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microscopic level in the tooth cementum may be of fundamental importance for further studies of fertility and motherhood. Certain life-events have been shown to interfere with the deposition of tooth cementum, among which pregnancy was mentioned. This important fact was however only referred to in a limited number of publications. In order to gain more specific knowledge of these occurrences we conducted a small-scale clinical study focusing on the detection of pregnancies recorded in the tooth cementum. Results obtained from this study are used for further interpretation of TCA (Tooth cementum annulation) analysis applied on a sample of teeth from archaeological contexts. All samples derived from archaeological sites are from individuals dating either to the Mesolithic or Neolithic period in the Central Balkan area. The aim of this study is to evaluate results from the clinical study and compare it to the results obtained from the archaeological sample. In this manner, we hope to tackle the complex question of pregnancies, fertility rates, and paleodemography at the advent of the Neolithic period.

2 HUMAN OSSICLES, A POSSIBLE BIOMARKER FOR THE DIET AND PHYSIOLOGY OF THE MOTHER DURING PREGNANCY

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Presentation Format: Oral

$\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of collagen from teeth and bone are used to study human nutrition and health. As bones are constantly remodelling throughout life, isotopic values of bone collagen represent an average of several years. In contrast, human teeth do not remodel, and their primary dentine contains only the isotopic data from the time of formation. Novel techniques using micro-sampling of dentine have allowed better temporal resolution and the examination of tissue formed in utero as a proxy for maternal diet and physiology.

Contrary to all other bones, human auditory ossicles also do not remodel. As they develop in utero and finish formation in the first two years of life, their collagen should represent isotopic values of these two relatively short periods. By comparing $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ data from ossicles and incremental dentine, we investigated how two developmental periods of the ossicles, in-utero and first two years of life, reflect in collagen obtained from the ossicles.

Ossicle and tooth samples of 12 individuals aged 0.5 ± 0.4 years to 13 ± 1 years from the 19th century St. Peter's burial ground in Blackburn were collected and subjected to the isotopic analyses of carbon and nitrogen. The results showed a significant and systematic offset between ossicles and dentine formed at the approximately same time. Based on the comparisons with the incremental dentine and offset pattern, it seems that the second phase of the ossicle development does not influence the isotopic values of collagen significantly. It thus suggests that the data from the ossicles reflect the in-utero period and could serve as a biomarker for the diet and physiology of the mother during the first two trimesters of pregnancy.

3 BONE SPOONS FOR PREHISTORIC BABIES: DETECTION OF PRIMARY TEETH MARKS ON THE NEOLITHIC ARTEFACTS

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Presentation Format: Oral

Around 8000 years ago, throughout the Neolithic world a new type of artefact appeared, small spoons masterly made from cattle bone, usually interpreted as tools, due to their intensive traces of use. Contrary to those interpretations, the small dimensions of spoons and presence of intensive traces of use led us to the assumption that they were used for feeding babies. In order to test this assumption, we compared 2230 marks on spoons from the Neolithic site of Grad-Starčevo in Serbia (5800–5450 cal BC) with 3151 primary teeth marks produced experimentally on fresh cattle bone. This study has shown that marks on spoons were made by primary teeth, which proves their usage in feeding babies. Our interpretation of the bone spoons' function, jointly with their wide distribution, could suggest that new kinds of gruel were also an important part of the 'Neolithic package'. The novelties in baby-feeding practices, indicated by spoons, could have had an important effect on the evolution of human fertility through shortening the length of the breastfeeding period.

4 MOTHERHOOD AND MARGINALITY IN BRONZE AND IRON AGE CENTRAL EUROPE AND ITALY

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Presentation Format: Oral

In this paper, we explore the intersection between motherhood as a biological and social process, and social categorisation, including practices leading to marginalisation and social exclusion.

The first part presents our approach of contextualizing possible skeletal markers of pregnancy and parturition with health status, degenerative changes and traces of occupational stress. Examples from Bronze and Iron Age central Europe and Italy illustrate a discussion of potential bio-archaeological markers of marginality (e.g. malnutrition, trauma).

The second part concerns the interpretation of bio-archaeological evidence of motherhood and marginality in their social context. In particular, we explore how women who were marginalised in their societies might have experienced pregnancy, childbirth