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FULL ANALYSIS OF HUMAN REMAINS FROM FIELD 159A OF THE A1 WIDENING SCHEME

Sophie Newman & Malin Holst

Introduction

During excavations in 2016 in Field 159A of the A1 Leeming to Barton Joint Venture for widening of the A1, a total of seven contexts were identified as containing possible human bone (Appendix, Table 1). Three of these contexts were *in situ* skeletons within grave cuts, clustered roughly halfway along the south-east boundary of the excavation area. Previous excavations in the 1980s had already resulted in the removed a fourth skeleton (Grave 2567, female aged 25-30 years) from a stone-lined grave along this boundary. A possible fourth grave cut was identified roughly halfway along the north-western boundary. It had been heavily disturbed by a ditch cutting through from NE-SW, and only a very small quantity of bone was recovered, which could not be reliably identified as human or animal (Appendix, Table 1). This has not been included in this report. Only one of the remaining three disarticulated contexts definitely contained human bone (Appendix, Table 1). This document presents the objectives, methods and results of the analysis of the articulated skeletal remains.

Objectives

The skeletal assessment aimed to determine age and sex, as well as any manifestations of disease from which the individuals may have suffered. Additionally, information was sought regarding the cremation techniques where appropriate.

Methodology

The skeletons were analysed in detail, assessing the preservation and completeness, as well as determining the age, sex and stature of the individual. All pathological lesions were recorded and described. A summary of the osteological and palaeopathological data for the inhumation burials is given in the Appendix, in Table 2.

Osteological Analysis

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human remains is assessed subjectively, depending on the severity of bone surface erosion and post-mortem breaks, but disregarding completeness.

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone erosion and very few or no post-depositional breaks, whereas very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation.

The majority of inhumation burials from Field 159A were moderately to extremely fragmented, and had moderate to very poor surface preservation. Poor preservation and heavy disturbance of Grave ~~13494~~ 13435 meant that very few skeletal elements remained for Skeleton~~s~~ 13437. Despite poor surface preservation and moderate fragmentation, the majority of skeletal elements were present for Skeleton 13454. While Skeleton 13474 only appeared to have undergone slight fragmentation, the surface preservation was very poor, and just under half of the skeletal elements were present.

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure during osteological assessments of inhumations in order to establish how many individuals were represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements, such as the hip joints and cranial elements.

A minimum of three adults were present within Field 159A, based on the presence of three left auricular surfaces and acetabula, and three right distal fibulae. At least three proximal and distal joint surfaces of the femora and tibiae from both sides were also present.

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). Age estimation relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual (Lovejoy et al 1985; Meindl and Lovejoy 1989). Age is split into a number of categories, from foetus (up to 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately as over the age of seventeen).

Age estimations could be made for three of the inhumation burials. Skeletons 13437 and 13454 were aged based on pelvic criteria (using the auricular surface). Skeleton 13437 was aged 36-45 years (older middle adult), and Skeleton 13454 was likely 46+ years (mature adult). Due to excessive abrasion of the auricular surfaces in Skeleton 13474, an age estimation of 26-35 years (younger middle adult) for this individual could only be made using dental wear, which is a much less reliable indicator.

Sex determination is usually carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood.Based on pelvic morphology, it was determined that Skeletons 13454 (mature adult) and 13474 (younger middle adult) were likely males, and Skeleton 13437 (older middle adult) possibly male.

Stature depends on two main factors, heredity and environment; it can also fluctuate between chronological periods. Stature can only be established in skeletons if at least one complete and fully fused long bone is present, but preferably using the combined femur and tibia. Knowing the sex of the individual is also necessary, which is an issue with disarticulated long bones where sex cannot be determined. The bone is measured on an osteometric board, and stature is then calculated using a regression formula developed upon individuals of known stature (Trotter 1970). Where possible, bones from the legs were used in preference to those of the upper limb as these carry the lowest error margin (*ibid*). Stature could only be estimated for two individuals. Skeleton 13437 (older middle adult possible male) was approximately 171.9cm (5'8") in height. Skeleton 13474 (younger middle adult male) was approximately 171.4cm (5'8") in height.

Non-metric traits are additional sutures, facets, bony processes, canals and foramina, which occur in a minority of skeletons and are believed to suggest hereditary affiliation between skeletons (Saunders 1989). The origins of non-metric traits have been extensively discussed in the osteological literature and it is now thought that while most non-metric traits have genetic origins, some can be produced by factors such as mechanical stress (Kennedy 1989) or environment (Trinkhaus 1978). Skeleton 13454 (mature adult male) had numerous non-metric traits, including an *ossicle at lambda* and at the right parietal notch, an *extrasutural mastoid foramen*, bridging of the left *supraorbital notch*, and *vastus fossae* on both patellae.Non-metric traits were not observed in any of the remaining individuals, due to either their absence, or poor preservation.

Other skeletal anomalies included an abnormally long right styloid process (for the attachment of muscles that run down the side of the neck), and the presence of two unidentified calcified objects in Skeleton 13454 (mature adult male). Both warrant further research to determine the potential aetiology for the former, and tissue of origin for the latter.

Pathological Analysis

The analysis of skeletal and dental manifestations of disease can provide a vital insight into the health and diet of past populations, as well as their living conditions and occupations.

A number of pathological changes were seen in the articulated skeletons from Field 159A, caused either by minor developmental anomalies (such as the cortical defect seen on one of the right foot bones of Skeleton 13474, and the inclusion cyst on the occipital bone of Skeleton

13454), daily wear and tear, or exposure to trauma/infective agents during life. Some of these changes seen will be described below.

Cribra orbitalia, or fine pitting of the orbital roof, tends to develop during childhood, and often recedes during adolescence or early adulthood. Until recently, it was thought to be related to iron deficiency anaemia, a condition with complex causes linked to the environment, hygiene and diet (Stuart-Macadam 1992). However, a recent study has suggested that other forms of anaemia are more likely causes (Walker *et al* 2009). These include megaloblastic anaemia, which results following a diet deficient in Vitamin B_{12} (found in animal products) and/ or folic acid, and haemolytic anaemia (e.g. sickle cell anaemia and thalassemia, found in areas of the Old World prone to malaria). It was also suggested that chronic infections and scurvy (Vitamin C deficiency) may have led to the development of *cribra orbitalia* in Europe (*ibid*). While the exact aetiology of this condition remains contentious (Oxenham and Cavill 2010), it is generally accepted that this pitting relates to unhygienic environments and/or dietary deficiency. *Cribra orbitalia* is commonly observed in archaeological populations, particularly associated with agricultural economies (Roberts and Cox 2003), and is often used as an indicator of general stress (Lewis 2000, Roberts and Manchester 2005). *Cribra orbitalia* was seen in the right orbit of Skeleton 13454 (mature adult male), but was recorded as the lowest grade (capillary impressions).

Evidence of joint disease was seen in two individuals. The term joint disease encompasses a large number of conditions with different causes, which all affect the articular joints of the skeleton. Factors influencing joint disease include physical activity, occupation, workload and advancing age, which manifest as degenerative joint changes and osteoarthritis. The most common type of joint disease observed tends to be degenerative joint changes (DJC). Degenerative joint changes are characterised by both bone formation (osteophytes) and bone resorption (porosity) at and around the articular surfaces of the joints, which can cause great discomfort and disability (Rogers 2001).

Skeleton 13437 (older middle adult possible male) had evidence of degenerative joint disease in the facets of the lumbar region of the spine. In one facet this had progressed to osteoarthritis, with evidence of eburnation on the joint surface. Osteoarthritis is frequently associated with increasing age, but can be the result of mechanical stress and other factors, including lifestyle, food acquisition and preparation, social status, sex and general health and body weight (Larsen 1997; Roberts and Manchester 2005).

Skeleton 13454 (mature adult male) had evidence of degenerative joint changes in the articular facets of the thoracic region of the spine. He also had severe disc degeneration in the thoracic region. The intervertebral discs are the 'shock absorbers' of the spine, but these can degenerate as a result of gradual desiccation (age-related drying), which then causes transmission of the stress from the vertebral discs to the articular facets and ligaments (Hirsh 1983, 123). Spinal osteophytes form to compensate for the constant stress that is placed on the spine as a result of human posture (Roberts and Manchester 2005, 106). Increasing stress or activity can therefore lead to increased size and prevalence of osteophytes (*ibid*). One thoracic vertebra also had a Schmorl's node. Schmorl's nodes manifest as indentations in the upper and lower surfaces of the vertebral bodies caused by the pressure of herniated vertebral discs (Aufderheide and Rodríguez-Martín 1998). Discs may rupture due to trauma, but vertebrae weakened by infection, osteoporosis or neoplastic disease may be more vulnerable (Roberts and Manchester 2005). Schmorl's nodes are often associated with degenerative changes to the vertebral bodies (Aufderheide and Rodríguez-Martín 1998, Hilton *et al.* 1976), as seen in this individual.

New bone deposits on the surfaces of the bones can indicate inflammation of a sheath of tissue (the periosteum), which surrounds all bones (Ortner 2003, 206-207). Inflammation may be due to infection, but low-grade trauma and chronic ulceration can also lead to new bone formation (Roberts and Manchester 2005; Ortner 2003, 206-207). Periosteal reactions are commonly observed in archaeological populations, particularly on the tibiae, and their prevalence has been used as a general measure of stress in past populations (Ortner 2003, 209). Woven bone deposits are indicative of inflammation that was active at the time of death, while lamellar bone indicates that the inflammation was healing.

Skeleton 13437 (older middle adult possible male) had very well healed lamellar bone striations on the medial surfaces of both tibiae, potentially indicative of past trauma and/or infection. Skeleton 13454 (mature adult male) had evidence of a more active reaction on the left side of the pelvis. Patches of woven bone were seen on the anterior surface of the ilium, and just posterior to the acetabulum (the hip joint), which may also be due to trauma and/or infection. He also had a patch of new bone formation on the external surface of the occipital bone (back of the head), where muscles of the neck and back attach.

Dental Health

Dental pathology was also noted in two of the articulated individuals. Skeleton 13437 (older middle adult possible male) no teeth or tooth positions present for analysis. Skeleton 13454 (mature adult male) had 23 tooth positions and 23 teeth (four loose), and Skeleton 13474 (younger middle adult male) had no tooth positions but fifteen teeth present. For Skeleton 13454, two teeth had been lost ante-mortem (during life).

If plaque is not removed from the teeth effectively (or on a regular basis) then it can mineralise and form concretions of calculus on the tooth crowns or roots (if these are exposed), along the line of the gums (Hillson 1996, 255-257). Mineralisation of plaque can also be common when the diet is high in protein (Roberts and Manchester 2005, 71). Calculus is commonly observed in archaeological populations of all periods, although poor preservation or damage caused during cleaning can result in the loss of these deposits from the teeth (*ibid*, 64). Calculus deposits were seen on thirteen teeth from Skeleton 13454 (mature adult male), ranging from flecks to heavy deposits.

Dental caries (tooth decay) forms when bacteria in the plaque metabolise sugars in the diet and produce acid, which then causes the loss of minerals from the teeth and eventually leads to the formation of a cavity (Zero 1999). Simple sugars can be found naturally in fruits, vegetables, dried fruits and honey, as well as processed, refined sugar; since the latter three contain the most sucrose they are most cariogenic. Complex sugars are usually less cariogenic and are found in carbohydrates, such as cereals. However, processing carbohydrates, including grinding grains into fine powders or cooking them, will usually increase their cariogenicity (Moynihan 2003). Five carious lesions were seen in the dentition of Skeleton 13454 (mature adult male), the majority of moderate size, and located between teeth. One of these lesions was associated with an abscess, exposing the roots of the left lower first molar. Dental abscesses occur when bacteria enter the pulp cavity of a tooth causing inflammation and a build-up of pus at the apex of the root. Eventually, a hole forms in the surrounding bone allowing the pus to drain out and relieve the pressure. Abscesses can form as a result of dental caries, heavy wear of the teeth, damage to the teeth, or periodontal disease (Roberts and Manchester 1995).

Skeleton 13454 (mature adult male) also had moderate periodontal disease. Calculus deposits in-between and around the necks of the teeth can aggravate the gums leading to inflammation of the soft tissues (gingivitis). In turn, gingivitis can progress to involve the bone itself, leading to resorption of the bone supporting the tooth, and the loss of the periodontal ligament that helps to anchor the tooth into the socket (Roberts and Manchester 2005, 73). Therefore it is unsurprising that periodontal disease should be seen in an individual with evidence of ante-mortem tooth loss and extensive calculus deposits.

Dental enamel hypoplasia (DEH) is the presence of lines, grooves or pits on the surface of the tooth crown, and occurs as a result of defective formation of tooth enamel during growth (Hillson 1996). Essentially, they represent a period when the crown formation is halted, and they are caused by periods of severe stress, such as episodes of malnutrition or disease, during the first seven years of childhood. Involvement of the deciduous (milk) teeth can indicate pre-natal stress (Lewis 2007). Trauma can also cause DEH formation, usually in single teeth, therefore only individuals with three or more teeth with DEH defects were included in the analysis below. Dental enamel hypoplasia was seen on two teeth from Skeleton 13454 (mature adult male) and two teeth from Skeleton 13474 (younger middle adult male).

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Appendix

Table 1 List of contexts containing human bone/possible human bone

Context No.	Sk No.	Position	Orientation	Additional finds	Notes
13420	**13454**	Supine, extended	NW-SE	Possible hobnails at feet; animal teeth/bone; fragments of burnt bone (can't determine if human or animal)	Cist burial
13426	**N/A**	N/A	N/A	Pot sherds; glass	Nine small fragments of burnt and unburnt bone, could not determine if human or animal. Recovered from the upper fill of the cut of a kiln/oven pit [13425], so likely animal bone
13435	**13437**	Supine, extended	NW-SE	Pot sherds; Fe	Damaged during machining
13438	**N/A**	N/A	N/A	Pot sherds; glass	One fragment of burnt bone, likely animal, from the fill of grave (13420)
13460	**13474**	Supine, extended	NW-SE	Pot sherds; glass	Stone-lined grave
13524	**N/A**	N/A	N/A	Pot sherds	Twelve fragments of burnt and unburnt bone from a cut of a pit/tree-bole [13523], can't determine if human or animal. One unfused distal hand phalanx of a juvenile

Table 2 Summary of osteological and palaeopathological results

Key: SP = Surface preservation: grades 0 (excellent), 1 (very good), 2 (good), 3 (moderate), 4 (poor), 5 (very poor), 5+ (extremely

Sk No	Fragmentation	SP	Completeness (%)	Age	Age Group	Sex	Dental Pathology	Skeletal Pathology
13437	Mod	3	25	36-45 years	OMA	M?	-	Periosteal reaction on tibiae; DJC and OA in lumbar spine
13454	Mod	4	90+	46+ years	MA	M	Calculus, caries, periodontal disease, abscess, asymmetrical wear; DEH	Degenerative disc disease and DJC in thoracic spine; periosteal reaction and possible inclusion cyst on occipital bone; cribra orbitalia; new bone formation on L os coxa; elongated R styloid process
13474	Sli	5	40	26-35 years?	YMA?	M	DEH	Cortical defect on R navicular

poor) after McKinley (2004); C = Completeness; F = Fragmentation: min (minimal), sli (slight), mod (moderate), sev (severe), ext (extreme)

Non-adult age categories: f (foetus, <38 weeks *in utero*), p (perinate, c. birth), n (neonate, 0-1m), i (infant, 1-12m), j (juvenile, 1-12y), ad (adolescent 13-17y)

Adult age categories: ya (young adult, 18-25y), yma (young middle adult, 26-35y), oma (old middle adult, 36-45y), ma (mature adult, 46+y), a (adult, 18+y)

R – right; L – left; OA = Osteoarthritis; DJC = Degenerative Joint Changes; DEH – dental enamel hypoplasia

Skeletal Catalogue – A1L2B F159A

Skeleton Number	**13437**
Preservation	3 (moderate)
Fragmentation	Moderate
Completeness	25% Fragmentary cranium; right scapula; 1 cervical vertebra, minimum 4 thoracic vertebrae, 5 lumbar vertebrae; sacrum; coccyx; minimum 3 right ribs; right hand (1 carpal, 3 proximal phalanges, 1 intermediate phalanx); unsided hand (distal phalanges); left pelvis; femora; tibiae; fibulae; right foot (6 tarsals, 5 metatarsals, 2 proximal phalanges, 1 distal phalanx); left foot (5 tarsals, 5 metatarsals, 2 proximal phalanges
Age	36-45 years (OMA)
Sex	Male?
Stature	171.86cm ±3.37 (5'8") (L.Tibia)
Non-Metric Traits	-
Pathology	DJC and OA in lumbar articular facets Very well-healed lamellar bone striations on the medial surfaces of both tibiae
Dental Health	-

	Right Dentition								Left Dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxilla	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mandible	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Skeleton Number	**13454**
Preservation	4 (poor)
Fragmentation	Moderate
Completeness	90+% Cranium, mandible; sternum; clavicles; scapulae; 2 cervical vertebrae, 9 thoracic vertebrae, 5 lumbar vertebrae; sacrum; minimum 9 left ribs, minimum 6 right ribs; humeri; radii; ulnae; right hand (5 metacarpals, 3 proximal phalanges, 3 intermediate phalanges, 1 distal phalanx); left hand (2 metacarpals, 3 proximal phalanges, 4 intermediate phalanges, 2 distal phalanges); unsided hand (2 proximal phalanges, 3 distal phalanges); pelves; femora; patellae; tibiae; fibulae; right foot (7 tarsals, 5 metatarsals, 4 proximal phalanges, 1 intermediate phalanx); left foot (6 tarsals, 5 metatarsals, 4 proximal phalanges)
Age	46+ years (MA)
Sex	Male
Stature	-
Non-Metric Traits	*Ossicle at lambda, ossicle at parietal notch* (right), *mastoid foramen extrasutural* (right), *absent zygomaticofacial foramen* (left), *bridging of supraorbital notch* (left), *exostosis in trochanteric fossa* (right), *vastus fossa* (bilateral)
Pathology	Cribra orbitalia (right=1, left =0) DDD, DJC and one Schmorl's node in thoracic spine, DDD S1 Patch of porous, nodular, lamellar bone formation just above the external occipital protuberance. To the right of the new bone formation there is a roughly ovoid cavity (6.4x5.1mm, 3.4mm deep). Margins and floor are blunt and smooth Asymmetry of the styloid processes – the right styloid process is very robust and elongated (broken fragment approximately 30.6mm long, left process

	approximately 11.2mm long). The left process ends with a blunt tip with a facet-like concavity. Can't determine if there had been an additional loose segment that had been broken off during life, forming a pseudofacet. The right mastoid process was also larger than the left side Small patches of woven bone on the anterior surface of the left os coxa, lateral to the auricular surface and to the sciatic notch. Another patch is located inferior to the acetabulum. A larger area of new bone formation located posterior to the acetabulum, with thick nodules of hair on end bone. No changes on the right side, sacrum, or left proximal femur. However, fragmentation and poor surface preservation may have led to loss of information Two calcified objects found in the bag for the pelvis. Irregularly shaped, porous, and flat. One fragment 42x25.8mm, the second 25.9x15.2mm. Some of the surfaces have a coating of new woven bone
Dental Health	23 tooth positions, 23 teeth present + 1 unidentifiable root, 2 teeth lost AM, 2 teeth NP/U 13 teeth with calculus, 2 teeth with DEH, 5 teeth with caries Moderate periodontal disease on the mandible and maxillae Buccal surface of the roots of the left lower first molar exposed, margins sharp and smooth. Tooth root sockets slightly expanded, and small patch of woven bone evident on the external surface of the margin under the distal root Asymmetrical wear of the teeth, more worn on the right side, likely related to ante-mortem tooth loss on the left side

	Right Dentition								Left Dentition							
Present	P	P	-	-	P	P	-	P	-	P	P	P	P	AM	AM	NP/U
Calculus	Mdb	Fd	-	-	-	-	-	-	-	-	-	Sdb	Sbdlm	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	Mm	Md	-	-	-	-	-	-	-	-	-	-	Sd	-	-	-
Wear	2	5	-	-	5	5	-	6	-	5	5	3	4	-	-	-
Maxilla	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mandible	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Present	NP/U	P	P	P	P	P	P(l)	P(l)	P(l)	P(l)	P	P	P	P	P	NP/U
Calculus	-	Mdlm	Mbl	Fb	Fbl	-	-	-	-	-	Fb	Fl	Fl	Mlb	Hbdl	-
DEH	-	-	-	-	-	L	-	-	-	-	L	-	-	-	-	-
Caries	-	-	Mmo	-	-	-	-	-	-	-	-	-	-	Mmo	-	-
Wear	-	6	6	4	4	5	6	7	7	6	5	3	3	4	3	-

Skeleton Number	**13474**
Preservation	5 (very poor)
Fragmentation	Slight
Completeness	40% Cranium; left scapula; humerii; radii; ulnae; right hand (2 metacarpals, pelves; femora; right patella; tibiae; fibulae; right foot (5 tarsals, 1 metatarsal, 1 proximal phalanx); left foot (7 tarsals, 5 metatarsals)
Age	26-35 years (YMA, based on dental wear)
Sex	Male
Stature	171.37cm ±3.27 (5'8") (R. Femur)
Non-Metric Traits	-
Pathology	Cortical defect on the facet for the talar head on the right navicular. Oval shape, approximately 2.5x1.3mm in size
Dental Health	0 tooth positions, 15 teeth present

				2 teeth with DEH Lower canines double rooted													
	Right Dentition								Left Dentition								
Present	-	-	-	-	-	P(l)	-	-	-	-	P(l)	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	4	-	-	-	-	4	-	-	-	-	-
Maxilla	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mandible	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Present	-	P(l)	-	P(l)	P(l)	P(l)	P(l)	P(l)	R	R	P(l)	P(l)	-	P(l)	P(l)	P(l)
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	L	-	P
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	4	-	3	3	3	4	5	-	-	3	3	-	5	4	2