An example of cranial trepanation dating to the Middle Bronze Age from Ebla, Syria

Silvia Mogliazza

Italian Archaeological Expedition at Ebla. Laboratorio di Antropologia, Soprintendenza per i Beni Archeologici del Lazio, via degli Stabilimenti, 5 - 00019 Tivoli (RM), Italy
e-mail: s.mogliazza@libero.it

Summary - This paper regards the discovery of a trepanated skull dating back to the end of the Middle Bronze Age II (1650-1600 B.C.). The skull was found in a funeral pit in the Syrian city of Ebla. A rectangular area of the frontal bone measuring approximately 50 by 45 mm was purposely surgically removed through the use of a blade. Deposition of new bone indicates that the subject survived for a long period after the surgery. This skull represents one of the oldest cases of trepanation with a quadrilateral form of incision found in the Near East.

Keywords - Trepanation, Ebla, Middle Bronze Age.

Introduction

The Italian Archaeological Expedition of the University of Rome “La Sapienza”, headed by Paolo Matthiae, has uncovered many human skeletal remains in the city of Ebla (Syria) in recent years. A demographic and palaeopathological project to study the human remains from this site was initiated in 2005. This work first focused on the human remains discovered in the funeral pit P8680 of the Southern Palace (Matthiae, 2004), which dates back to the end of the Middle Bronze Age II (1650-1600 B.C.). The pit was employed for burial depositions until it was ceased to be used. In fact, archaeological investigations have established that for a certain period of time, the pit was the direct entrance of a funeral chamber. Only later, during the final phases, was this pit used for burial deposition. The excavation of this structure reached the entrance tunnel to the chamber, at that point in the excavation there was a considerable risk of the vault collapsing and the work was suspended. The archaeological evidence shows that the burials from the upper level were found in primary burial position whereas bones found on the lower levels were mixed. The mixing of bones probably took place every time the tomb was reopened and a new burial was placed in it. The individual with a cranial trepanation (Individual 1) was the last burial to be deposed before the tomb was closed for the last time.

Materials and results

Individual 1 is a male, 45 to 55 years old. The body was in a primary posture, flexed, in an East-West orientation and left lateral position. The burial was nearly complete on recovery. The trepanation is located on the left side of the frontal bone very near the coronal suture and the hole measures 35 by 29 mm (Figs. 1 and 2). The hole is characterized by an irregular quadrilateral perimeter which is clearly visible when laterally illuminated with a lamp (Fig. 3).

The surface of the border is irregular, rough and contains small pits of an osteitic nature, while the diploe has been completely obliterated by later deposition of bone as a result of healing. The
Cranial trepanation at Ebla

The skull examined is thought to have been subjected to a quadrilateral incision of the bone through the use of a blade. The dimensions of the original cranial surgically made hole can be calculated by considering the approximately rectangular sclerotic and osteitic area, which is visible on the outer surface of the skull. The cut, which was probably 50 by 45 mm in size, was followed by an extensive deposition of new bone. This partly covered the original morphology of the surgical hole.

The extensive healed area of bone suggests that the period of survival of this individual appears to be considerable. He survived long enough to produce approximately up to 15 mm of new bone growth. This hypothesis is also based on the macroscopic observation of the spongy diploe and on the internal and external characteristics of the tables. There is a considerable bone remodeling evident by the presences of bony overgrowths over the once exposed cranial diploe. The area immediately surrounding the opening is thin and therefore more transparent compared to the more marginal peripheral area (Fig. 4). In some trepanations, including this one, the borders contain a pitted area around the opening which makes the bone seem spongy in nature. This is further evidence that the subject survived for a certain period because it indicates an infection following the trepanation which was resolved as indicated by the remodeling of the borders.

Discussion

Trepanation consists of removing part of the skull without damaging the tissue below. It has been used frequently in the past in many cultures over the world and represents one of the first forms of medical surgery on the head for which there is clear evidence (Lisowsky, 1967; Arnott, 2003). Practiced since Neolithic times and widespread throughout the world, it requires a skilled intervention and a considerable technical ability (Guiard, 1930). Even today, some societies still perform this type of intervention using the same techniques adopted in prehistoric times (Oakley