

CASE REPORT

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Self-extraction of Teeth Involving Gamma-Hydroxybutyric Acid

ABSTRACT: A case involving self-extraction of teeth linked to the abuse of gamma-hydroxybutyric acid (GHB) is reported. A 28-year-old woman and her 29-year-old boyfriend were discovered by paramedics following an extensive period of GHB use. The paramedics were alerted by a neighbor who had heard screaming from the house. On presentation to the accident and emergency department, it was noted that the female had 18 fresh extraction sockets visible intra-orally. At the scene, a mirror, a pair of pliers, and a bowl containing human teeth were found. Charges of assault were taken to the courts against the boyfriend who was subsequently acquitted. Odontological evidence centered on whether or not it was possible to self-extract the teeth using the pliers found. This case is the first to describe possible oral self-mutilation under the influence of GHB and odontologists should always consider self-injury as an explanation for intra- and perio-oral injuries of unknown origin.

KEYWORDS: forensic science, odontology, dentistry, auto-extraction, self, treatment, extraction, teeth, GHB, drugs

Gamma-hydroxybutyric acid (GHB) is an endogenous metabolite of gamma amino butyric acid (GABA) and is found in the central nervous system and peripheral tissues. GHB was used clinically as an anaesthetic in the 1960s but was withdrawn due to side effects that included seizures and coma (1–3). GHB has been implicated in a number of crime types; most notably in drug-facilitated sexual assault (GHB is detected in approximately 4% of drug-facilitated sexual assaults (4)), although reports also include driving impairment (5) and death (6). GHB is abused by three main groups of users: body builders who use the substance believing that it stimulated the release of growth hormone (7); sexual predators who covertly administer the drug for its sedative and amnesic effects (4) and club-goers who take the drug for its euphoric effects in much the same way as MDMA (ecstasy) (8), indeed a street name of GHB is “liquid ecstasy.” See Table 1. The two individuals in this case fell into the latter category of users.

GHB is generally taken orally, normally in capsules. It is supplied as a light-colored powder or colorless liquid that is odorless, tasteless and frequently mixed with soft drinks prior to consumption (6). The average dose is 1 to 5 g, with some users taking doses every 2–4 h. The drug has an addictive potential if used long term and withdrawal symptoms occur in heavy users (2). The primary effects of GHB use are those of a CNS depressant and therefore range from relaxation, to euphoria, confusion, dizziness, nausea, short-term amnesia, hallucinations, seizures, aggressiveness, and coma (5).

Possession of the drug in the U.K. is not currently illegal without a prescription, but supply is against the law and Class C penalties apply. In the U.S., GHB became a Schedule I controlled substance

in March 2000. A proprietary drug, Xyrem, containing GHB, was licensed by the FDA in 2002 for the treatment of cataplexy attacks in narcoleptic patients. When used as prescribed, the drug falls under Schedule III but illicit use is subject to Schedule I penalties (5).

Case Circumstances

The individuals in the case were both chronic users of GHB taking the drug every 2–4 h. Both resided at the same address and in the early evening of 15 April 2002, an ambulance was called by a neighbor who stated that they had heard screams from the house. The paramedics arrived and left after the couple had calmed down. Another ambulance was called in the early hours of 16 April following a call by the male to a friend asking for help. The paramedics discovered the female bleeding from her mouth standing over a mirror adjacent to pliers and a bowl containing what appeared to be human teeth.

A total of 18 teeth had been extracted from the female resident of the house, see Fig. 1. A set of pliers was covered in blood and tissue and was assumed to be the extraction instrument, see Fig. 2.

The extracted teeth are shown in Fig. 3. On the maxillary arch, the first four teeth on each side had been extracted (central incisor to first premolar) and on the lower arch, the first five teeth on each side; from central incisor to second premolar. Almost all the teeth had been removed without fracture of root or crown. Exceptions included the upper right central incisor that had been restored with a porcelain jacket crown. These extra-coronal restorations have no metal framework and therefore are very brittle. The crown portion had fractured yet the remainder of the root was removed intact. The lower first premolars fractured just below the dentinal-enamel junction.

The fact that the majority of teeth were in sound condition is astounding given the implement used and the lack of dental or

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Received 28 Mar. 2004; accepted 10 April 2004; published 3 Aug. 2004.

TABLE 1—Street or common names for GHB.

Cherry Meth	Liquid X
Fantasy	Organic Quaalude
GBH	Salty water
Georgia home boy	Scoop
Great hormones at bedtime	Sleep-500
Grievous bodily harm	Soap
Liquid E	Somatomaz
Liquid Ecstasy	Vita-G
Easy Lay	Everclear
Water	G-Riffick

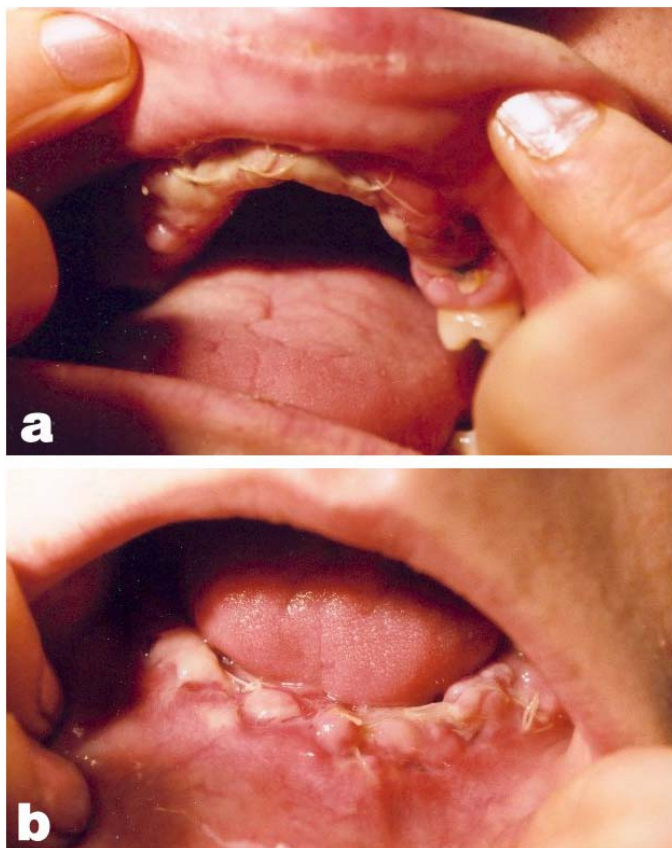


FIG. 1—Intra-oral shots following the suturing of the extraction sockets: (a) maxillary and (b) mandibular. Note the absence of soft tissues injuries to the peri-oral structures.

anatomical knowledge of either possible “extractors.” An example of this is shown in Fig. 4; the upper right canine. The maxillary canines are, usually, the longest tooth (from crown to root) and can be very difficult to remove intact.

The female had no periodontal disease, bony pathology or other condition that would render these teeth more or less difficult to remove. On presentation at the district hospital, the open sockets were irrigated with chlorhexidine and sutured. Tetanus vaccine was provided. There were no other injuries to the female noted.

Forensic Aspects

Both of the individuals gave conflicting accounts of events that evening. Initially neither could recall who had extracted the teeth, although both believed that the female had been possessed by a demon or similar during the night. Some time later, the police

charged the male in the case with assault (causing grievous bodily harm). The odontologist was asked to determine, from an examination of the teeth and pliers, whether or not it was possible to determine if the teeth could have been self-extracted. At the time, the evidence was provided that the female had a statement stating that she had extracted her own teeth and that the male was not involved. Neither individual in the case had any dental experience or knowledge.

Odontological Examination

Each tooth was identified and carefully examined for signs of extraction damage that could indicate the position of the pliers on the tooth at the time of removal. In so doing, it would be possible to determine if the position was consistent with self-extraction or removal by a second party. An identical pair of pliers was purchased and the positions determined from the teeth replicated. In each case, it was determined that either extraction by a second party or self was possible.

The absence of soft tissue damage to lips and other peri-oral structures was also noted and it was thought that this would tend to suggest self-extraction as one would be sure to clear the lip prior to extraction. The presence of a mirror in the room also supported the possibility that self-extraction was the method of tooth removal.

The odontological report, however, stated that it was impossible to exclude either causes based upon the evidence provided and it could have been a combination of self and assisted extraction.

Case Outcome

Despite the failure of the odontological report to determine cause, the case proceeded to court and the male in the case was acquitted of assault for extracting his partner’s teeth. It was suggested in court that the female had extracted her own teeth and the jury, taking two hours to reach its verdict, agreed with this version of events. BBC television news carried details of the case and these are archived on their website (9–11).

Discussion

Self-extraction of teeth is a rarely reported phenomenon. In 2002 Gilbert and co-workers described that, from 699 participants questioned in a study on health care provision, 42% had reported a tooth loss in a 72 month period, with 14% stating that this loss had occurred in a place other than a health care facility. Further questioning revealed that 94% of these teeth had been self-extracted, the remainder being removed by relatives. However, the authors state that the tooth mobility and attachment loss of these teeth were severe and therefore “consistent with non-professional” extraction. In the current case, the attachment levels were good and one could determine that there would be little or no mobility.

Altorn and Diangelis (12) describe a case in which a 27-year-old male self-extracted numerous posterior teeth. The individual was described as being in a severe psychotic state at the time. They concluded that auto, or self-extraction is rare but should always be considered when examining oral lesions of unknown cause. A further case describes a 59-year-old male who, while self-extracting a maxillary molar, displaced the tooth into the lateral pharyngeal space (13).

Self-extraction of teeth is a rarely documented occurrence and this is the first to report the possibility of oral self-mutilation under

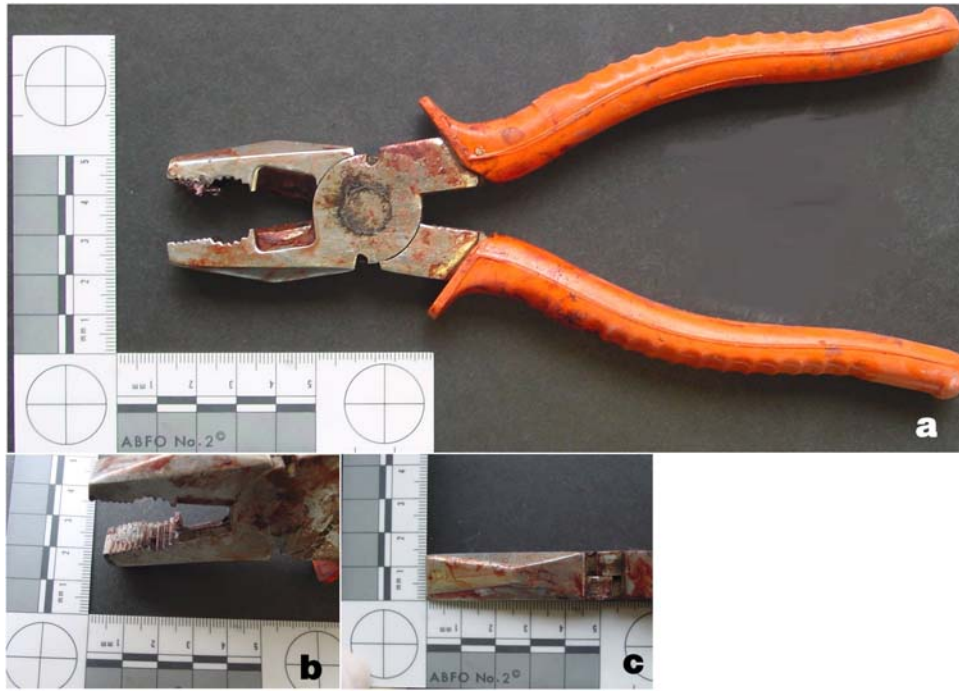


FIG. 2—The pliers recovered from the scene. It is interesting to note that the pliers were extremely stiff and difficult to manipulate: (a) full shot, (b) beak appearance, and (c) beak width.



FIG. 3—All 18 teeth anatomically arranged. Note that the maxillary right central incisor is discolored and has been root filled. This tooth and (the adjacent upper left central incisor) were both restored with porcelain jacket crowns, a fragment of which is shown on the far right of the photograph.



FIG. 4—A close up of an individual tooth, in this case maxillary right canine. This is a composite image showing the buccal, mesial and cuspal aspects. Note the absence of root or crown fracture.

the influence of GHB. While the exact circumstances surrounding the cause of tooth loss in this case remain unclear, the literature supports the contention that these teeth could have been removed by the female. The odontological evidence in this case was ambiguous as it was impossible to show conclusively that either party could have extracted one or more teeth. The ability for either party, without formal dental training and using an instrument wholly unsuitable for the procedure, to extract any of the teeth is extraordinary. The observation that most of the teeth were removed without damage, including a root filled and crowned central incisor is beyond the credulous. This case should remind odontologists that intra-oral lesions, such as extraction sockets, may be the result of self-mutilation

either due to mental illness or altered states caused by the use of prescription or non-prescription drugs.

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