

《传统观察分析方法与转换分析方法的出土人骨年龄鉴定数据对比》

A-传统观察方法

（一）牙齿萌出及骨骺愈合

个体编号	发育阶段	年龄结果
付大门墓地 M10	下颌犬齿正在萌出，第一前臼齿未萌出，第二臼齿即将暴露出齿槽，肱骨近端与远端骨骺均未愈合	8-10

（二）牙齿磨耗

吴汝康先生的方法

个体编号	牙齿磨耗程度	牙齿形态	年龄结果
付大门墓地 M1-1	第一臼齿磨耗 4 级	齿质点扩大，连成一片	40-45
付大门墓地 M1-2	第一臼齿磨耗 3 级	齿尖大部分磨去，齿质点暴露	30-35
付大门墓地 M2	第一臼齿磨耗 5 级	齿冠部分磨去，齿质全部暴露	45-55
付大门墓地 M16-1	第一臼齿磨耗 5 级	齿冠部分磨去，齿质全部暴露	45-55

（三）耻骨联合面

个体编号	分期	形态	年龄结果
付大门墓地 M1-1	第 9 期	联合面起伏不平，略有下凹，腹侧有唇缘形成	45-50
付大门墓地 M16-1	第 10 期	联合面崎岖不平，不规则	50-55

（四）耳状面

个体编号	分期	形态	年龄结果
付大门墓地 M1-1	第 7 期	耳状面形态整体较为致密，不存在横纹等结构	50-55
付大门墓地 M16-1	第 7 期	耳状面形态整体较为致密，不存在横纹等结构	50-55
大岚村墓地 M25	第 8 期	耳状面表面不规则，呈崩解状，存在软骨下破坏结构	60+

B-转换分析方法

观察者 A:

TA2 转换分析记录表																			
遗址：2022 聊城付大门墓地				出土单位：M1-1				性别：男		年龄：传统观察：50-55/TA2：68.8(40.0-86.8)									
颅外缝（L） Ectocranial suture closure (1-5)																			
冠状缝翼区段 Coronal pterica				矢状缝顶孔段 Sagittal obelica				人字缝星点段 Lambdoidal asterica				颧上颌缝 Zygomaticomaxillary				腭中缝 Interpalatine			
4				3-4				1-2				2				3			
耻骨联合面 Pubic symphysis																			
L 浮雕样 R Relief（1-6）				L 质地 R Texture（1-4）				L 上尖 R Superior apex（1-4）				L 腹侧缘 R Ventral symphyseal margin（1-7）				L 背侧缘 R Dorsal symphyseal margin（1-5）			
5-6		5-6		3-4		2-3						5-6		5-6					
耳状关节面 Auricular surface																			
L 上下表面形貌 R Superior and inferior demiface topography（1-3）				L 上、中下关节面形态 R Superior,apical and inferior surface morphology（1-5）				L 下表面质地 R Inferior surface texture（1-3）				L 髌后上下骨疣 R Superior and inferior posterior iliac exostoses（1-6）				L 髌后部骨疣 R Posterior iliac exostoses（1-3）			
3		3	3	3-4	4		4	4	4-5		2-3	3-4					1-2		

TA2 转换分析记录表																						
遗址：2022 聊城付大门墓地				出土单位：M16-1				性别：男		年龄：传统观察：50-55/TA2：78.1(59.7-90.9)												
颅外缝（L） Ectocranial suture closure (1-5)																						
冠状缝翼区段 Coronal pterica				矢状缝顶孔段 Sagittal obelica						人字缝星点段 Lambdoidal asterica					颧上颌缝 Zygomaticomaxillary				腭中缝 Interpalatine			
4				3						3					2				5			
耻骨联合面 Pubic symphysis																						
L 浮雕样 R Relief（1-6）				L 质地 R Texture（1-4）						L 上尖 R Superior apex（1-4）					L 腹侧缘 R Ventral symphyseal margin（1-7）				L 背侧缘 R Dorsal symphyseal margin（1-5）			
		6				4				4				6								
耳状关节面 Auricular surface																						
L 上下表面形貌 R Superior and inferior demiface topography（1-3）				L 上、中下关节面形态 R Superior,apical and inferior surface morphology（1-5）						L 下表面质地 R Inferior surface texture（1-3）					L 髌后上下骨疣 R Superior and inferior posterior iliac exostoses（1-6）				L 髌后部骨疣 R Posterior iliac exostoses（1-3）			
3		3	3	3	4		4	4	4		3		4-5		5	3-4	2	3				

TA2 转换分析记录表																			
遗址：2024 烟台大岚村墓地				出土单位：M25				性别：男		年龄：传统观察：60+/TA2：81.5(60.0-110.0)									
颅外缝（L） Ectocranial suture closure (1-5)																			
冠状缝翼区段 Coronal pterica				矢状缝顶孔段 Sagittal obelica				人字缝星点段 Lambdoidal asterica				颧上颌缝 Zygomaticomaxillary				腭中缝 Interpalatine			
耻骨联合面 Pubic symphysis																			
L 浮雕样 R Relief（1-6）				L 质地 R Texture（1-4）				L 上尖 R Superior apex（1-4）				L 腹侧缘 R Ventral symphyseal margin（1-7）				L 背侧缘 R Dorsal symphyseal margin（1-5）			
耳状关节面 Auricular surface																			
L 上下表面形貌 R Superior and inferior demiface topography（1-3）				L 上、中下关节面形态 R Superior,apical and inferior surface morphology（1-5）						L 下表面质地 R Inferior surface texture（1-3）				L 髌后上下骨疣 R Superior and inferior posterior iliac exostoses（1-6）				L 髌后部骨疣 R Posterior iliac exostoses（1-3）	
3	3	3		4	5	4		5		3									

观察者 B:

TA2 转换分析记录表																			
遗址：2022 聊城付大门墓地				出土单位：M1-1				性别：男		年龄：传统观察：50-55/TA2：67.5（37.5-87.1）									
颅外缝（L） Ectocranial suture closure (1-5)																			
冠状缝翼区段 Coronal pterica				矢状缝顶孔段 Sagittal obelica				人字缝星点段 Lambdoidal asterica				颧上颌缝 Zygomaticomaxillary				腭中缝 Interpalatine			
4-5				4				2-3				3				4			
耻骨联合面 Pubic symphysis																			
L 浮雕样 R Relief（1-6）				L 质地 R Texture（1-4）				L 上尖 R Superior apex（1-4）				L 腹侧缘 R Ventral symphyseal margin（1-7）				L 背侧缘 R Dorsal symphyseal margin（1-5）			
4				2								6				4			
耳状关节面 Auricular surface																			
L 上下表面形貌 R Superior and inferior demiface topography（1-3）				L 上、中下关节面形态 R Superior,apical and inferior surface morphology（1-5）				L 下表面质地 R Inferior surface texture（1-3）				L 髌后上下骨疣 R Superior and inferior posterior iliac exostoses（1-6）				L 髌后部骨疣 R Posterior iliac exostoses（1-3）			
3								4		4									

TA2 转换分析记录表																					
遗址：2022 聊城付大门墓地				出土单位：M16-1				性别：男		年龄：传统观察：50-55/TA2：75.7(54.7-89.6)											
颅外缝（L） Ectocranial suture closure (1-5)																					
冠状缝翼区段 Coronal pterica				矢状缝顶孔段 Sagittal obelica				人字缝星点段 Lambdoidal asterica				颧上颌缝 Zygomaticomaxillary				腭中缝 Interpalatine					
4				3				3				3-4				5					
耻骨联合面 Pubic symphysis																					
L 浮雕样 R Relief（1-6）				L 质地 R Texture（1-4）				L 上尖 R Superior apex（1-4）				L 腹侧缘 R Ventral symphyseal margin（1-7）				L 背侧缘 R Dorsal symphyseal margin（1-5）					
		5				3				4				4-6				4			
耳状关节面 Auricular surface																					
L 上下表面形貌 R Superior and inferior demiface topography（1-3）				L 上、中下关节面形态 R Superior,apical and inferior surface morphology（1-5）						L 下表面质地 R Inferior surface texture（1-3）				L 髌后上下骨疣 R Superior and inferior posterior iliac exostoses（1-6）				L 髌后部骨疣 R Posterior iliac exostoses（1-3）			
		3		3						4		4		5						2	

TA2 转换分析记录表																		
遗址：2024 烟台大岚村墓地				出土单位：M25			性别：男		年龄：传统观察：60+/TA2：80.5(58.5-93.2)									
颅外缝（L） Ectocranial suture closure (1-5)																		
冠状缝翼区段 Coronal pterica				矢状缝顶孔段 Sagittal obelica				人字缝星点段 Lambdoidal asterica				颧上颌缝 Zygomaticomaxillary				腭中缝 Interpalatine		
耻骨联合面 Pubic symphysis																		
L 浮雕样 R Relief（1-6）				L 质地 R Texture（1-4）				L 上尖 R Superior apex（1-4）				L 腹侧缘 R Ventral symphyseal margin（1-7）				L 背侧缘 R Dorsal symphyseal margin（1-5）		
耳状关节面 Auricular surface																		
L 上下表面形貌 R Superior and inferior demiface topography（1-3）				L 上、中下关节面形态 R Superior,apical and inferior surface morphology（1-5）					L 下表面质地 R Inferior surface texture（1-3）				L 髌后上下骨疣 R Superior and inferior posterior iliac exostoses（1-6）				L 髌后部骨疣 R Posterior iliac exostoses（1-3）	
3	3	3		3-4	4	4		5		3								

TA3 转换分析记录表		
遗址：2022 聊城付大门墓地 出土单位：M1-1 性别：男 年龄：传统观察：50-55/TA3： 59.4(40.2-77.9)		
Section	Trait	Score
Auricular Surface	Superior posterior iliac exostoses (left)	exostoses (rounded, pointed, jagged)
Auricular Surface	Posterior exostoses (left)	discontinuous exostoses
Auricular Surface	Inferior surface porosity (right)	smooth
Cranium	Parietal depression (left)	absent
Cranium	Parietal depression (right)	absent
Cranium	Occipital condyle lipping (left)	absent (<50%)
Cranium	Occipital condyle lipping (right)	absent (<50%)
Cranium	Spheno-occipital synchondrosis	closed
Humerus	Humerus weight	normal
Humerus	Humerus greater tubercle pits (left)	absent
Humerus	Humerus medial epicondyle texture (left)	smooth
Humerus	Humerus lateral epicondyle texture (left)	smooth
Humerus	Humerus lesser tubercle bumps (right)	absent
Humerus	Humerus lesser tubercle margin shape (right)	round/flat
Humerus	Humerus greater tubercle pits (right)	absent
Humerus	Humerus medial epicondyle texture (right)	smooth
Humerus	Humerus lateral epicondyle texture (right)	smooth
Innominate, Sacroiliac Joint, & Acetabulum	Sacroiliac joint fusion (left)	normal
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest fusion (left)	fully fused (FF)
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest tuberculum ossification (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Iliac AHS exostoses (left)	exostoses (>=75%)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior margin lipping (left)	present (>=10mm)

Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior articular surface roughening (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior margin spur (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior medial spur (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity bumps (left)	present ($\geq 50\%$)
Innominate, Sacroiliac Joint, & Acetabulum	Sacroiliac joint fusion (right)	normal
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest fusion (right)	fully fused (FF)
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest tuberculum ossification (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Iliac AHS exostoses (right)	exostoses ($\geq 75\%$)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior margin lipping (right)	present ($\geq 10\text{mm}$)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior articular surface roughening (right)	present ($\geq 5\text{mm}$)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum inferior joint lipping (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior margin spur (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior medial spur (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity bumps (right)	present ($< 50\%$)
Innominate, Sacroiliac Joint, & Acetabulum	Innominate light weight	normal
Femur	Femur fovea margin lipping (left)	lipped ($\geq 10\text{mm}$)
Femur	Femur head surface extra bone (left)	absent
Femur	Femur greater trochanter roughening (left)	rough (rectangle)
Femur	Femur trochanteric fossa exostoses (left)	absent
Femur	Femur trochanteric medial exostoses (left)	present
Femur	Femur trochanteric fossa exostoses (right)	absent
Pubic symphysis	Pubic symphyseal collar (left)	absent
Pubic Symphysis	Symphyseal relief (left)	flat/irregular
Pubic Symphysis	Superior protuberance (left)	flat (late protuberance, integrated)
Pubic Symphysis	Ventral symphyseal margin (left)	rim

Pubic Symphysis	Dorsal symphyseal margin (left)	rim
Radius, Ulna, & Trapezium	Radius tuberosity medial crest (left)	absent
Radius, Ulna, & Trapezium	Ulna olecranon spur (left)	absent
Radius, Ulna, & Trapezium	Radius tuberosity medial crest (right)	absent
Radius, Ulna, & Trapezium	Ulna olecranon spur (right)	absent
Sternum & Ribs	Rib 1 fusion (left)	absent
Sternum & Ribs	Rib 1 fusion (right)	absent
Sternum & Ribs	Rib 3-10 sternal end rim profiles	irregular
Sternum & Ribs	Rib 3-10 ossification pattern	absent
Sternum & Ribs	Rib 2 shingle ribs	normal
Sternum & Ribs	Ribs 3-10 shingle ribs	normal
Tibia, Fibia, & Calcaneus	Tibia light weight	normal
Clavicle & Scapula	Clavicle medial epiphysis fusion (left)	fully fused (FF)
Clavicle & Scapula	Clavicle medial epiphysis gravel (left)	present
Clavicle & Scapula	Clavicle medial macroporosity (left)	absent
Clavicle & Scapula	Clavicle lateral macroporosity (left)	absent
Clavicle & Scapula	Clavicle medial epiphysis fusion (right)	fully fused (FF)
Clavicle & Scapula	Clavicle medial epiphysis gravel (right)	present
Clavicle & Scapula	Clavicle medial macroporosity (right)	macroposity (≥ 3)
Clavicle & Scapula	Scapula glenoid foss lipping (right)	present ($< 1/2$)
Vertebral Column	C1 lipping	present ($\geq 50\%$)
Vertebral Column	C1 eburnation	absent
Vertebral Column	L1 spinous process flattening	ligament ossification (any shape)
Vertebral Column	L1 superior epiphyseal ring fusion	fully fused (FF)
Vertebral Column	L1 superior surface morphology	flat

Vertebral Column	L1 inferior epiphyseal ring fusion	fully fused (FF)
Vertebral Column	L1 inferior surface morphology	flat
Vertebral Column	S1 margin shape	sharp
Vertebral Column	S1-S2 fusion	closed
Vertebral Column	Sacral "Elbow"	absent
Vertebral Column	Cervical vertebral lipping	absent (<3mm)
Vertebral Column	Thoracic vertebral lipping	absent (<5mm)
Vertebral Column	Lumbar vertebral lipping	absent (<5mm)
Vertebral Column	Cervical vertebral candlewax	absent
Vertebral Column	Thoracic vertebral candlewax	absent
Vertebral Column	Lumbar vertebral candlewax	absent
Vertebral Column	Cervical Vertebral DISH	absent (<4 vertebrae)
Vertebral Column	Thoracic Vertebral DISH	absent (<4 vertebrae)
Vertebral Column	Lumbar Vertebral DISH	absent (<4 vertebrae)

TA3 转换分析记录表		
遗址：2022 聊城付大门墓地 出土单位：M16-1 性别：男 年龄：传统观察：50-55/TA3：67.8(47.3-87.7)		
Section	Trait	Score
Auricular Surface	Superior posterior iliac exostoses (left)	exostoses (rounded, pointed, jagged)
Auricular Surface	Posterior exostoses (left)	absent
Auricular Surface	Superior posterior iliac exostoses (right)	exostoses (rounded, pointed, jagged)
Auricular Surface	Inferior posterior iliac exostoses (right)	exostoses (rounded, pointed, jagged)
Auricular Surface	Posterior exostoses (right)	discontinuous exostoses
Cranium	Parietal depression (left)	absent
Cranium	Parietal depression (right)	absent
Cranium	Occipital condyle lipping (right)	absent (<50%)
Cranium	Occipital condyle lipping (left)	absent (<50%)
Cranium	Spheno-occipital synchondrosis	closed
Humerus	Humerus weight	normal
Humerus	Humerus lateral epicondyle texture (left)	smooth
Humerus	Humerus lesser tubercle bumps (right)	present ($\geq 1/3$)
Humerus	Humerus lesser tubercle margin shape (right)	raised
Humerus	Humerus medial epicondyle texture (right)	rough ($\geq 1/2$ exostoses or 5mm rim)
Humerus	Humerus lateral epicondyle texture (right)	smooth
Innominate, Sacroiliac Joint, & Acetabulum	Sacroiliac joint fusion (left)	normal
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest fusion (left)	fully fused (FF)
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest tuberculum ossification (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior margin lipping (left)	present ($\geq 10\text{mm}$)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior articular surface roughening (left)	present ($\geq 5\text{mm}$)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum inferior joint lipping (left)	lipped ($\geq 3\text{mm}$)

Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior margin spur (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior medial spur (left)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity bumps (left)	present (<50%)
Innominate, Sacroiliac Joint, & Acetabulum	Sacroiliac joint fusion (right)	normal
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest fusion (right)	fully fused (FF)
Innominate, Sacroiliac Joint, & Acetabulum	Iliac crest tuberculum ossification (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior margin lipping (right)	present (>=10mm)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum posterior articular surface roughening (right)	present (>=5mm)
Innominate, Sacroiliac Joint, & Acetabulum	Acetabulum inferior joint lipping (right)	lipped (>=3mm)
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior margin spur (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity superior medial spur (right)	absent
Innominate, Sacroiliac Joint, & Acetabulum	Ischial tuberosity bumps (right)	present (<50%)
Innominate, Sacroiliac Joint, & Acetabulum	Innominate light weight	normal
Femur	Femur fovea margin lipping (left)	lipped (>= 10mm)
Femur	Femur head surface extra bone (left)	absent
Femur	Femur trochanteric fossa exostoses (left)	present
Femur	Femur trochanteric medial exostoses (left)	present
Femur	Femur fovea margin lipping (right)	lipped (>= 10mm)
Femur	Femur head surface extra bone (right)	absent
Femur	Femur trochanteric fossa exostoses (right)	absent
Femur	Femur trochanteric medial exostoses (right)	absent
Pubic Symphysis	Symphyseal relief (right)	flat/irregular
Pubic Symphysis	Superior protuberance (right)	flat (late protuberance, integrated)
Pubic Symphysis	Ventral symphyseal margin (right)	rim
Radius, Ulna, & Trapezium	Ulna olecranon spur (left)	absent

Radius, Ulna, & Trapezium	Radius tuberosity medial crest (right)	absent
Sternum & Ribs	Rib 3-10 ossification pattern	claw
Sternum & Ribs	Rib 3-10 sternal end rim profiles	irregular
Sternum & Ribs	Rib 2 shingle ribs	normal
Sternum & Ribs	Ribs 3-10 shingle ribs	normal
Tibia, Fibia, & Calcaneus	Fibula wings (left)	absent
Tibia, Fibia, & Calcaneus	Tibia light weight	normal
Tibia, Fibia, & Calcaneus	Calcaneus light weight	normal
Tibia, Fibia, & Calcaneus	Fibula wings (right)	present
Clavicle & Scapula	Clavicle medial epiphysis fusion (left)	fully fused (FF)
Clavicle & Scapula	Clavicle medial epiphysis gravel (left)	present
Clavicle & Scapula	Clavicle medial macroporosity (left)	absent
Clavicle & Scapula	Clavicle lateral macroporosity (left)	macroposity (≥ 3 holes)
Clavicle & Scapula	Scapula glenoid foss lipping (left)	present ($\geq 1/2$)
Clavicle & Scapula	Clavicle medial epiphysis fusion (right)	fully fused (FF)
Clavicle & Scapula	Clavicle medial epiphysis gravel (right)	present
Clavicle & Scapula	Clavicle lateral macroporosity (right)	macroposity (≥ 3 holes)
Clavicle & Scapula	Scapula glenoid foss lipping (right)	present ($\geq 1/2$)
Vertebral Column	C1 lipping	present ($\geq 50\%$)
Vertebral Column	C1 eburnation	absent
Vertebral column	L1 superior epiphyseal ring fusion	fully fused (FF)
Vertebral Column	L1 superior surface morphology	flat
Vertebral Column	L1 inferior epiphyseal ring fusion	fully fused (FF)
Vertebral Column	L1 inferior surface morphology	flat
Vertebral Column	L5 superior epiphyseal ring fusion	fully fused (FF)

Vertebral Column	L5 superior surface morphology	flat
Vertebral Column	L5 inferior epiphyseal ring fusion	fully fused (FF)
Vertebral Column	L5 inferior surface morphology	flat
Vertebral Column	L5 superior margin shape	lipped
Vertebral Column	L5 inferior margin shape	sharp
Vertebral Column	Sacral "Elbow"	absent
Vertebral Column	Cervical vertebral lipping	present ($\geq 3\text{mm}$)
Vertebral Column	Cervical vertebral candlewax	present
Vertebral Column	Thoracic vertebral lipping	present ($\geq 5\text{mm}$)
Vertebral Column	Thoracic vertebral candlewax	present
Vertebral Column	Lumbar vertebral candlewax	present
Vertebral Column	Lumbar vertebral lipping	present ($\geq 5\text{mm}$)
Vertebral Column	Cervical Vertebral DISH	absent (< 4 vertebrae)
Vertebral Column	Thoracic Vertebral DISH	absent (< 4 vertebrae)
Vertebral Column	Lumbar Vertebral DISH	absent (< 4 vertebrae)