



## The Positive Identification of Skeletal Remains from the Church of the Assumption of the Virgin Mary in Přeštice: a Case Study

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### ABSTRACT

The reconstruction and subsequent rescue archaeological excavation in the baroque chapel of St Barbara in the Church of the Assumption of the Virgin Mary in Přeštice has resulted in the discovery of one atypical burial in a small bricked vault. The vault contained skeletal remains in a very poor state of preservation. The discovery of the skeletal remains in the chapel was unexpected given the absence of any signs of a grave being present. In this article we describe the attempt to identify the person to whom the skeletal remains belong. Based on anthropological analysis, these remains were interpreted as probably female over 50 years of age. By combining archaeological context, anthropological analysis and historical sources, the skeleton was interpreted as the remains of Marie Anna Lindauer, a resident of Pilsen and the mother of Josef Ondřej Lindauer, the dean in Přeštice and the bishop in Budweis.

### 1. Introduction

In 2022, a rescue archaeological excavation in the chapel of St Barbara in the Church of the Assumption of the Virgin Mary in Přeštice, Czech Republic (Figure 1) was performed in connection with the reconstruction of the church. The reconstruction was focused among other things on the installation of electrical cables under the floor. Similar work was also carried out in the chapel of St Barbara. During the reconstruction, skeletal remains in a small, bricked vault were exposed, which resulted in the presence of archaeologists and anthropologists from the Museum of West Bohemia, who documented the situation and excavated the skeletal remains. The skeletal remains were anthropologically evaluated and the results were compared with historical and archaeological

research in order to identify the buried person. After the anthropological assessment, the skeletal remains were returned to the vault and covered by original paving.

#### 1.1 The Church of the Assumption of the Virgin Mary

The Church of the Assumption of the Virgin Mary is situated above the Úhlava River in Přeštice in the Pilsen Region and ranks among the largest baroque buildings in the Czech Republic. The church was supposed to replace the original gothic church, which stood next to the former until at least 1775 but probably as late as 1783 (Hostaš and Vaněk, 1907). Construction of the Church of the Assumption of the Virgin Mary began on the 17 May 1750 by Kryštof Ignác Dienzenhofer (1689–1751). However, he died a year later. After his death, architects Antonín Haffenecker (who almost completed the construction), František Ignác Prée and Anselmo Lurago took over the construction. In 1892,

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**Figure 1.** The Church of the Assumption of the Virgin Mary in Přeštice, Czech Republic. Photo by Radka Šišsová, 2012.

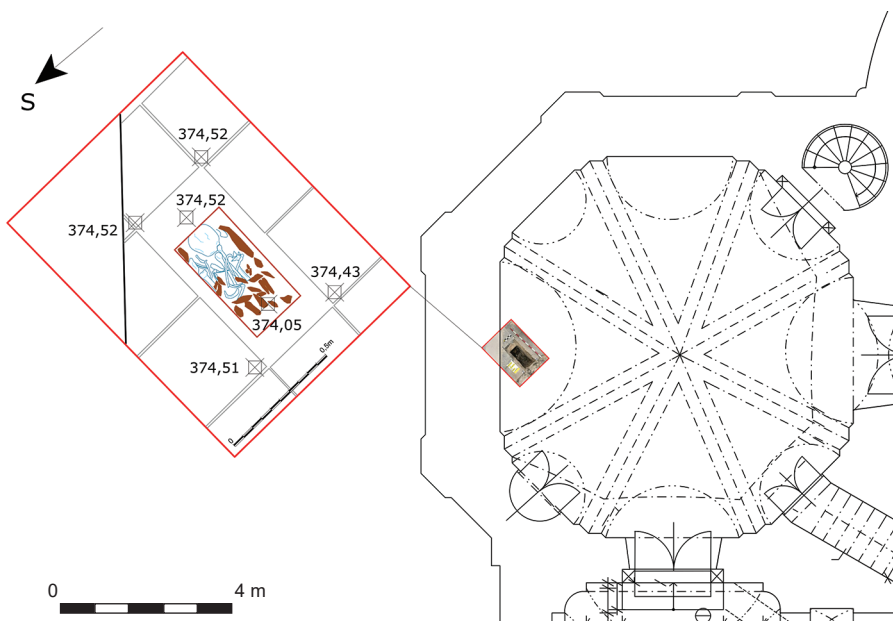
the spire of the church was struck by lightning and the subsequent fire seriously damaged the roof. After the fire, the church had been left in a bad condition for over a hundred years, only the roofs being repaired in 1926 and the exterior walls plastered in 1932. However, significant reconstructions of the church took place between 1990 and 1998. In 1993, the “Foundation for the Completion of the Church Towers” was established, finishing the reconstruction of the church completely (Běl *et al.*, 2009).

The chapel of St Barbara, where the skeletal remains were found, is located on the north side of the presbytery. A large crypt with the tomb of the monks of a nearby monastery is also located under the paving of the chapel (Mrkvička, 2000). The Brotherhood of St Barbara has been situated next to the original church since the beginning of the 16<sup>th</sup> century

(Hostaš and Vaněk, 1907). The existence of the crypt is confirmed by a rectangular lid in the floor in front of the altar, as well as six ventilation holes from the outside and a mention by E.V. Řičák (1864). The last legal burial in the crypt took place in 1778 (Mrkvička, 2000).

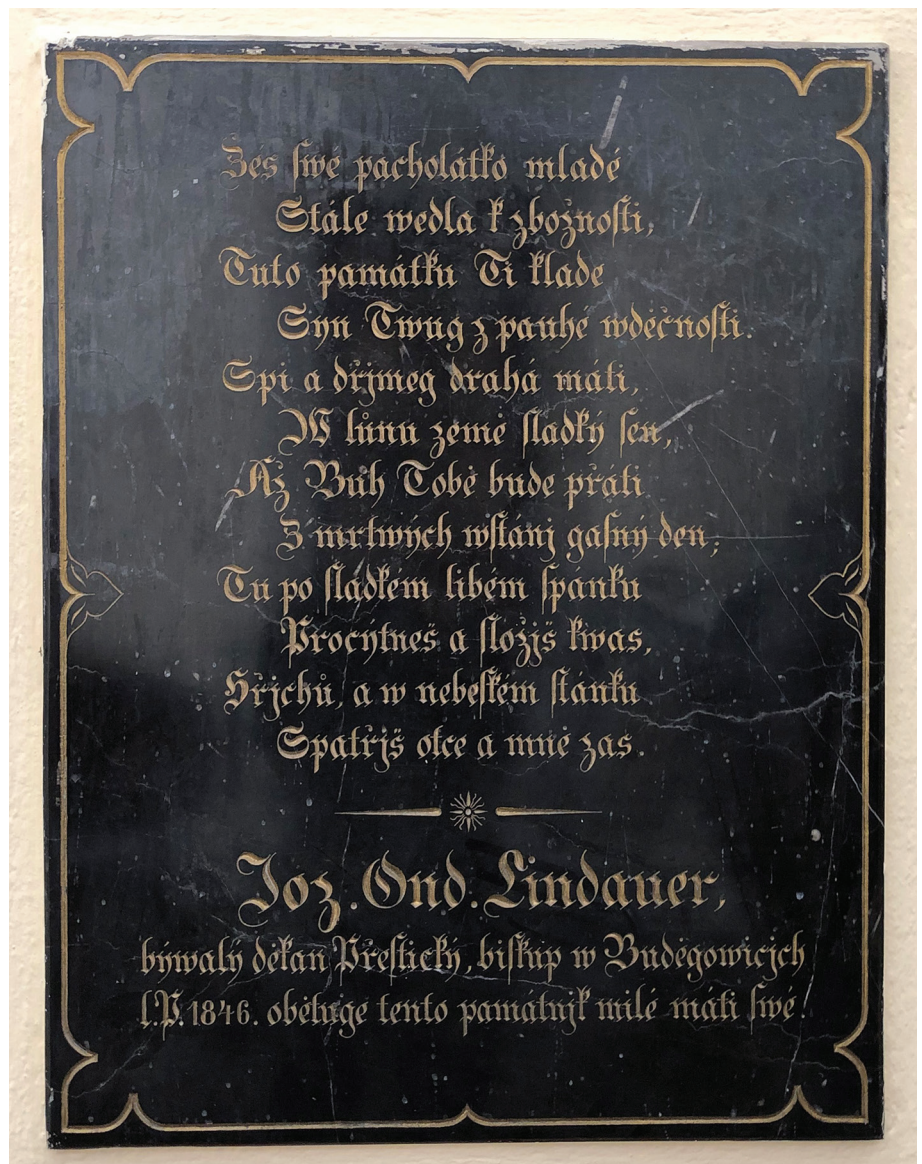
### 1.2 Archaeological context

The skeletal remains were deposited in a small bricked vault (40×40×70 cm) situated under the paving in the north-eastern corner of the chapel of St Barbara (Figure 2) in the Church of the Assumption of the Virgin Mary in Přeštice. The vault had no typical grave markings and there was not a single sign of a grave on the floor of the chapel either. However, a dated commemorative plaque with a poem dedicated to the mother of Josef Ondřej Lindauer hung on the wall near the place



**Figure 2.** The location of the bricked vault in the chapel of St Barbara in the Church of the Assumption of the Virgin Mary in Přeštice and the deposition of the skeletal remains.

**Figure 3.** The plaque hung on the wall near the vault.



where the vault was found (Figure 3). There is no inscription or any other sign which could connect the plaque with any grave or burial. Therefore, there was no clear evidence of a grave at the site. Only historical sources mention the possibility of a secondary burial of Marie Anna Lindauer (Řičák, 1864).

The vault was oriented in an east-west direction. The poorly preserved human skeletal remains were in a position indicating secondary deposition. The skull was placed in the east quarter of the vault and the postcranial bones were placed on a heap in the rest of the vault without any anatomical order. This situation indicated that the reburial was conducted several years after the first burial, when the soft tissues had already been decomposed (Figure 4). Furthermore, iron parts (lock, key and hinge) and the remains of wooden boards were found around the bones, indicating their deposition in a small wooden box. The individual was either reburied without any additional grave goods (e.g., a rosary) or none of them have been preserved.

## 2. Methods

The evaluation of skeletal preservation has been based on quantitative and qualitative methods. The Bone Representation Index (Bello *et al.* 2006) was chosen as the quantitative method, using the ratio between the present and expected bones expressed as a percentage. The qualitative state of preservation was evaluated by the Gordon and Buikstra (1981) method, which is based on a range of values from one to five, where number “1” is best preserved and number “5” is worst preserved with bones only having a form of bone dust or imprint in soil.

Age at death has been evaluated by a combination of three methods focused on progressive degenerative changes on different segments of the pelvic bones. All of these methods are morphological, meaning that the methods observe differences in morphology. Specific assessed segments of the pelvic bones have been *facies symphysialis* (Brooks and Suchey, 1990), *facies*



**Figure 4.** The archaeological situation in the vault.

*auriculares* (Schmitt, 2005) and acetabulum (San-Millán *et al.*, 2017).

Sex of the individual has been assessed mainly by two methods. The first one, DSP (*Diagnose Sexuelle Probabiliste*), is morphometric. The DSP is based on the measurement of various proportions of pelvic bone segments (Murail *et al.*, 2005). The second method assesses the differences in morphology of several parts of the pelvic bones (Bruzek, 2002). The estimation of sex was supported by a morphological assessment of the skull (Walrath *et al.*, 2004) and morphometric measurement of the humerus and femur (Černý and Komenda, 1980).

Body height has been assessed using the estimated anatomical length of the left femur and the Sjøvolds (1990) equation.

Palaeopathological evaluation was conducted only visually/macrosopically without microscopical or any destructive methods. All possible pathological manifestations

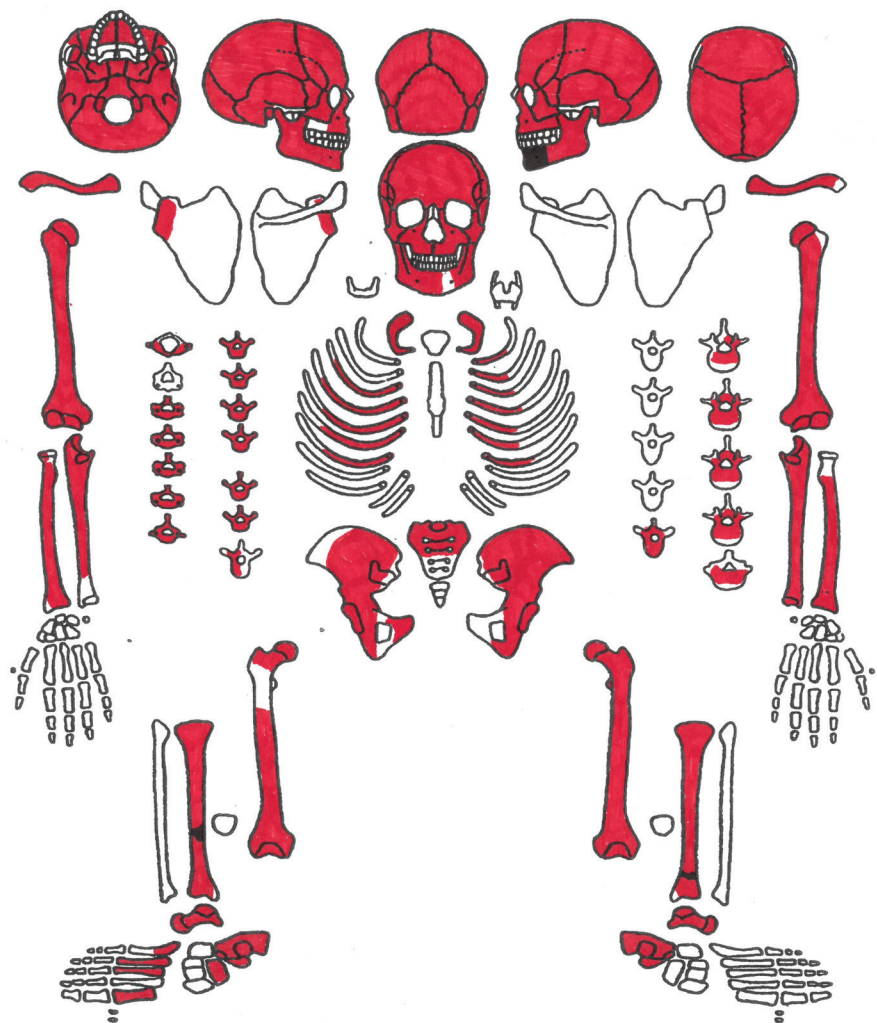
observed on the bones were sequentially compared with cases published in the literature and excluded until we obtained the most reliable diagnosis.

### 3. Results and discussion

#### 3.1 State of preservation and demographic assessment

The quantitative preservation of the skeletal remains from the vault was moderate and the BRI index has been calculated as 62%. The quantitative state of preservation was also captured by a drawing protocol – the situation before any measurements (Figure 5). Qualitatively, the bones were in fairly poor condition, marked “4–5” based on the Gordon and Buikstra (1981) scale. The dentition was not preserved at all. The lateral teeth were intravitaly lost. Most of the frontal teeth were lost post-mortem and left preserved as an open alveolus. It was not possible to evaluate a small part of the lower jaw

**Figure 5.** The quantitative state of preservation of the skeletal remains described by drawing protocol.



(a part from the second lower left incisor to the first lower left molar) because it was not preserved. The poor qualitative preservation was caused by a combination of moisture and fungi, which is a very common state in churches and tombs (Piepenbrink, 1986). These conditions caused the bones to degrade when touched, resulting in decreased quantitative and qualitative preservation. For these reasons, the possibilities of anthropological evaluation of the skeletal remains were severely limited. Some features had been removed by erosion; others were covered by mould, the removal of which would cause further erosion of the bone surface. Similarly, the measurement possibilities were limited, as even the mere application of the calliper caused the degradation of bone segments. Despite very careful manipulation and no washing of the osteological material, the BRI index decreased to 57% after finishing the anthropological analysis, which meant an additional destruction of two assessed skeletal segments. These two segments were located on the pelvic bones and their damage was caused only by the pelvic measurements. Despite the very poor qualitative preservation, it was possible to carefully carry out basic anthropological evaluations, such as assessment of sex, age at death, and body height, and make visual evaluation of pathological conditions on several bones from the skeletal remains.

With respect to the morphometric assessment, only seven features out of ten on the left pelvic bone were possible to evaluate with inconclusive results of 68% for female sex and 32% for male sex. The right pelvic bone was not evaluated at all due to its poor state of preservation. The morphological assessment was performed with seven features on the left pelvic bone where three features were concluded as female, one as indifferent, and three as male. The right pelvic bone was scored by two female and four male features. The morphometric evaluation of the humerus bone comes out as indifferent and the femur as female. The results of skull morphoscopic assessment for the purpose of sex evaluation come out as female in all fourteen features. Based on the combination of all these results, we conclude that the individual from the vault was female with a lower degree of reliability.

Age at death for the individual from the vault was evaluated as an older adult. The evaluation of progressive degenerative changes on the *facies symphysialis* results in stage “V”, which means 25–83 years old individual. The *facies auriculares* evaluation indicates an individual older than 50 years of age and the acetabulum suggests the age of 40–75 years. For the purpose of the age at death estimation, only the left acetabulum and the right *facies*

*symphysialis* were used. The right acetabulum was affected by its pathological condition and the left *facies symphysialis* was not preserved. Furthermore, older age at death of the individual is supported by the intravital loss of lateral teeth and a complete remodelling of the alveolar bone.

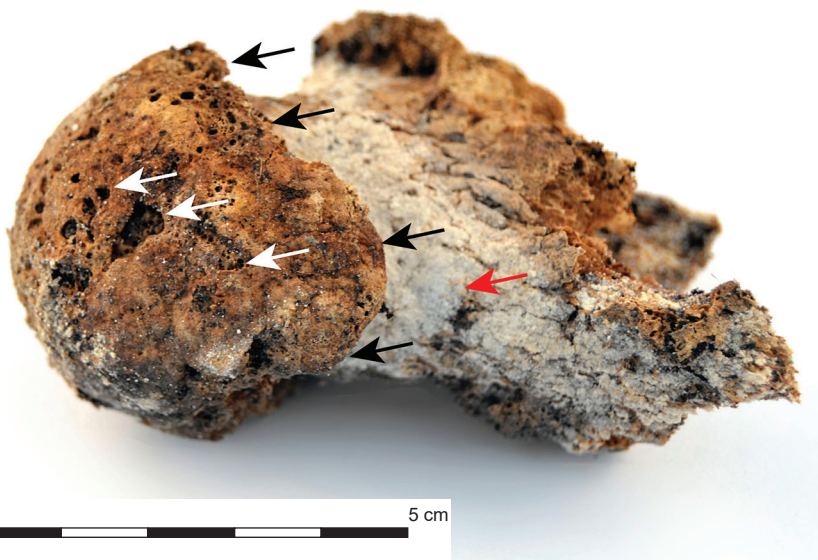
Body height has been assessed using the measured physical length of the left femur (388 mm). According to Sjøvold (1990), the body height of the individual from the vault falls within the range of 147–155 cm with a middle value of 151 cm.

### 3.2 Palaeopathological assessment

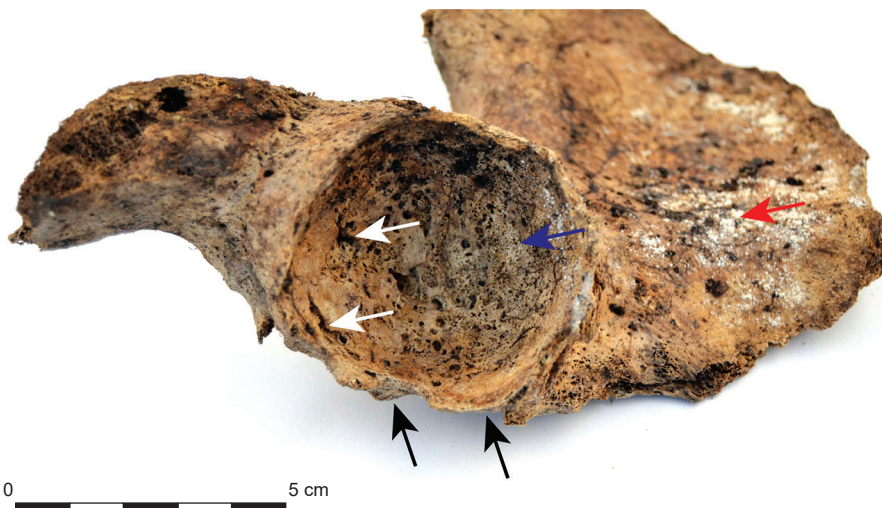
During the paleopathological evaluation and interpretation, we faced a problem caused by a very poor qualitative state of preservation. It was difficult to determine the line between pathological state, normal state and a state caused by diagenetic changes. For this reason, we were able to reliably identify only a few degenerative changes on the skeleton. The bones with changes which were impossible to reliably

identify as pathological or diagenetic were excluded from subsequent analysis.

The pathological changes present in our case were joint alterations/diseases. The physical characteristics usually connected in palaeopathological literature with osteoarthritis (OA) are lipping, eburnation and porosity (e.g., Horáčková *et al.*, 2004; Ubelaker, 1989; Weiss, 2009). Waldron (2009) considers eburnation as the most important evidence of OA. In his definition, eburnation or at least two of the following traits – marginal osteophyte, new bone formation on the joint surface, pitting on the joint surface or alteration in joint contour – must be present to consider bone changes as osteoarthritis (Waldron, 2009). In our case, the most evident changes are on the right hip joint, specifically the head of the femur (Figure 6) and acetabulum (Figure 7). Mild manifestations of arthritic changes were found on the left hip joint, both ankle joints, and the *facies articularis carpea* of the right radius bone. However, the first problem is to determine whether it is a pathology or normal state considering the estimated age



**Figure 6.** Significant bone changes (marginal osteophytes – black arrowheads, pitting – white arrowheads and overall alteration of joint contour) at the head of the right femur with white mildew – red arrowhead.



**Figure 7.** Significant bone changes (eburnation – blue arrowhead, marginal osteophytes – black arrowheads, pitting – white arrowheads and overall alteration of joint contour) at the acetabulum of the right pelvic bone with white mildew – red arrowhead.

at death of the individual. Here we can speculate whether the bone changes were caused by old age or primary osteoarthritis given the fact that the mild degree of OA is usually connected with individuals older than 40 years of age (Vargová *et al.*, 2016). The second problem in this case is the poor state of preservation, which is probably the main reason for not finding nearly any trait of eburnation. The only place where it is possible to reliably identify eburnation is the small superior part of the acetabulum. We presume that in a good state of preservation, the eburnation should be much larger and, most importantly, should be on the opposite joint surface, on the head of the femur. Eburnation on the superior joint surface is reportedly the most frequent trait of osteoarthritis of the hip joint (Cameron and McNab, 1975). Even with nearly absent eburnation, marginal osteophytes, pitting on the joint surface, and alterations in joint contour

from the Waldron (2009) definition, are sufficiently present to conclude the bone changes of the hip joint as OA.

In our case, the changes on the right hip joint are much more severe than the rest (if we conclude that the other bone changes are OA) or are completely isolated (if we do not). This pathological state (in both cases) is sometimes called secondary osteoarthritis, the cause of which could be for several reasons (Horáčková *et al.*, 2004). With respect to differential diagnosis, the most probable cause of the bone changes on the right hip joint would be inflammation, because the bones do not bear traces of trauma or congenital deformity. The other possible causes, such as metabolic disorders, diabetes or overloading of the joints, would pathologically change more than one joint. The changes of the femoral head fit the stage “IV a” (very severe changes) of the Schultz classification of arthritic manifestations (Schultz,

**Figure 8.** Portrait of Josef Ondřej Lindauer as the Bishop in Budweis by Karl Ludwig Phillippot (1801–1859), undated, kept in the painting room of the Budweiser bishops in the bishop’s residence (Svoboda, 2015).



1988). There is still discussion between palaeopathologists about the precise definition of OA, whether it should be considered a disease or manifestation of patterns of activity, and what are the reasons for the OA manifestation (e.g., Ortner, 2003; Ubelaker, 1989; Waldron, 2009; Weiss, 2009). Many studies are also focused on the differences in the variety of OA in populations (Rojas-Sepúlveda *et al.*, 2008) and sexes (Cope *et al.*, 2005; Lieverse *et al.*, 2007). It is impossible to conclude the reason for the OA present in our case based only on the anthropological assessment because there are many factors which could play a role. For example, the medical literature has mentioned a higher prevalence of OA on the hip joints of older women caused by genetics and hormonal changes (Wilson *et al.*, 1990) which could also have played a role in this case.

### 3.3 Historical research

Based on historical sources, the skeletal remains of the individual buried in the vault in the Church of the Assumption of the Virgin Mary in Přeštice could belong to Marie Anna Lindauer, mother of Josef Ondřej Lindauer (Figure 8), the dean in Přeštice and later the bishop in Budweis. Unfortunately, we have not been able to find a picture of her. The assumption is based on the combination of the commemorative plaque dedicated by Lindauer to his mother in 1846 and placed on the north wall of the chapel near the place of the find (*cf.* Mrkvička, 2000), and other historical reports.

Marie Anna Lindauer was born in 1753. In 1784, she married Ondřej Lindauer from Útušice, a subject of the city of Pilsen who worked as a cook's assistant in the Franciscan monastery. They lived in Pilsen, house number 166, where their only son, Josef Ondřej Lindauer, was born in 1786 (Parish Register Pilsen 05; Parish Register Pilsen 023). The son completed his studies at the Pilsner Gymnasium and the Prague Archbishop's Seminary and was ordained a priest. He started as a chaplain in Malešice and in 1809 he was transferred to Horšice (1809–1810) and Dolní Lukavice castle (1810–1813). Later, he became a parish priest in Letiny (1813–1817) and Dolní Lukavice (1817–1824) and, in the years 1824–1827, he served as a dean in Přeštice (Svoboda, 2015). After his father's death, Josef Ondřej Lindauer probably housed his mother and at the time of her death at the age of 72 (1825), she resided at her son's parish in Přeštice, house number 1. The death registry records mention that she died of old age and was a burgher of Pilsen. She was buried in the Přeštice cemetery (Parish Register Přeštice 18).

Josef Ondřej Lindauer moved to Pilsen in 1827 and became the archdeacon; in 1835, he became a member of the metropolitan chapter in Prague and was appointed by the council of provincial governorship in 1842 (Svoboda, 2015). Lindauer was ordained bishop in Budweis in 1846. In the same year, he visited the diocese in Přeštice where he supposedly exhumed his mother's remains from the local cemetery and moved them to the new grave in the chapel of St Barbara. On that occasion, he placed a commemorative

plaque dedicated to his mother there (Řičák, 1864). Because of a completely absent record in the parish chronicle from the 1840s, we have to rely on the information from E.V. Řičák, who came to Přeštice in 1855 as a chaplain of Lindauer's successor, dean Pavlík. However, the reasons why Lindauer performed the second funeral of his mother are unknown. The missing information could be found in the extensive and still unprocessed archive fond called "Děkaný úřad Přeštice" (Dean's office in Přeštice), which are stored in The State District Archive of Pilsen-South, based in Blovice.

### 4. Conclusions

By the process of historical, anthropological and archaeological evaluation (all evaluations were carried out independently), we can make a relatively reliable conclusion that the skeletal remains from the chapel of St Barbara in the Church of the Assumption of the Virgin Mary in Přeštice belong to the historically-known person called Marie Anna Lindauer. Marie Anna Lindauer was the mother of Josef Ondřej Lindauer, the dean in Přeštice and later the bishop in Budweis, who probably reburied the skeletal remains of his mother from a regular graveyard to the church. The funeral was probably not public and Lindauer was aware that he had violated applicable regulations. The regulations, created by Josef II in 1784, prohibited any burials inside urban areas, which also included the inner parts of churches. Due to this regulation, he could not perform the second funeral as the dean of Přeštice; however, he was able to do so as a bishop. The presented hypothesis about a positive identification of human remains based on historical resources cannot be ruled out either by archaeological excavation or anthropological evaluation. On the contrary, both assessments rather contribute to an agreement with the hypothesis. Nonetheless, we were not able to validate the pathological conditions resulting from the anthropological analysis by data from the historical records.

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