

Table S1: Code, name and definition of the landmarks in this study. ¹From White, Black and Folkens, 2012, unless otherwise noted.

Code	Name	Definition ¹
BM2_L/R	Left/right buccal M ²	Left most buccal point in the upper second molar alveolus (cervical) margin (Stelzer et al., 2019)
BM1_L/R	Left/right buccal M ¹	Left most buccal point in the upper first molar alveolus (cervical) margin (Stelzer et al., 2019)
BP4_L/R	Left/right buccal P ⁴	Left most buccal point in the upper second premolar alveolus (cervical) margin (Stelzer et al., 2019)
BP3_L/R	Left/right buccal P ³	Left most buccal point in the upper first premolar alveolus (cervical) margin (Stelzer et al., 2019)
BCA_L/R	Left/right buccal C	Left most buccal point on the upper canine alveolus (cervical) margin (Stelzer et al., 2019)
LM1_L/R	Left lingual M ¹	Left most lingual point in the upper first molar alveolus (cervical) margin (Stelzer et al., 2019)
LP4_L/R	Left lingual P ⁴	Left most lingual point in the upper second premolar alveolus (cervical) margin (Stelzer et al., 2019)
LP3_L/R	Left lingual P ³	Left most lingual point in the upper first premolar alveolus (cervical) margin (Stelzer et al., 2019)
LCA_L/R	Left/right lingual C	Left most lingual point on the upper canine alveolus (cervical) margin (Stelzer et al., 2019)
ALA L/R	Left/right alare	Most lateral points along the margin of the nasal aperture
CGO L/R	Left/right zygoorbitale	Points of intersection between the zygomatico-maxillary suture and the lower orbital rim
MSO_L	Mid-torus inferior	Point in the middle of the inferior margin of the left supraorbital torus (McNulty, 2005)
MXF L/R	Left/right maxillofrontale	Points of intersection of the axis of the anterior lacrimal crest and the fronto-maxillary suture
NAS	Nasion	Intersection between the internasal and fronto-nasal sutures
FMO_L	Left frontomolare orbitale	Intersection of the left lateral orbital rim and the frontozygomatic suture
FMT_L	Left frontomolare temporale	Intersection of the left temporal line and the fronto-zygomatic suture
FRT_L/R	Left/right frontotemporale	Most antero-medial point on the left/right temporal line
SPH_L/R	Left/right sphenion	Point of intersection between the parieto-sphenoidal, parieto-temporal, and sphenotemporal sutures (Martin & Saller, 1957)

FIS_L/R	Left/right superior infra-temporal fossa	Bilateral point where the infra-temporal crest is intersected by the spheno-squamosal suture (Smith et al., 2013)
POR_L/R	Left/right porion	Upper- and outermost point on the margin of the external acoustic meatus
AST_L/R	Left/right asterion	Points of intersection between the lambdoid, parieto-mastoid and occipitomastoid sutures
LAM	Lambda	Intersection of the sagittal and lambdoid sutures
INI	Inion	Midline point projected where the superior nuchal lines meet
PGL_L/R	Left/right posterior glenoid point	Inferior-most point of the post-glenoid process (Smith et al., 2013)
LGL_L/R	Left/right lateral glenoid point	Point on the lateral margin of the articular surface of the temporo-mandibular joint (point of inflection of the braincase) (modified from Smith et al., 2013)
AGP_L/R	Left/right anterior glenoid point	Anterior-most point in the articular surface of the temporomandibular joint (Smith et al., 2013)
OPI	Opisthion	Midline point on the posterior margin of the foramen magnum
BAS	Basion	Midline point on the anterior margin of the foramen magnum
PRO	Prosthion	Most anterior point along the midline of the alveolar process
GLA	Glabella	Anterior-most point along the midline of the frontal bone

Table S2: Descriptive statistics of surface semilandmarks test results. Mean and standard deviation of mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

Fragments	Semilandmarks	Variable	n	Mean	SD
Facial skeleton – Neurocranium	no	Procrustes distance	21	0.454	0.194
Facial skeleton – Neurocranium	yes	Procrustes distance	21	0.492	0.213
Left supraorbital – Neurocranium	no	Procrustes distance	21	0.29	0.124
Left supraorbital – Neurocranium	yes	Procrustes distance	21	0.288	0.084

Table S3: Shapiro-Wilk test of normality on model residuals of surface semilandmarks test results. Shapiro-Wilk statistic and p value for model residuals of mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

Variable	Statistic	p value
Model residuals	0.961	0.0126 ¹

¹ Not normal.

Table S4: Shapiro-Wilk test of normality on surface semilandmarks test results. Shapiro-Wilk statistic and p value for the mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

Fragments	Semilandmarks	Variable	Statistic value	p
Facial skeleton – Neurocranium	no	Procrustes distance	0.934	0.162
Facial skeleton – Neurocranium	yes	Procrustes distance	0.937	0.188
Left supraorbital – Neurocranium	no	Procrustes distance	0.895	0.0281 ¹
Left supraorbital – Neurocranium	yes	Procrustes distance	0.831	0.00205 ¹

¹ Not normal.

Table S5: Levene test for the equality of variances on surface semilandmarks test results. Levene statistic and p value for the mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

df ₁	df ₂	Statistic	p value
3	80	6.37	0.000629 ¹

¹ Not homoscedastic.

Table S6: Shapiro-Wilk test of normality on model residuals of transformed data of surface semilandmarks test results. Shapiro-Wilk statistic and p value for model residuals of Box-Cox transformed mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

Variable	Statistic	p value
Model residuals	0.979	0.180

Table S7: Shapiro-Wilk test of normality on transformed data of surface semilandmarks test results:" Shapiro-Wilk statistic and p value for for the Box-Cox transformed mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

Fragments	Semilandmarks	Variable	Statistic	p value
Facial skeleton – Neurocranium	no	Procrustes distance	0.928	0.128
Facial skeleton – Neurocranium	yes	Procrustes distance	0.963	0.572
Left supraorbital – Neurocranium	no	Procrustes distance	0.966	0.641
Left supraorbital – Neurocranium	yes	Procrustes distance	0.831	0.00207 ¹

¹ Not normal.

Table S8: Levene test for the equality of variances on transformed data of surface semilandmarks test results. Levene statistic and p value for the Box-Cox transformed mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information per couple of aligned fragments.

df₁	df₂	Statistic	p value
3	80	2.02	0.118

Table S9: Descriptive statistics of surface semilandmarks vs symmetrization test results. Mean and standard deviation of mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information and with and without symmetrization for the facial skeleton fragment.

Semilandmarks	Symmetry	Variable	n	Mean	SD
no	no	Procrustes distance	21	0.454	0.194
no	yes	Procrustes distance	21	0.452	0.192
yes	no	Procrustes distance	21	0.523	0.214
yes	yes	Procrustes distance	21	0.61	0.248

Table S10: Shapiro-Wilk test of normality on model residuals of surface semilandmarks vs symmetrization test results. Shapiro-Wilk statistic and p value for model residuals of mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information and with and without symmetrization for the facial skeleton fragment.

Variable	Statistic	p value
Model residuals	0.971	0.0587

Table S11: Shapiro-Wilk test of normality on surface semilandmarks versus symmetrization test results. Shapiro-Wilk statistic and p value for the mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information and with and without symmetrization for the facial skeleton fragment.

Semilandmarks	Symmetry	Variable	Statistic	p value
no	no	Procrustes distance	0.934	0.162
no	yes	Procrustes distance	0.934	0.165
yes	no	Procrustes distance	0.962	0.553
yes	yes	Procrustes distance	0.941	0.230

Table S12: Levene test for the equality of variances on surface semilandmarks versus symmetrization test results. Levene statistic and p value for the mean Euclidean distance between corresponding landmark coordinates estimated with and without using surface semilandmark information and with and without symmetrization for the facial skeleton fragment.

df₁	df₂	Statistic	p value
3	80	0.206	0.892