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STORIES OF TEETH. A COMPARATIVE RESEARCH OF HUMAN TEETH FROM DIFFERENT ARCHAEOLOGICAL AGES IN TRANSYLVANIA

SZILÁRD SÁNDOR GÁL*

Dental morphology has an important role in examination of health status of ancient communities. The analysis of teeth from different archaeological contexts reflect how many particularities could be observed between people of the past and today's population. The following study is an attempt to present major periodontal diseases on human tooth from different archaeological periods in Transylvania.

Keywords: dental morphology, dental diseases, Late Bronze Age, Early Iron Age, Middle Ages, Early Modern Age

Cuvinte-cheie: morfologie dentară, boli dentare, epoca Bronzului Târziu, prima epocă a fierului, ev mediu, epoca modernă timpurie

The human tooth is a priceless source in understanding the lifestyle and health status of a community. The tooth is the hardest and most mineralized tissue of the human skeleton.¹ The physicochemical structure of the tooth makes it resistant to taphonomy.² In many cases the graves are disturbed or robbed and only the teeth contain any information about the deceased. The aim of the study is to compare the dental morphology and pathological changes of the mandible in communities from different archaeological periods in Transylvania.

The material of the study was collected from different archaeological excavations (Fig. 1): Voivodeni, Mureș county (Middle Bronze Age, Wietenberg culture, 2200–1509 BC), Sâncraia,³

Recea de Mureș,⁴ Alba County (Early Iron Age, 7th–8th century BC), Teiuș, Recea de Mureș, Alba county, Turda Nouă,⁵ Cluj county, Lopadea Nouă, Ciumbrud, Sibiu county and Porumbeni Mari, Harghita county (Middle Ages, Early Modern Age and Modern Age, 14th–18th century AD).⁶ Anthropometric⁷ and dental morphological⁸ analyses were carried out with macroscopic and digital imaging (Image-Pro Insight) methods.

The study started with the reconstruction of the mandible and other parts of the tooth surfaces, followed by their classification and finally the photographic registration of the teeth from vestibular, oral, mesial and distal views.

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¹ SCHEID ET AL. 2012.

² MAYS 1998; CORRON ET AL. 2017.

³ RUSTOIU–BERECKI 2018; RUSTOIU–EGRI 2021.

⁴ KÓCZA 2016.

⁵ DEMJÉN ET AL. 2020.

⁶ DUDÁS ET AL. 2018.

⁷ CAPLE–STEPHAN 2016, 863–879.

⁸ BUDAI 2007.

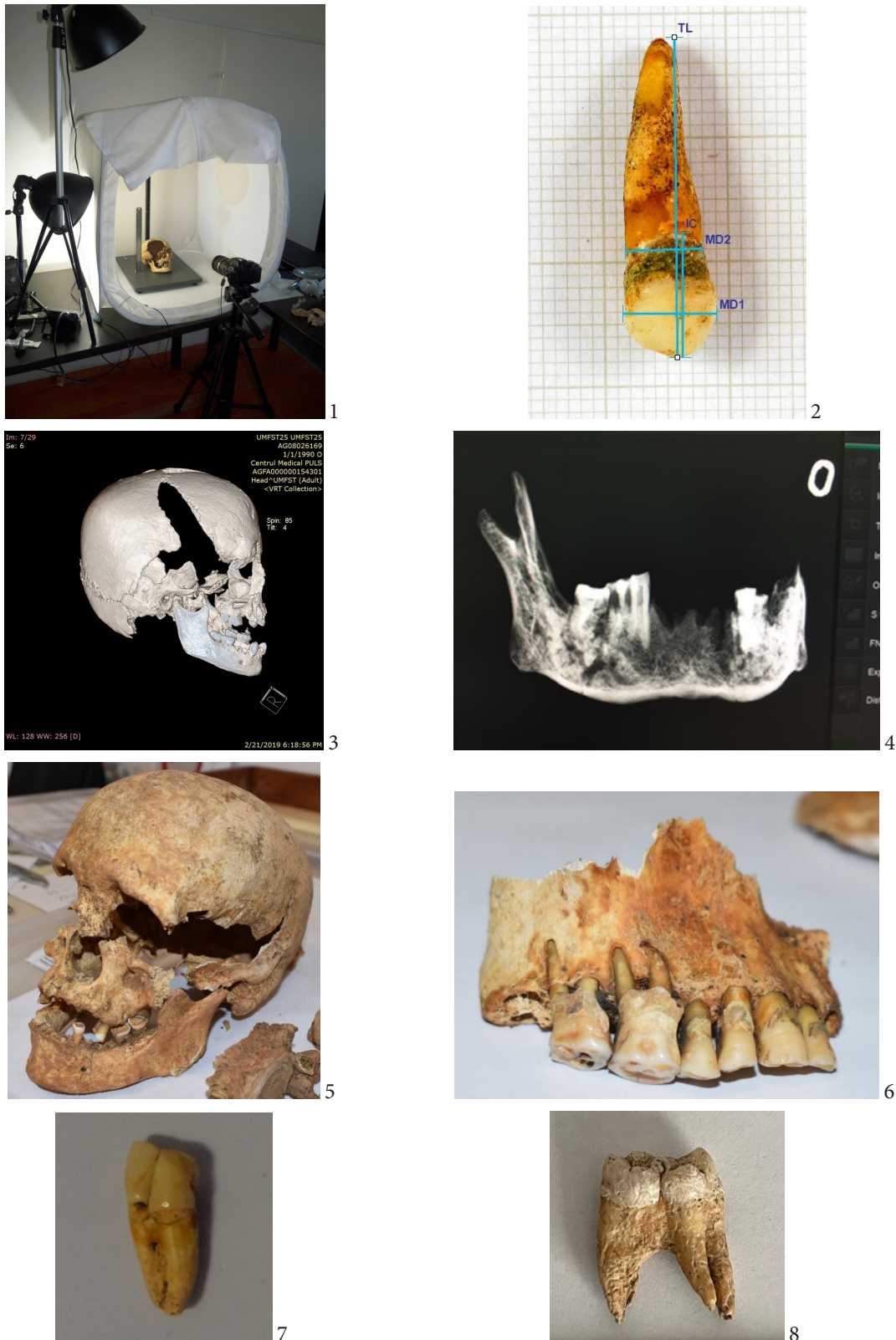


Fig. 1. 1. Photographic documentation of the teeth; 2. Dental measurement with Image-Pro Insight software; 3. CT analysis of teeth, Voivodeni (Bronze Age cemetery); 4. Sâncrai, morphological analysis of teeth with radiographic methods (Early Iron Age cemetery); 5. Teiuș, a case of caries and abrasion (medieval cemetery); 6. Turda Nouă, tartar and abrasion (Modern Age cemetery); 7. Turda Nouă, split tooth (Modern Age cemetery); 8. Recea de Mureș, fused teeth (Late Bronze Age/Early Iron Age cemetery).

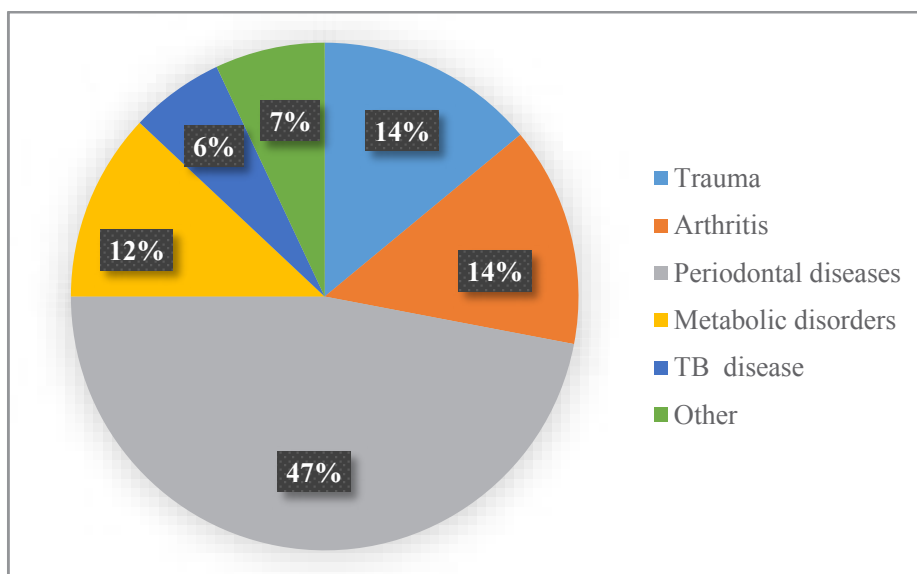


Fig. 2. Distribution of paleopathological cases.

Dental data is a very important stress marker.⁹ The dental wear and different periodontal diseases show the health status of a community, its nutritional background, oral hygiene, genetic background, and lifestyle. Along with stress markers, dental morphology is a very important part of the paleopathological analysis. In many cases, only the teeth are preserved. The most common cases of paleopathology are the periodontal diseases (Fig. 2).¹⁰

Dental diseases can be classified as dental disorder, tooth shape disorder and jaw disorder. Dental disorders can be classified by:¹¹

- Formal characteristics
- Differences in size
- Structural disorders
- Differences in number

The formal characteristics of the tooth include the number and shape of cusps: Tallon¹² and Carabelli cusps on the molars.¹³ The Carabelli cusp appears on the molars of the maxilla and is typical of the Europoid race. It was observed in a few cases from Turda Nouă and

Sânvășii.¹⁴ Tallon cusps (a Mongoloid sign) have been noticed only in a Bronze Age community in Voivodeni.¹⁵

Occlusal anomalies can be another type of formal characteristics in teeth. The most common examples are distal bite and mesial occlusion. Two cases of distal bite from Turda Nouă and Porumbenii Mari can be mentioned in this regard.

Differences in size, namely smaller (Microdontia) or larger (Macrodontia) teeth represent another category. One case of Microdontia is known from Turda Nouă.¹⁶ The samples from grave no. S15/M60 are small molars with extensive caries.

Structural disorders occur in both prehistoric and modern times. A split crown (caninus tooth) occurred in a modern age cemetery in Turda Nouă; a rare disorder of fused premolars is known from a Late Bronze Age/Early Iron Age cemetery in Recea de Mureș (Alba county); while nearly split and fused teeth, an important stress marker, hypoplasia, for chronic childhood

⁹ TIHANYI ET AL. 2015, 65–77.

¹⁰ BOLK 1916, 91–148.

¹¹ BUDAI 2007, 10–12.

¹² MATHEW 2022.

¹³ KRAUS 1951, 348–355; CSAPÓ 2020.

¹⁴ DUDÁS ET AL. 2018.

¹⁵ NÉMETH 2015.

¹⁶ DEMJÉN ET AL. 2020.

disease have been documented in Sânvăsii, Mureş county.

Another dental disorder is the unusual number of teeth: extra teeth or missing teeth (dental agenesis or aplasia).¹⁷ Cases of aplasia in the analyzed area (with the third molar missing) are known from Lopadea Nouă, Ocna Mureş, Ciombrud, Turda Nouă and Porumbenii Mari.

The most common dental morphological disorders are caries and tartar.¹⁸ The tartar is present in all archaeological periods, while caries is typical for medieval and modern cemeteries. Tartar is the effect of poor nutrition and acidic food (wine, tea, fruit).

Several stages of caries could be observed: from simple decay to cavity in the tissue of the mandible and maxilla. All these cases have been documented from medieval and modern cemeteries in Transylvania.

The second major periodontal disorder is the dental wear or abrasion (abrasio media after the scale of Huszár).¹⁹ The abrasion of teeth since childhood is common in all cemeteries. These characteristics reflect the lifestyle (primitive grinding stones) and gastronomy (wild and raw foods) of a community. The hard food led to fractures in the dental crown. The pain threshold of the individuals was very high.²⁰

Large amounts of tartar, poor oral hygiene and bad nutrition led to illness and periodontitis. Caries and premature decay of the teeth is a common feature of all communities. Dental abrasion was widespread in ancient times, e.g. all individuals had heavily worn teeth in the early Iron Age and the Scythian Age,²¹ including milk teeth (deciduous teeth), but abrasion is also present in modern times.

From the Middle Ages to modern times, the most common periodontal disease is caries and tartar.²² The youngest individual with tartar was discovered in a modern age cemetery from Turda Nouă (a 7–10 year old child). The number of cases of caries is higher in Modern Age than in ancient times ($p < 0,05$).

A connection between periodontal disease and several pathological changes in the skeleton was obvious (e.g. cribra orbitalia, porotic hyperostosis – signs of chronic illness) in Sâncraia, Voivodeni, Teiuş, Sânvăsii and Turda Nouă.

Differences have been observed in the size of teeth. The dentition of ancient and medieval communities was larger than that of modern people. Teeth are generally smaller today.²³

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¹⁷ RÓZSA ET AL. 2009, 374–379.

¹⁸ ORTNER 2003; ESCLASSAN ET AL. 2009, 287–297.

¹⁹ HUSZÁR 1976.

²⁰ PINDBORG 1970.

²¹ BERECKI ET AL. 2022.

²² ORTNER 2003.

²³ DUDÁS ET AL. 2018.

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ABBREVIATIONS

<i>ActaArchHung</i>	Acta Archaeologica Academiae Scientiarum Hungaricae
<i>ActaMN</i>	Acta Musei Napocensis
<i>Acta MP</i>	Acta Musei Porolissensis
<i>ActaTS</i>	Acta Terrae Septemcastrensis
<i>AIIA</i>	Anuarul Institutului de Istorie și Arheologie “A. D. Xenopol”. Iași
<i>AJA</i>	American Journal of Archaeology
<i>Angustia</i>	Angustia. Muzeul Carpaților Răsăriteni
<i>Apulum</i>	Apulum. Acta Musei Apulensis
<i>ArchÉrt</i>	Archaeologiai Értesítő
<i>ArchKorr</i>	Archäologisches Korrespondenzblatt
<i>ArhMold</i>	Arheologia Moldovei
<i>Banatica</i>	Banatica, Muzeul Banatului Montan
<i>BAR (IS)</i>	British Archaeological Reports (–International Series)
<i>BHAUT</i>	Bibliotheca Historica et Archaeologica Universitatis Timisiensis
<i>BJ</i>	Bonner Jahrbücher
<i>BAI</i>	Bibliotheca Archaeologica Iassiensis
<i>BAM</i>	Bibliotheca Memoriae Antiquitatis
<i>BMA</i>	Bibliotheca Musei Apulensis
<i>BMM</i>	Bibliotheca Musei Marisiensis
<i>BMN</i>	Bibliotheca Musei Napocensis
<i>BMP</i>	Bibliotheca Musei Porolissensis
<i>BudRég</i>	Budapest Régiségei
<i>CA</i>	Cercetări Arheologice
<i>CCAR</i>	Cronica Cercetărilor Arheologice din România
<i>Dacia (N. S.)</i>	Dacia. Recherches et découvertes archéologiques en Roumanie, I–XII (1924–1948), Nouvelle série (N. S.): Dacia. Revue d’archéologie et d’histoire ancienne
<i>DolgKoložsvár (Ú.S.)</i>	Dolgozatok az Erdélyi Nemzeti Múzeum Érem- és Régiségtárából, (Új sorozat 2006–)
<i>EMúz</i>	Erdélyi Múzeum
<i>EphemNap</i>	Ephemeris Napocensis
<i>FolArch</i>	Folia Archaeologica
<i>JAHA</i>	Journal of Ancient History and Archaeology
<i>JbRGZM</i>	Jahrbuch des Römisch-Germanischen Zentralmuseums
<i>JRA</i>	Journal of Roman Archaeology
<i>KuBA</i>	Kölner und Bonner Archaeologica
<i>Lymbus</i>	Lymbus. Magyarságtudományi Forrásközlemények
<i>Marisia</i>	Marisia (V–XXXV): Studii și Materiale
<i>Marisia-AHP</i>	Marisia: Archaeologia, Historia, Patrimonium
<i>MCA</i>	Materiale și Cercetări Arheologice
<i>MFME (–StudArch)</i>	A Móra Ferenc Múzeum Évkönyve, (Studia Archaeologica 1995–)
<i>ReiCretActa</i>	Rei Cretariae Romanae Fautorum Acta

<i>RevBis</i>	Revista Bistriței. Complexul Județean Muzeal Bistrița-Năsăud
<i>Sargetia</i> (S.N.)	Sargetia. Acta Musei Devensis
<i>SCIV</i> (A)	Studii și Cercetări de Istorie Veche (și Arheologie 1974–)
<i>StComSfGheorghe</i>	Studii și comunicări. Sfântu Gheorghe
<i>StudiaAA</i>	Studia Antiqua et Archaeologica. Iași

MARISIA. ARCHAEOLOGIA, HISTORIA, PATRIMONIUM

With a publishing tradition since 1965, in 2019 the annual of the Mureș County Museum initiated a new series entitled: *Marisia. Archaeologia, Historia, Patrimonium*. The publication provides a panel for new research results in archeology, architecture and material heritage of the history of arts and culture. The studies mainly focus on the inner Transylvanian region that encompasses also Mureș County. Beyond local valuable contributions, the annual aims at a regional and global concern that is relevant for the whole of Transylvania. Among the annual's missions is to provide mutual interpretation of the research results produced by the Romanian and Hungarian scientific workshops. Therefore, the annual articles are mainly in English but based on the field of research and the approached topic studies in German, Romanian or Hungarian are also accepted.

Cu o tradiție din anul 1965, anuarul Muzeului Județean Mureș s-a relansat în 2019 sub titlul *Marisia. Archaeologia, Historia, Patrimonium*. Această publicație se descrie ca o platformă științifică care cuprinde rezultatele cercetărilor în domenii precum: arheologia, arhitectura și patrimoniul material din zona istoriei artelor și a culturii, studii localizate în regiunea centrală a Transilvaniei, din care face parte județul Mureș. In extenso, anuarul își propune să ofere un spațiu unitar contribuțiilor științifice valoroase, relevante din perspectiva geografică a ceea ce înseamnă întreaga regiune a Transilvaniei. Una dintre misiunile publicației este aceea de a oferi tuturor celor interesați spațiul de schimb pentru cele mai noi rezultate din atelierele științifice românești și maghiare. Articolele anuarului sunt scrise în general în limba engleză, existând totodată articole scrise în germană, română și maghiară, în funcție de specificul domeniului și a temei abordate.

A Maros Megyei Múzeum 1965 óta megjelenő évkönyvének 2019-ben útjára bocsátott új sorozata, a *Marisia. Archaeologia, Historia, Patrimonium* elsősorban a mai Maros megyét is magába foglaló belső-erdélyi régió régészeti, épített és tárgyi örökségére, nemkülönben az ezekhez kapcsolódó művészettörténeti, művelődéstörténeti kérdésekre vonatkozó újabb kutatások tudományos fóruma. A lokális perspektíván túl igyekszik kitekinteni a regionális és univerzális összefüggésekre, így a tágran értelmezett Erdély területére nézve is közöl kiemelkedő értékkel bíró tanulmányokat. Küldetésének tekinti a hazai román és magyar tudományos műhelyekben született eredmények kölcsönös tolmácsolását. A dolgozatok nyelve főként az angol, de szakterülettől és témától függően német, román vagy magyar nyelven is közöl írásokat.