

# Two skulls with evidence of trepanning from Late Medieval and Modern Age sites in North Dalmatia, Croatia

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## Introduction

Trepanation is one of the most spectacular traumas observed in human skeletal remains. Although the procedure was first mentioned and described by Hippocrates, the first osteological evidence of trephining goes back to at least the Neolithic. In the procedure the skull is drilled or scraped by a sharp instrument thus exposing the intracranial contents either to treat health problems or for mystical purposes (Missios 2007). So far, only two cases of trepanation were reported from Croatian skeletal series: one from the prehistoric Bezdanjača site (Malez, Nikolić 1975) , and the other from Ludbreg dated to the Migration period (Novak et al. 2013). In the osteological collection of the Croatian Academy of Sciences and Arts two additional cases from North Dalmatia have recently been acquired.



Figure 1. Trepanned skull from Škabrnja – St. Mary. (Vyroubal V.)



Figure 2. Trepanned skull from Pakoštane – Crkvina (Vyroubal V.).



Figure 3. Trepanned skull from Pakoštane – Crkvina, detail (Vyroubal V.).



Figure 4. Mass grave 76B.



Figure 5. A signet ring found inside the grave 76B.



Figure 6. A coin found inside the grave 76B.

Case 1. Late Medieval and Early Modern Age archaeological site Škabrnja - St. Mary was investigated in 2009 by Archaeological Museum in Zadar. The site yielded 12 graves. The trepanned skull was found in grave No 5 which contained one female skeleton and an abundance of dislocated bones. A minimum number of five individuals (four adults and one subadult) were present. An oval shaped defect 33×25 mm in diameter is located on the left side of the frontal bone of a male skull aged between 40 and 55 years at the time of death (Figure 1). The defect is completely healed indicating that the person survived the surgical procedure and lived for some time. Radiocarbon analysis dates the skull between 1395 and 1452 AD (2 Sigma, 95% probability).

Case 2 was found during archaeological excavations in Pakoštane - Crkvina conducted by Department of Archaeology, University of Zadar. During systemic archaeological excavations from 2006 to 2015 the remnants of the Church of St. Mary and a medieval cemetery were uncovered. Mass grave 76B contained nine individuals (eight adults and one subadult); Figure 4. A signet ring and a coin were found inside the grave (Figure 5 and 6). One of the male skulls aged between 40 and 60 years showed a massive irregular defect 81×57 mm in diameter located on the right side of the cranium (Figure 2 and 3). The defect was in the process of healing suggesting that the afflicted individual died shortly after the surgical procedure was performed. Also, healed inflammatory process was noticed on the frontal bone and both parietal bones. At the moment, it cannot be establish whether the inflammation was a reason for trepanning the skull or appeared later as a consequence of the procedure. Skull was dated between 1450 and 1640 AD (2 Sigma, 95% probability).

## Conclusion

Both trepanations were performed on adult male skeletons from Late Medieval and Modern Age sites in North Dalmatia. The procedures were most probably conducted for therapeutic reasons, using a scraping technique. Both males survived the operation, however it seems that in the first case the individual probably lived for a longer period of time without major complications while in the second case the individual died shortly after the surgery. Previously studies showed high mortality rates during the Roman and Medieval periods which correlates with unsterile metal instruments used for trepanation which could cause infections (Weber, Czarnetzki 2001).

## References

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