

# UNUSUAL FOREIGN METALLIC OBJECT (NAIL) IN THE DENTITION OF A SKULL FROM THE ANTHROPOLOGICAL COLLECTION OF RUDOLF VIRCHOW (BERLIN)

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## ABSTRACT

Foreign bodies in the dentition of present day patients are frequently diagnosed. They are more rare in mediæval and anthropological specimens. Rudolf Virchow, the doyen of pathology in Germany formed a huge collection of anthropological specimens in the 19th century. Among these specimens one skull from Tiflis (Tbilisi, Georgia) found its way into the collection of Virchow in 1881. The skull is that of a prisoner of war who died in 1877 due to dysentery. The skull is remarkable in that a metallic nail was adapted around the second right maxillary molar. Both radiological and clinical findings indicate that the nail was adapted to the tooth while the individual was still alive. In particular, erosion of the cortical bone plate in the affected area and osseous healing between the first and second maxillary molar may be taken as proof of adaptation of the nail *in vivo*. The reasons why the nail was applied, however, are difficult to explain. The authors assume that the nail was applied not by the individual himself. Probably, the nail was adapted as an amulet to protect the individual from injury or death. (J Forensic Odontostomatol 2006;24:18-21)

**Keywords:** anthropology, foreign object, forensic odontology

## INTRODUCTION

Numerous reports on foreign objects found in the dentition of present day dental patients have been published including objects such as needles, pins, staples, screws, beads, hair, remnants of tooth picks and many others.<sup>1-6</sup> Reports on foreign objects in paleo-odontology are much less frequent. Tooth mutilations and foreign objects as inlays made of precious stones have been recorded in teeth of pre-Columbian skulls.<sup>7</sup> An unusual bead made of jade, which was considered to represent a bridge was observed in the dentition of a Maya skull found in

Guatemala.<sup>7</sup> Møller-Christensen<sup>8</sup> described a rosary bead used as tooth filling material in a human mandibular canine tooth of a skull from the Danish middle ages.

Zias and Numeroff described a 2.5mm bronze wire implanted in a maxillary lateral incisor of a skull from ancient Israel dated to 200 BCE.<sup>9</sup>

During recent studies of the anthropological collection of Rudolf Virchow (Berlin, Germany, 1821-1902) the authors had the opportunity to study a skull, which found its way into the collection in the year 1881. This particular skull is one specimen among skulls and osteological specimens of 3,365 individuals, which were registered in 1990 (Creutz, personal communication). The purpose of this report is to shortly describe this skull, in the dentition of which a most unusual foreign object was found, namely a metallic nail.

## CASE REPORT

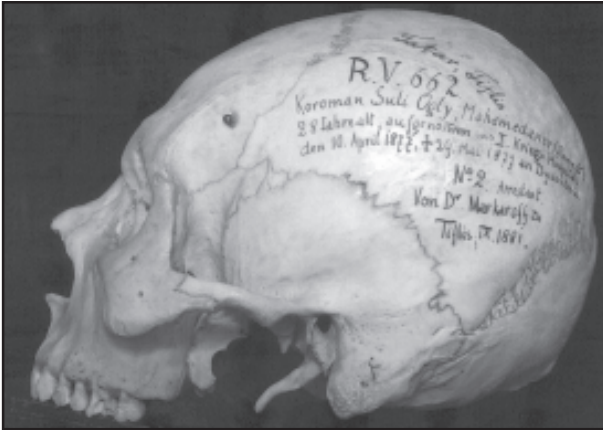
The well-preserved skull bears several lines of inscriptions in German script allowing for a detailed history of the skull. The inscriptions read as follows (Fig.1):

Line 1: *Tatar, Tiflis* - The skull was brought from the land of the Tatars with the capital of Tiflis (present day: Tbilisi, Georgia).

Line 2: *R. V. 662.* - The abbreviation R.V. stands for Rudolf Virchow, 662 indicating the number of registration at the time when the skull was acquired.

Line 3: *Koroman Suli Ogly, Mohamedaner (Sunnit)* - The name of the individual was Koroman Suli Ogly who was a follower of the Mohammedans (Sunnite).

Line 4: *28 Jahre alt, aufgenommen ins I. Kriegs-*



**Fig.1:** Lateral view (left side) of the skull from Tiflis

*Hospital* - 28 years old, admitted to I. (first) war hospital.

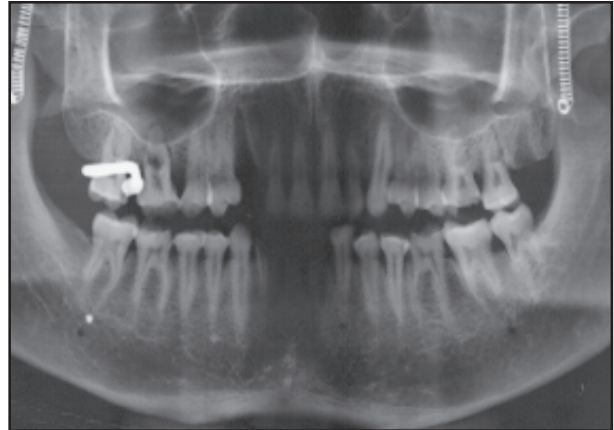
Line 5: *den 10. April 1877, † 29. Mai 1877 an Dysenterie.* - 10th of April 1877, died 29th of May 1877 due to dysentery.

Line 6: *Nº 2. Arrestant.* - No. 2, prisoner.

Lines 7 and 8: *Von Dr. Markaroff zu Tiflis; IX. 1881.* - From Dr. Markaroff at Tiflis; September 1881.

Both maxilla and mandible are entirely intact. The dentition of the maxilla (Fig.2) is complete except post mortem loss of the right maxillary canine and the left maxillary third molar. In the mandible the right and left central incisors and the left lateral incisor are missing with the losses most probably having occurred post mortem. Also, the mandibular right third molar is missing. Whether it has been lost ante mortem, or was congenitally missing cannot be determined.

The panoramic radiograph shows a radiodense metallic object between the right maxillary first molar extending over the neck of the second maxillary right molar. The clinical occlusal view shows a nail the head of which is adapted to the buccal interproximal space. The corroded, rusty nail is firmly bent around the neck of the second maxillary right molar. The tip of the nail somewhat extends away from the buccal plate (Fig.3). A lateral view of the involved two teeth shows that the second maxillary molar is slightly dislocated distally (Fig.4), forming a diastema between the first and second maxillary molar. The missing maxillary third molar might have influenced the size of this diastema. Beneath the head of the nail bone is present in the interproximal space. The



**Fig.2:** Panoramic radiography of the maxilla and mandible. The maxillary right canine, the left maxillary third molar as well as both mandibular central incisors and the left lateral incisor are missing. The foreign object is seen between the right first and second maxillary molar with the nail extending over the neck area of the second molar. The periodontal space of the first maxillary molar is slightly widened. There is a translucency between the mesial and distal buccal root of the maxillary first molar

buccal cortical plate is missing in this area as well as in between the mesial and distal root of the first maxillary molar. Also, mesially to the first molar the bony plate is eroded. On panoramic radiography a slight interradiolar translucency is seen corresponding to the clinical finding of bone erosion in that area (Fig.2). The palatal bone is intact. All maxillary molars and premolars are covered by a white material representing calculus.

## DISCUSSION

Foreign objects in the dentition and soft tissues of the oral cavity mostly occur in children, adolescents and psychiatric patients.<sup>1-6,10,11</sup> In most of cases foreign bodies are detected accidentally. Foreign objects may have found their way into oral structures unintentionally or as part of a fashion including "body art".<sup>12</sup> Mutilations, particularly of dental hard structures have been practised from prehistoric times until recently.<sup>7,13,14</sup> Generally, mutilations imply permanent or lasting sectioning or lesions of a part of the body comprising skeletal deformations, dental mutilations, circumcisions, ablation of the clitoris, scarification, tattoos and perforations.<sup>12</sup> Usually, mutilations are performed intentionally. Automutilation is a phenomenon performed with a neuropsychiatric or psychotic background.<sup>15</sup>



**Fig.3:** Occlusal view of the right maxillary first and second molar with the nail around the second molar



**Fig.4:** Lateral view of the same teeth as in Fig. 3. The cortical bone plate is eroded mesially and distally to the first maxillary molar. Both buccal roots of the first molar are exposed

The present case of a nail in the dentition of a prisoner is unique and is difficult to explain. In order to explain the presence of the nail the following questions must be asked:

1. When was the nail applied?
2. Who performed the adaptation of the nail to the tooth?
3. What was the reason for the application of the nail?

Both clinical and radiological findings indicate that the nail was applied to the tooth during the life time of the individual. The nail was forcibly adapted creating a space between the two molars, dislocating the second molar to the distal side. The interproximal space between both teeth was filled by septal bone, showing that after application of the nail osseous healing had occurred. The erosion of the buccal cortical plate is a further proof that the nail was adapted *in vivo*. The presence of the nail as a foreign body had caused inflammatory changes, which resulted in loss of the buccal cortical bone in the area of the first and second maxillary molar. In addition, horizontal bone loss at the first maxillary molar resulted in exposure of the interradicular space. In general, horizontal bone loss was rather limited. Both bone formation between the first and the second maxillary molar as well as the inflammatory changes of the buccal cortical plate may be taken as proof of application of the nail during life time.

The exact adaptation of the nail around the second maxillary molar most probably was not performed by the individual himself but by someone else. The procedure of adaptation must have been difficult and

needed considerable force. Bending a nail of the size as represented in this case in the oral cavity comes close to torture. In this context it is of interest whether the nail has been applied as a voluntary act or whether the procedure was forced on the prisoner, perhaps as an act of torture. Closely related to these questions is the question why the nail has been applied to the tooth at all. It is well-known that in former times prisoners of war often tried to attract the authorities by acts of automutilation. The general intention usually was to be admitted to the hospital. Application of a nail to a tooth, however, seems to be an unlikely procedure to attract the attention of medical doctors or dentists of war hospitals. The other reason why the nail could have been applied was to wear it as an amulet. In many societies amulets are worn to ward off mishaps and death during fighting and war. Probably, the strength of a nail might have represented such secret power characteristic for amulets. Møller-Christensen<sup>8</sup> in his article on a rosary bead used as a tooth filling material in a human mandibular canine tooth explained that "...popular medicine made extensive use of numerous purely magic remedies such as 'dead man's tooth', coffin nails, amulettes, written or spoken magic formulae, conjurations, invocations of saints, in particular St. Appolonia, and much more". While a definite explanation for the presence of this nail in the dentition of a 19th century skull from Tiflis cannot be given, it is an unusual example of a foreign object applied to a tooth, and would certainly qualify as a unique identifying object.

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