar from lost portion of maxilla (13-16)

Notes:

- No mandible was recovered
- Heavy plant damage

Dental Inventory of Case #0443	
Tooth #	Condition
1	N
2	N
3	N
4	N
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	N
13	N
14	N
15	N
16	C: 1O
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0444

Unable to chart due to extensive postmortem damage

Case #0445

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0445	
Tooth #	Condition
1	A
2	A
3	1A: 1O
4	P
5	P
6	P
7	N
8	P
9	P
10	N
11	P
12	P
13	A
14	1B: 1MO
15	1A: 1O
16	A
17	A
18	N
19	A
20	N
21	N
22	N
23	N
24	P
25	P
26	P
27	P
28	P
29	P
30	A
31	1A:1O
32	A

Case #0449

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0449	
Tooth #	Condition
1	P
2	P
3	1B: 1Multi
4	N
5	N
6	N
7	1B: 1Li
8	P
9	N
10	1B: 1Li
11	1B: 1Li
12	1B: 1O
13	N
14	1B: 1O, 1Li
15	P
16	N
17	N
18	1B: 1O, 1La
19	1B: 1O, 1La
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	1B: 1O, 2La
31	1B: 1O, 1La
32	N

Case #0452

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Periodontal Disease

Dental Inventory of Case #0452	
Tooth #	Condition
1	C: 1O
2	1A: 1O
3	1A: 1MOD
4	A
5	A
6	N
7	P
8	N
9	N
10	N
11	N
12	N
13	N
14	C: 2O
15	C: 2O
16	C: 2O
17	C: 1La
18	1A: 1O; C: 1La
19	A
20	P
21	P
22	N
23	P
24	P
25	P
26	P
27	N
28	N
29	1A: 1O
30	P
31	1A: 1Multi
32	1A: 1Multi

Case #0453

Maxillary Dental Arcade

Notes:

- No mandible recovered with remains

Dental Inventory of Case #0453	
Tooth #	Condition
1	C: 2O, 1Li
2	C: 1O
3	C: 1O
4	C: 1O
5	N
6	P
7	N
8	N
9	P
10	N
11	P
12	N
13	N
14	C: 1O
15	C: 1O
16	P
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0454	
Tooth #	Condition
1	A
2	P
3	N
4	P
5	N
6	P
7	P
8	P
9	P
10	P
11	P
12	1B: 1O
13	N
14	P
15	C: 1O
16	A
17	A
18	1B: 1Multi
19	A
20	P
21	P
22	N
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	A
31	A
32	1B: 1Multi

Case #0460

Maxillary Dental Arcade

Notes:

- Periodontal Disease
- No mandible recovered

Dental Inventory of Case #0460	
Tooth #	Condition
1	A
2	C: 1O
3	C: 2O
4	C: 1O
5	N
6	N
7	T
8	T
9	T
10	T
11	P
12	A
13	C: 1M
14	C: 1M, 2O, 1Li
15	C: 3O, 1Li
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0461	
Tooth #	Condition
1	P
2	P
3	1A: 1Multi; C: 1O, 1M
4	P
5	P
6	P
7	P
8	P
9	P
10	P
11	N
12	1A: 1DO, 1O
13	1A: 1MOD, 1O
14	P
15	P
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0462

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0462	
Tooth #	Condition
1	N
2	N
3	A
4	N
5	N
6	N
7	P
8	P
9	P
10	P
11	N
12	P
13	P
14	A
15	N
16	N
17	A
18	C: 1O
19	C: 3O, 1La
20	N
21	N
22	P
23	N
24	P
25	N
26	N
27	P
28	N
29	N
30	C: 3O
31	N
32	N

Case #0463

Maxillary Dental Arcade

Mandibular Dental Arcade

Maxillary Denture

Mandibular Denture

Notes:

- Full Dentures

Dental Inventory of Case #0463	
Tooth #	Condition
1	A
2	A
3	A
4	A
5	A
6	A
7	A
8	A
9	A
10	A
11	A
12	A
13	A
14	A
15	A
16	A
17	A
18	A
19	A
20	A
21	A
22	A
23	A
24	A
25	A
26	A
27	A
28	A
29	A
30	A
31	A
32	A

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Deep Shoveling

Dental Inventory of Case #0465	
Tooth #	Condition
1	P
2	1A: 1O
3	A
4	N
5	N
6	N
7	N
8	N
9	N
10	C: 1Li
11	N
12	N
13	P
14	N
15	C: 1O
16	P
17	C: 2O
18	C: 1O
19	C: 1O, 1La
20	C: 1O
21	N
22	N
23	P
24	P
25	P
26	N
27	N
28	P
29	N
30	A
31	1A: 1O
32	C: 2O

Case #0466

Maxillary Dental Arcade

Notes:

- No mandible recovered
- 7, 8: Gold caps

Dental Inventory of Case #0466	
Tooth #	Condition
1	P
2	N
3	1B: 1O; C: 1O
4	C: 2O
5	A
6	N
7	R
8	P
9	P
10	R
11	N
12	C: 1D
13	1A: 1M; C: 1D
14	A
15	N
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0474

Maxillary Dental Arcade

Molar from damaged portion of maxilla (16)

Notes:

- No mandible recovered
- Supernumerary left later incisor completely emerged distally to 10, only root remains after postmortem break
- Maxilla damaged around socket for 16, molar was recovered

Dental Inventory of Case #0474	
Tooth #	Condition
1	N
2	N
3	N
4	P
5	N
6	P
7	P
8	P
9	P
10	P
11	N
12	N
13	N
14	N
15	N
16	P
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Mandibular Dental Arcade

Mandibular Denture

Notes:

- Possibly full dentures only lower denture recovered

Dental Inventory of Case #0478	
Tooth #	Condition
1	A
2	A
3	A
4	A
5	A
6	A
7	A
8	A
9	A
10	A
11	A
12	A
13	A
14	A
15	A
16	A
17	A
18	A
19	A
20	A
21	A
22	A
23	A
24	A
25	A
26	A
27	A
28	A
29	A
30	A
31	A
32	A

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Severe bone resorption on maxilla and mandible
- Periodontal Disease

Dental Inventory of Case #0479	
Tooth #	Condition
1	A
2	A
3	A
4	P
5	P
6	P
7	A
8	N
9	P
10	P
11	N
12	P
13	A
14	A
15	A
16	A
17	A
18	A
19	A
20	1A: 1O
21	A
22	P
23	N
24	N
25	P
26	N
27	N
28	A
29	A
30	A
31	A
32	P

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0480	
Tooth #	Condition
1	N
2	C: 1Li
3	C: 1Li
4	N
5	N
6	N
7	P
8	P
9	P
10	N
11	N
12	C: 1La
13	C: 1D
14	N
15	C: 1Li
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0481

No skull was recovered with the remains

Case #0483

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Periodontal Disease

Dental Inventory of Case #0483	
Tooth #	Condition
1	A
2	N
3	C:1O
4	N
5	N
6	N
7	P
8	P
9	C: 1M
10	N
11	N
12	N
13	C: 1O
14	N
15	N
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0484

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Periodontal Disease

Dental Inventory of Case #0484	
Tooth #	Condition
1	1B: 1O
2	1B: 1O
3	1B: 2O
4	P
5	1B: 1O
6	P
7	P
8	P
9	P
10	P
11	N
12	1B: 1O
13	P
14	1A: 1Li; 1B: 1O
15	1B: 1O
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0486

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 17, 18: impacted
- 32 obstructed
- Bilateral winging and deep shoveling

Dental Inventory of Case #0486	
Tooth #	Condition
1	C: 2O
2	C: 1O
3	C: 1O, 1Li
4	N
5	1O
6	N
7	N
8	N
9	N
10	N
11	N
12	C: 1O
13	P
14	C: 1O
15	C: 1O
16	N
17	N
18	C: 1O
19	C: 3O
20	P
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	C: 1O, 1La
31	C: 1O
32	N

Case #0489

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Severe attrition
- Asymmetrical cranium

Dental Inventory of Case #0489	
Tooth #	Condition
1	A
2	N
3	N
4	N
5	N
6	P
7	N
8	N
9	N
10	N
11	N
12	N
13	N
14	N
15	N
16	A
17	N
18	C: 1La
19	N
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	N
31	N
32	N

Maxillary Dental Arcade

Mandibular Dental Arcade

Loose molar (18) recovered with remains

Notes:

- Recovered molar (18) was unable to be placed within the dental arcade due to a buildup of debris in its respective socket

Dental Inventory of Case #0492	
Tooth #	Condition
1	N
2	P
3	A
4	A
5	P
6	N
7	P
8	P
9	P
10	P
11	N
12	N
13	A
14	A
15	A
16	N
17	N
18	N
19	N
20	N
21	P
22	N
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	C: 1O
31	P
32	N

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 32 impacted

Dental Inventory of Case #0493	
Tooth #	Condition
1	N
2	N
3	A
4	N
5	N
6	A
7	P
8	P
9	N
10	N
11	N
12	N
13	N
14	A
15	C: 1O
16	C: 1O
17	N
18	C: 1O
19	A
20	N
21	N
22	N
23	N
24	P
25	P
26	N
27	N
28	N
29	C: 1O
30	A
31	N
32	C: 3O

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Maxilla is separated from the cranium

Dental Inventory of Case #0494	
Tooth #	Condition
1	A
2	P
3	A
4	P
5	P
6	P
7	P
8	P
9	P
10	P
11	P
12	P
13	P
14	A
15	P
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0495

No mandible was recovered with the remains and the maxillary dentition was cut from the cranium

Case #0496

No skull was recovered with the remains

Case #0497

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0497	
Tooth #	Condition
1	A
2	N
3	N
4	N
5	N
6	N
7	N
8	N
9	N
10	P
11	N
12	N
13	1A: 1MOD
14	N
15	N
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- No mandible recovered
- 16 is possibly impacted with the roots of 15, enamel exposure in the left side of the maxilla

Dental Inventory of Case #0498	
Tooth #	Condition
1	P
2	C: 1O
3	A
4	P
5	P
6	P
7	P
8	P
9	P
10	N
11	N
12	N
13	P
14	N
15	N
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- No mandible
- Possibly had dentures, none recovered

Dental Inventory of Case #0499	
Tooth #	Condition
1	A
2	A
3	A
4	A
5	A
6	A
7	A
8	A
9	A
10	A
11	A
12	A
13	A
14	A
15	A
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0502	
Tooth #	Condition
1	P
2	N
3	C: 1O
4	N
5	N
6	N
7	N
8	P
9	P
10	N
11	N
12	P
13	N
14	C: 1Li
15	C: 1Li
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0509

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Enamel Hypoplasia
- Periodontal Disease

Dental Inventory of Case #0509	
Tooth #	Condition
1	A
2	N
3	1A: 2O
4	1A: 1O
5	1A: 1DO
6	P
7	P
8	P
9	P
10	P
11	P
12	1A: 1O
13	1A: 1O
14	1A: 2O, 1Li
15	N
16	A
17	1A: 1O
18	1A: 1O, 1La
19	1A: 2O
20	1A: 1O
21	P
22	N
23	N
24	P
25	P
26	N
27	N
28	P
29	P
30	1A: 2O, 1La; C: 1O
31	1A: 1O; C: 1O
32	N

Case #0510

Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0510	
Tooth #	Condition
1	N
2	C: 1O
3	N
4	P
5	P
6	P
7	P
8	P
9	P
10	P
11	P
12	P
13	P
14	N
15	C: 2O
16	P
17	N
18	N
19	N
20	N
21	N
22	N
23	N
24	P
25	P
26	P
27	P
28	P
29	N
30	C: 1La
31	C: 1O
32	P

Case #0511
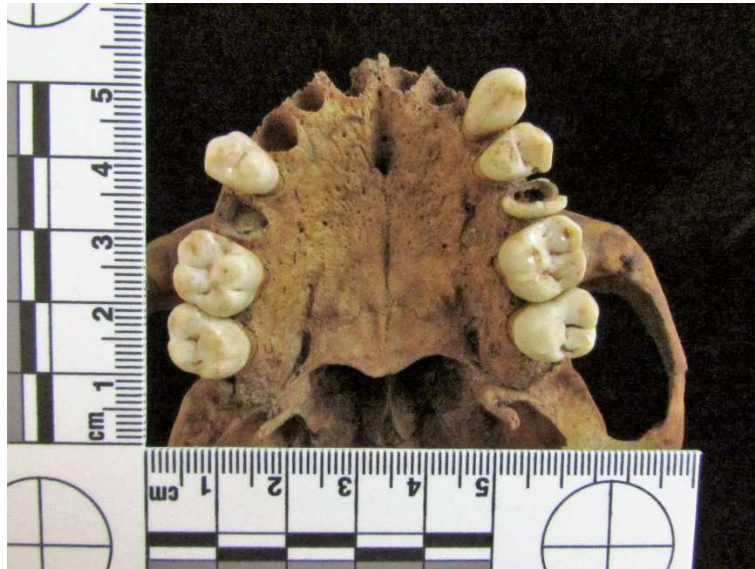
Maxillary Dental Arcade

Mandibular Dental Arcade

Dental Inventory of Case #0511	
Tooth #	Condition
1	N
2	N
3	N
4	P
5	N
6	P
7	P
8	P
9	P
10	P
11	N
12	C: 1D
13	N
14	N
15	N
16	N
17	N
18	N
19	N
20	N
21	P
22	P
23	P
24	P
25	N
26	P
27	P
28	P
29	P
30	N
31	N
32	C: 1O

Case #0512
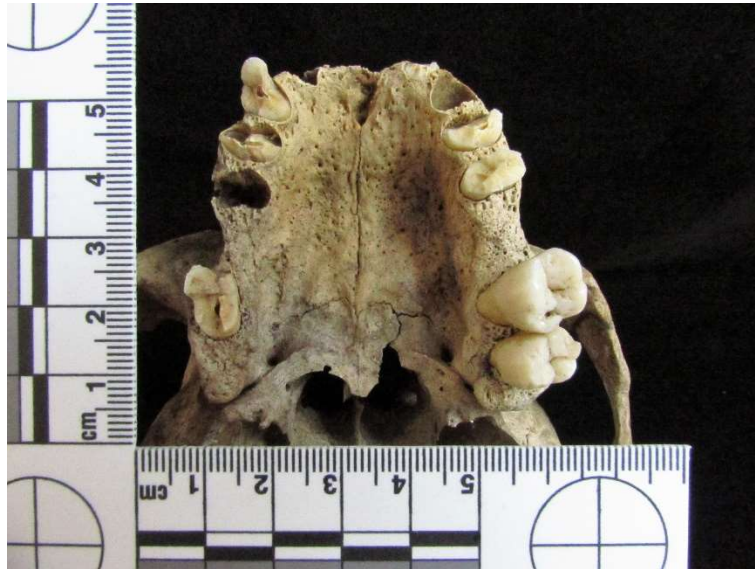
Maxillary Dental Arcade

Mandibular Dental Arcade

Unassigned loose molar

Large number of unassigned crown fragments

Dental Inventory of Case #0512	
Tooth #	Condition
1	A
2	N
3	A
4	P
5	N
6	N
7	P
8	A
9	A
10	N
11	P
12	N
13	N
14	P
15	C: 1O
16	N
17	N
18	A
19	A
20	P
21	N
22	P
23	P
24	P
25	P
26	P
27	P
28	N
29	N
30	A
31	A
32	N

Case #0513

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- 7, 8, 9: Fused caps with open labial surface, natural teeth remain

Dental Inventory of Case #0513	
Tooth #	Condition
1	N
2	C: 1O
3	N
4	P
5	N
6	N
7	R
8	R
9	R
10	C: 1M
11	N
12	N
13	P
14	N
15	N
16	N
17	N
18	C: 3O
19	C: 1O, 1La
20	P
21	P
22	N
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	C: 1O
31	A
32	C: 2O

Case #515

No skull was recovered with the remains

Case #0516

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0516	
Tooth #	Condition
1	A
2	1A: 2O
3	1A: 2O
4	N
5	N
6	P
7	P
8	P
9	P
10	P
11	N
12	N
13	N
14	N
15	1A: 1O
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0517

Maxillary Dental Arcade

Mandibular Dental Arcade

Fragment of left maxilla containing 15 and 16

Notes:

- Fragment of maxilla containing 15 and 16 broken from skull
- Trace shoveled incisors

Dental Inventory of Case #0517	
Tooth #	Condition
1	1A: 1O
2	1A: 1O, 1La; C: 1Li
3	A
4	1A: 1O, 1M
5	1A: 1O
6	N
7	N
8	P
9	N
10	N
11	N
12	A
13	A
14	A
15	1A: 1Multi
16	C: 1O
17	C: 1O
18	1A: 1O
19	1A: 1O; C: M
20	P
21	P
22	N
23	N
24	N
25	N
26	N
27	N
28	P
29	P
30	A
31	1A: 1O
32	1A: 1O

Maxillary Dental Arcade

Mandibular Dental Arcade

Unassigned Tooth Crown Fragments

Notes:

- Periodontal Disease
- 29: Root canal, preparation site on lower buccal surface, broken post, not prepared for crown

Dental Inventory of Case #0518	
Tooth #	Condition
1	A
2	N
3	1A: 1DO
4	N
5	N
6	N
7	N
8	N
9	P
10	N
11	N
12	N
13	N
14	N
15	N
16	A
17	A
18	A
19	N
20	N
21	N
22	N
23	P
24	P
25	P
26	P
27	N
28	N
29	C: Complete
30	N
31	N
32	N

Maxillary Dental Arcade

Notes:

- No mandible recovered
- 11: Tarnished gold colored crown

Dental Inventory of Case #0519	
Tooth #	Condition
1	P
2	C: 2O
3	N
4	N
5	N
6	P
7	A
8	A
9	A
10	A
11	R
12	C: 1O
13	P
14	C: 1O
15	P
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0520

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Severe bone resorption
- Possible Periodontal Disease

Dental Inventory of Case #0520	
Tooth #	Condition
1	A
2	C: 2O
3	A
4	A
5	A
6	P
7	A
8	A
9	A
10	A
11	A
12	A
13	A
14	A
15	A
16	A
17	A
18	A
19	A
20	P
21	N
22	A
23	A
24	P
25	P
26	P
27	N
28	N
29	C: 1O
30	A
31	A
32	A

Case #0521

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Staining on enamel may be due to plastic gloves left with the body after recovery

Dental Inventory of Case #0521	
Tooth #	Condition
1	A
2	C: 2O
3	1A: 1MO
4	A
5	1A: 1O
6	N
7	P
8	P
9	A
10	P
11	N
12	N
13	N
14	1A: 1O; C: 1Li
15	1A: 1O
16	A
17	A
18	A
19	A
20	P
21	N
22	N
23	N
24	N
25	P
26	P
27	N
28	P
29	P
30	1A: 1MOD, 1La
31	A
32	1A: 1O, 1Li

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Sealant present on molars

Dental Inventory of Case #0522	
Tooth #	Condition
1	P
2	P
3	N
4	P
5	N
6	N
7	N
8	P
9	P
10	N
11	N
12	P
13	N
14	N
15	P
16	P
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0523

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Maxilla separated from cranium
- Shoveled inicisors

Dental Inventory of Case #0523	
Tooth #	Condition
1	A
2	1A: 1O
3	1A: 1O
4	1A: 1O
5	1A: 1O
6	N
7	1B: 1Li
8	P
9	P
10	N
11	A
12	N
13	1A: 1O
14	1A: 1O
15	1A: 3O
16	1A: 1O
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Mandibular Dental Arcade

Notes:

- No cranium, only mandible recovered
- Mandible has been sampled by unknown

Dental Inventory of Case #0524	
Tooth #	Condition
1	/
2	/
3	/
4	/
5	/
6	/
7	/
8	/
9	/
10	/
11	/
12	/
13	/
14	/
15	/
16	/
17	C: 1La
18	1A: 1O
19	1A: 1O; C: 1La
20	N
21	N
22	N
23	P
24	P
25	P
26	P
27	P
28	N
29	N
30	C: 1La
31	N
32	A

Case #0525

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Periodontal disease

Dental Inventory of Case #0525	
Tooth #	Condition
1	N
2	N
3	N
4	A
5	N
6	N
7	N
8	P
9	P
10	N
11	N
12	N
13	A
14	N
15	N
16	N
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0526

Right Half of Maxillary Dental Arcade

Notes:

- No mandible or left maxilla recovered

Dental Inventory of Case #0526	
Tooth #	Condition
1	P
2	C: 1O
3	C: 1O
4	N
5	N
6	N
7	P
8	/
9	/
10	/
11	/
12	/
13	/
14	/
15	/
16	/
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Maxillary Dental Arcade

Notes:

- No crowns present on retained teeth
- No mandible recovered
- Possible Periodontal Disease

Dental Inventory of Case #0529	
Tooth #	Condition
1	P
2	N
3	N
4	P
5	N
6	P
7	P
8	P
9	P
10	P
11	P
12	N
13	P
14	P
15	P
16	P
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0531

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Traditional bridge for 8 and 9 with caps on 7 and 10
- Either a third molar (1) peg or supernumerary peg tooth

Dental Inventory of Case #0531	
Tooth #	Condition
1	N
2	C: 1O
3	C: 1O, 1M
4	C: 1D
5	N
6	N
7	T
8	T
9	T
10	T
11	P
12	C: 1O
13	C: 1O, 1D
14	C: 1O, 1M
15	C: 1O
16	C: 1O
17	A
18	A
19	1A: 1O; C: 1D, 1M
20	C: 2O, 1D, 1La
21	N
22	P
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	N
31	C: 2O
32	A

Case #0532

Maxillary Dental Arcade

Notes:

- No mandible recovered

Dental Inventory of Case #0532	
Tooth #	Condition
1	N
2	N
3	N
4	A
5	A
6	P
7	P
8	P
9	P
10	N
11	N
12	P
13	N
14	N
15	N
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0533

Mandibular Dental Arcade

Notes:

- No maxilla recovered, cranium in fragments
- No teeth recovered

Dental Inventory of Case #0533	
Tooth #	Condition
1	/
2	/
3	/
4	/
5	/
6	/
7	/
8	/
9	/
10	/
11	/
12	/
13	/
14	/
15	/
16	/
17	P
18	A
19	A
20	A
21	P
22	P
23	P
24	P
25	P
26	P
27	P
28	P
29	P
30	A
31	A
32	A

Maxillary Dental Arcade

Notes:

- No mandible recovered
- Periodontal Disease

Dental Inventory of Case #0534	
Tooth #	Condition
1	N
2	1A: 1O
3	N
4	P
5	1A: 1O
6	N
7	P
8	P
9	P
10	P
11	P
12	N
13	N
14	A
15	P
16	A
17	/
18	/
19	/
20	/
21	/
22	/
23	/
24	/
25	/
26	/
27	/
28	/
29	/
30	/
31	/
32	/

Case #0535

Maxillary Dental Arcade

Mandibular Dental Arcade

Notes:

- Shoveled incisors
- Enamel Hypoplasia

Dental Inventory of Case #0535	
Tooth #	Condition
1	C: 1O
2	C: 1O
3	A
4	N
5	N
6	N
7	N
8	N
9	N
10	N
11	N
12	N
13	N
14	C: 2O
15	A
16	C: 1O
17	P
18	C: 2O, 1M, 1D, 1La
19	P
20	N
21	N
22	N
23	N
24	N
25	N
26	N
27	N
28	N
29	N
30	A
31	A
32	A

APPENDIX B

Prevalence Tables

Untreated Carious Lesions

Tooth #	Caries	1 carie	1+ caries	Occlusal	Labial	Lingual	Distal	Mesial	Complete	Total teeth	Prevalence
1	9	5	4	7	0	2	0	1	0	39	23.08%
2	17	13	5	15	0	2	0	0	0	71	23.94%
3	14	10	4	10	0	5	0	2	0	64	21.88%
4	6	5	1	4	0	0	2	0	0	44	13.64%
5	4	4	0	1	0	0	3	0	0	62	6.45%
6	0	0	0	0	0	0	0	0	0	62	0%
7	3	3	0	0	1	1	1	0	0	36	8.33%
8	1	0	1	0	0	0	1	1	0	23	4.35%
9	3	2	1	0	0	0	2	2	0	28	10.71%
10	4	3	1	0	1	1	1	3	0	47	8.51%
11	1	1	0	0	0	0	0	1	0	69	1.45%
12	9	9	0	5	1	0	3	0	0	66	13.63%
13	6	4	2	2	0	0	4	2	0	47	12.77%
14	18	9	9	12	0	9	0	4	0	59	30.51%
15	20	15	5	16	0	6	1	0	0	66	30.30%
16	8	6	2	7	0	0	0	0	1	40	20.00%
17	9	7	2	7	3	0	0	0	0	35	25.71%
18	12	10	2	7	7	0	1	1	0	37	32.43%
19	13	6	7	7	8	0	2	3	0	33	39.39%
20	2	1	1	2	1	0	1	0	0	32	6.25%
21	0	0	0	0	0	0	0	0	0	34	0%
22	0	0	0	0	0	0	0	0	0	36	0%
23	0	0	0	0	0	0	0	0	0	32	0%
24	0	0	0	0	0	0	0	0	0	23	0%
25	0	0	0	0	0	0	0	0	0	18	0%
26	0	0	0	0	0	0	0	0	0	26	0%
27	0	0	0	0	0	0	0	0	0	33	0%

28	0	0	0	0	0	0	0	0	0	31	0%
29	3	3	0	2	0	0	0	0	1	29	10.34%
30	12	9	3	6	7	0	0	0	0	30	40.00%
31	8	6	2	5	3	0	0	0	0	35	22.86%
32	8	4	4	5	2	0	0	0	1	34	23.52%
Total	190	135	56	120	34	26	22	20	3		
		71.05%	29.47%	63.16%	17.89%	13.68%	11.58%	10.52%	1.58%	1321	

Dental Restorations

Tooth #	Fillings	1 filling	2+ fillings	Occlusal	Labial	Lingual	Distal	Mesial	MO	DO	MOD	Multiside	Amalgam	Composite	Other	Total Teeth	Prevalence
1	3	3	0	3	0	0	0	0	0	0	0	0	2	1	0	39	7.69%
2	11	8	3	11	2	0	0	0	0	0	0	0	10	2	0	71	15.49%
3	14	9	5	8	0	2	0	0	2	1	1	3	11	3	0	64	21.88%
4	5	4	1	3	0	0	0	2	0	1	0	0	5	0	0	44	11.36%
5	12	12	0	7	0	0	1	0	2	2	0	0	10	2	0	62	19.35%
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	0.00%
7	4	3	1	0	2	3	0	0	0	0	0	0	0	4	0	36	11.11%
8	2	2	0	0	0	1	0	0	0	0	0	1	0	2	0	23	8.70%
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0%
10	3	3	0	0	0	3	0	0	0	0	0	0	0	3	0	47	6.38%
11	2	2	0	0	0	2	0	0	0	0	0	0	1	1	0	69	2.90%
12	9	8	1	8	0	0	0	0	0	2	0	0	5	4	0	66	13.63%
13	9	8	1	6	0	0	0	1	0	1	2	0	8	1	0	47	19.14%
14	12	5	7	9	0	6	0	0	2	1	0	1	10	4	0	59	20.33%
15	12	10	2	10	0	0	0	0	0	0	0	1	10	1	0	66	18.18%
16	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	40	2.50%
17	3	3	0	2	0	0	0	0	0	0	0	1	2	1	0	35	8.57%
18	11	8	3	8	3	0	0	0	1	0	0	3	8	3	0	37	29.73%
19	7	5	2	6	1	0	0	0	0	0	0	1	6	1	0	33	21.21%
20	3	3	0	2	0	0	0	0	1	0	0	0	2	1	0	32	9.38%
21	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	34	2.94%
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0%
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0%
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0%
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0%

26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0%
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0%
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0%
29	3	3	0	3	0	0	0	0	0	0	0	0	1	2	0	29	10.34%
30	5	1	4	4	4	0	0	0	0	0	1	0	4	1	0	30	16.67%
31	10	8	2	8	2	0	0	0	0	0	0	2	9	1	0	35	28.57%
32	6	5	1	3	1	1	0	0	0	0	0	3	3	2	1	34	17.65%
Total	148	115	33	102	15	18	1	3	9	8	4	16	109	40	1	1321	
		77.70%	22.30%	68.92%	10.14%	12.16%	0.68%	2.03%	6.08%	5.41%	2.70%	10.81%	73.65%	27.03%	0.68%		

Overall Caries Incidence

Tooth #	Have Carie	1 Carie	2+ Caries	Occlusal	Labial	Lingual	Mesial	Distal	MOD	Multiside	Total Teeth	Prevalence
1	12	8	6	10	0	2	0	0	0	0	39	30.77%
2	27	19	8	26	2	2	0	0	0	0	71	38.03%
3	26	15	11	17	0	7	2	0	1	6	64	40.63%
4	10	7	3	7	0	0	2	2	0	1	44	22.73%
5	15	14	1	8	0	0	0	4	0	0	62	24.19%
6	0	0	0	0	0	0	0	0	0	0	62	0%
7	6	5	1	0	3	4	0	1	0	0	36	16.67%
8	3	2	1	0	0	1	1	1	0	1	23	13.04%
9	3	2	1	0	0	0	2	2	0	0	28	10.71%
10	7	6	1	0	1	4	3	1	0	0	47	14.89%
11	3	3	0	0	0	2	1	0	0	0	69	4.35%
12	18	17	1	13	1	0	0	3	0	2	66	27.27%
13	14	8	6	8	0	0	3	4	2	1	47	29.79%
14	29	12	17	21	0	15	4	0	0	4	59	49.15%
15	31	23	8	26	0	6	0	1	0	1	66	46.96%
16	9	7	2	8	0	0	0	0	0	1	40	22.50%
17	12	10	2	9	3	0	0	0	0	1	35	34.29%
18	21	14	7	15	10	0	1	1	0	4	37	56.76%
19	17	6	11	13	9	0	3	2	0	1	33	51.52%
20	5	4	1	4	1	0	0	1	0	1	32	15.63%
21	1	1	0	0	0	0	0	0	0	1	34	2.94%
22	0	0	0	0	0	0	0	0	0	0	36	0%
23	0	0	0	0	0	0	0	0	0	0	32	0%
24	0	0	0	0	0	0	0	0	0	0	23	0%
25	0	0	0	0	0	0	0	0	0	0	18	0%
26	0	0	0	0	0	0	0	0	0	0	26	0%
27	0	0	0	0	0	0	0	0	0	0	33	0%
28	0	0	0	0	0	0	0	0	0	0	31	0%
29	6	6	0	5	0	0	0	0	0	1	29	20.68%
30	16	8	8	10	10	0	0	0	1	0	30	53.33%
31	17	12	5	12	5	0	0	0	0	2	35	48.57%
32	15	10	5	8	3	1	0	0	0	4	34	44.12%
Total	323	219 67.80%	106 32.82%	220 68.11%	48 14.86%	44 13.62%	22 6.81%	23 7.12%	4 1.24%	32 9.91%	1321	

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