

Osteological Assessment

Lincoln Cathedral Street

Lincoln

Site Code: LCSZ03
NGR: SK 7635 71456

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Prepared for

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Summary

York Osteoarchaeology Ltd was commissioned by Lindsey Archaeological Services to carry out the osteological assessment of an assemblage of human remains recovered from Lincoln Cathedral Street, Lincoln (SK 7635 71456). It is probable that the majority of skeletons had been interred in the cloister of a 13th century Blackfriars Priory, although one skeleton may be later than the monastic site (Trench 17), while skeletal remains from Trench 4 may date to the Roman period (Table 1).

Osteological analysis revealed that the skeletal remains were well-preserved throughout the collection. The assemblage represented a minimum number of four individuals. This included one complete skeleton (14) from Trench 6, which was a mature adult male aged 46 years or older (Table 2). Additionally, a pair of lower legs and feet (2) from Trench 17 was treated as an individual skeleton and represented an adult.

In the disarticulated assemblage, which consisted of 140 bones or bone fragments, one young adult aged 18 to 25 was identified, as well as one young middle adult, aged 26-35, one old middle adult male aged 36 to 45 and two mature adult males aged over 46 years or older. Additionally, at least five bones belonging to a female were found, although her age could not be assessed. It is probable that this woman dates to the Roman period. Her bones were associated with a skull, initially thought to belong to her, but which was found to be a mature adult male upon analysis. Stature could be established in the two individual skeletons. In both cases, the individuals were 1.72m tall, which is slightly taller than the mean stature calculated for a number of medieval cemeteries (170.5cm) by Caffell (1997).

Evidence for pathology was observed on a number of bone fragments, as well as in Skeleton 14. The most commonly observed pathological manifestations were those related to muscle trauma in the form of bony protrusions (*enthesopathies*) or bone excavations. Muscular trauma occurs as a result of repetitive strain or sudden severe trauma, such as a fall. *Enthesopathies* at the muscle attachment for *gluteus maximus*, the main bottom muscle which extends the hip and trunk (Stone and Stone 1990) were most prevalent. Additionally, muscle strain was noted on the rotator cuff at the upper arm and shoulder. These muscles strengthen the shoulder joint and aid in all upper arm movements. The evidence suggests that the individuals from Lincoln Cathedral Street were carrying out tasks which placed strain on the upper arm and shoulder muscles, such as crafts, gardening, or other physical activities.

Evidence for joint degeneration was also prevalent in the assemblage and was mostly observed in the vertebrae as well as in the joints of one pelvis fragment. The neck vertebrae of Skeleton 14 showed evidence for considerable porosity as well as marginal new bone formation which develops in an attempt to repair the deteriorating joints (Plate 1). It is probable that the joint disease observed in this population was age-related. Schmorl's nodes, or depressions in the vertebral bodies caused as a result of vertebral disc damage, were observed in the lower spine of Skeleton 14. These lesions are commonly seen in skeletons from archaeological contexts and reflect strain placed on the spine as a result of carrying heavy loads.



Plate 1 Joint disease on a neck vertebra of Skeleton 14

Other pathological conditions encountered included pitting in the eye orbits resulting from iron deficiency anaemia (*cribra orbitalia*). Mild inflammation of the lower legs was noted in two disarticulated tibial shaft fragments, as well as the lower legs of Skeleton 14. These lesions, termed *periostitis*, could be the result of an infectious disease such as syphilis or leprosy, or may have developed as a result of ulcers, varicose veins, or trauma to the shins. Spondylolysis is a condition which is characterised by separation of the vertebral arch of the fifth lumbar vertebra. This can occur in individuals who habitually carry out activities which place strain on the lower spine, such as athletes.



Plate 2 Cavities on first premolar of Skeleton 14

Dental disease was noted in both Skeleton 14 and in the disarticulated remains. This included moderate calculus formation (concretions of dental plaque), which are caused by poor dental hygiene. Additionally, several cavities were noted, which tend to become more prevalent after the introduction of cane sugar to the general populace in the 17th century (Moore and Corbett 1975). Periodontitis was observed in the form of receding gums and may have been exacerbated by irritation from the plaque formation.

In conclusion, the small population from Lincoln Cathedral Street provided a glimpse into the life, health and diet of individuals buried at the site. The evidence suggests that the individuals buried at the cloister were mostly males, but included at least one female skeleton. The group had experienced little stress during childhood, which meant that the two individuals whose living height could be assessed were slightly taller than the average medieval man. One individual suffered from iron deficiency during childhood, which can probably be attributed to an infectious disease, rather than inadequate diet. The presence of several cavities suggests that the individuals had access to cane sugar, or enjoyed a carbohydrate-rich diet. This, together with numerous plaque concretions also points to poor oral hygiene. The men were physically active and carried out activities which placed particular strain on the shoulders, upper arms and spine. This may have involved carrying heavy loads, causing disc degeneration in the lower spine. The older age of some of the men meant that the joints of the neck had deteriorated, which might have caused some pain.

Table 1 Summary of disarticulated human remains

Context	Trench	Bone	Side	Present	Age	Sex	Pathology	Other
5	1	Maxilla	Right	50%	18-25	-	Little wear, little calculus	-
6	1	Humerus shaft	Left	50%	Adult	-	-	-
17	1	Femur upper shaft	Left	45%	Adult	Female		Plaque, third trochanter
		Femur, proximal	Left	90%	Adult	-	Enthesopathy for gluteus maximus	-
		Humerus head	-	1%	-	-	-	-
		Sacrum	Left	5%	46+	-	Degenerative joint disease at hip joint	-
4	3	Rib fragment	-	30%	-	-	-	-
		Humerus shaft	-	10%	-	-	-	-

Context	Trench	Bone	Side	Present	Age	Sex	Pathology	Other
20	4	Skull	-	90%	36-45	Male	Cribrra orbitalia	Roman?
		Scapula	Right	65%	Adult	Female	-	
		Scapula	Left	90%	Adult	Female	-	
		Clavicle	Right	100%	Adult	Female	-	
		Clavicle	Left	100%	Adult	Female	-	
		Thoracic vertebra	-	100%	Adult	-	-	
		Ribs, 3 left, 4 right	Left/right	35%	Adult	-	-	
		Skull, mandibular condyle	Right	1%	Adult	-	-	
8	6	Tibia	Right	100%	Adult	-	Periostitis at medial surface	-
		5 th lumbar vertebra	-	90%	Adult	-	Spondylolysis	-
		First sacral vertebra	-	15%	Adult	-	-	-
		Femur, distal epiphysis	-	2%	Adult	-	-	-
		4 th metatarsal	L	100%	Adult	-	-	-
13	6	Pelvis ilium	L	70%	46+	Male	Degenerative joint disease at joint with sacrum	-
		Femur, proximal	L	50%	Adult	Male	Enthesopathy for gluteus maximus	-
		Talus	L	100%	Adult	-	-	Pair?
		Talus	R	100%	Adult	-	-	Pair?
		12 rib shaft fragments	Right /left	30%	-	-	-	
		Ribs, 4 right, 1 left	Right /left	80%	Adult	-	-	-
		Thoracic vertebra	-	70%	Adult	-	Joint degeneration of body	-
		1 st , 2 nd , 5 th metacarpal	Right	100%	Adult	-	-	-
		1 st metatarsal	Right	100%	Adult	-	-	-
		Humerus, distal epiphysis	-	1%	-	-	-	-
		Cuboid	Left	100%	Adult	-	-	-
		Clavicle	Right	100%	Adult	-	Enthesopathy for costoclavicular ligament, joint degeneration of lateral joint	-
		Humerus	Left	100%	Adult	-	Teres major bone excavation, enthesopathy	Pair?

Context	Trench	Bone	Side	Present	Age	Sex	Pathology	Other
							for supraspinatus	
		Humerus	Right	100%	Adult	-	Enthesopathy for supraspinatus	-
		Femur	Right	100%	Adult	Male	Enthesopathy for gluteus maximus	-
		Radius	Right	100%	Adult	-	Enthesopathy for brachialis and flexor pollicis longus	-
		Radius	Left	100%	Adult	-	-	-
		Radius	Right	100%	Adult	-	-	-
		Fibula	Left	100%	Adult	-	-	-
		Ulna	Right	100%	Adult	-	-	-
		Ulna	Right	100%	Adult	-	-	-
		Ulna	Left	100%	Adult	-	-	-
		Cervical vertebra	-	100%	Adult	-	-	-
		Thoracic vertebra	-	75%	Adult	-	Slight degenerative joint disease	-
		Thoracic vertebra, T12	-	100%	Adult	-	Slight degenerative joint disease	-
		2 x thoracic arch	-	30%	Adult	-	-	-
		Scapula	L	60%	Adult	-	-	-
		Manubrium	-	5%	Adult	-	-	-
		Ribs, 7 sternal ends	-	10-30%	46+	-	-	-
		Ribs, 4 heads	Left & right	3%	Adult	-	-	-
		Pelvis, pubic symphysis	Left	10%	46+	Male	-	-
		Tooth, maxillary 2 nd molar	Right	100%	26-35	-	-	-
3	8	Humerus, distal shaft	-	30%	Adult	-	-	-
		Animal scapula	-	-	-	-	-	-
2000	8	Fibula shaft	-	20%	-	-	-	-
		Skull fragment	-	3%	-	-	-	-
		Ulna shaft	-	5%	-	-	-	-
		Femur shaft	-	70%	-	-	-	-
9	8	Rib fragment	-	30%	-	-	-	-
		3 skull fragments	-	10%	-	-	-	-
4	10	Ulna shaft	-	20%	-	-	-	-
		Patella	Left	100%	Adult	-	-	-
		Rib, 2 head fragments	-	2%	-	-	-	-

Context	Trench	Bone	Side	Present	Age	Sex	Pathology	Other
1	12	Tibia shaft	-	30%	-	-	Periostitis on shaft	-
1	14	Femur shaft	Left	25%	Adult	-	Joint degeneration, enthesopathy for rectus femoris	-
1	17	Humerus proximal shaft	Left	50%	Adult	-	Marked pectoralis major/pectoralis major attachments	Post-medieval
4	17	Skull, frontal, parietals	-	60%	46+	Male	-	
		Skull, frontal	-	3-%	46+	Male	-	
		Skull, temporals	Right & left	20%	Adult ?	Male	-	
		Skull, occipital and basion	-	25%	Adult ?	-	-	
		Skull, zygomatic	Right	2%	Adult ?	-	-	
		Maxilla, 8 teeth	-	100%	26-35	-	Slight wear, slight calculus, severe caries on right first molar	
		Scapula, blade, coronoid	Left	25%	-	-	-	
Radius	Left	100%	Adult	-	-			
1	19	Femur, all but distal end	Right	95%	Adult	Female ?	Enthesopathy for gluteus maximus	Plaque
19	39	Tibia shaft	Left	80%	Adult	-	Periostitis	-
		Humerus shaft	-	15%	-	-	-	-
6	39	Humerus shaft	Right	70%	Adult	-	-	With lead ?

Table 2 Summary of individual skeletons

Context	Trench	Preservation	Completeness	Age	Sex	Stature	Pathology
2	17	Excellent	25%, legs only	Adult	-	1.72m	none
14	6	Good	80%	46+	Male	1.72m	Degeneration of cervical spine, Schmorl's nodes, periostitis, enthesopathies, bone excavations, periodontitis, caries, calculus, dental chipping

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