Extraction of "Killer" Teeth: The Case of two Somali Siblings

Marcio A. da Fonseca, DDS, MS Chad Hoge, DDS

ABSTRACT

Many cultures present several intriguing ethnic dental practices. Therefore, in a multiethnic society, health care professionals have to be attuned to the patients' cultural values and traditions because they impact their attitude in seeking care and the implementation of the professionals' recommendations. Before seeking medical or dental care in the formal health system, families may rely first on an elder or healer for advice and interventions. In East Africa, the unerupted primary canines may be extracted in the first days or months of life because it is believed that they cause persistent fever, vomiting, diarrhea, weight loss, dehydration, infectious diseases and death. The practice is done using nonsterilized instruments leading to harmful localized and systemic sequelae, including fatalities. The purpose of this manuscript was to discuss the case of two Somali siblings who had tooth buds enucleated at a young age, leading to significant dental problems. (J Dent Child 2007;74:143-6)

Keywords: Dental mutilation, Somalia, East Africa, traditional health practices, dental trauma, dilaceration

In any multiethnic society, health care professionals have to be attuned to the patients' cultural values and traditions because they impact their attitude in seeking care and the implementation of the professionals' recommendations. In many cultures, families rely first on a village elder or healer for advice and interventions, only seeking medical help after the traditional approach has failed or has caused harm. Parents may also consult a traditional healer after a few visits to a health facility did not cure their child's illnesses.[1] In areas of Tanzania, Sudan, Ethiopia, Kenya, Uganda, and Somalia, the unerupted primary canines are known as the "killer teeth" because it is believed that they cause persistent fever, vomiting, diarrhea, weight loss, dehydration, infectious diseases and death. Thus, they are removed at a very early age to prevent or treat such ailments.[1-12] Obviously they have no connection with the tooth bud or teething, but are rather a consequence of poor nutrition and unsanitary living conditions.[3,5,8,9,12] In a Ugandan hospital, the peak times for pediatric admissions due to complications related to tooth bud gouging coincided with the peaks in admissions for malaria and gastroenteritis.[8]

Dr. da Fonseca is clinical associate professor and Dr. Hoge was a resident, Section of Pediatric Dentistry, The Ohio State University, Nationwide Children's Hospital, Columbus, Ohio. Correspond with Dr. da Fonseca at Marcio.DaFonseca@Nationwide Childrens.org

Extraction of the primary canine buds is widespread in rural areas of East Africa, but it is also seen in cities and even in immigrant communities overseas.[3,4,6,9,11,13] It appears to be highly prevalent and may be on the rise. It is difficult to estimate the prevalence however, because of underreporting and the different study criteria used by investigators. Variations of the procedure are seen among the cultures. Usually the baby is taken to a traditional healer (called "tooth drawer" in Uganda or "tooth extractor" in Ethiopia) who, without sedation or anesthesia, lances the gingiva and removes the tooth bud using nonsterilized penknives, sharpened bike tire spokes, metal blades made from spoon handles, razor blades, sharpened rusty nails, heated needles, and overgrown fingernails.[1-4,6-11,13-15]

In some places, salt, sodium bicarbonate, herbs, butter, mustard, garlic, sugar or locally prepared medicinal powders are applied to the wounds.[5,8,15] In other regions, certain herbs are rubbed on the gingiva preoperatively which may provide an anesthetic effect. The extractions are often bilateral and there is no gender predilection, since boys and girls become equally sick.[4,5,8,10,12] The average age for tooth enucleation is 6 months, although it can be done as early as a few days after birth. It is rarely performed after 24 months of age because it is much harder to restrain the children.[1,5-9] It usually coincides with the beginning of the teething process, the child's first episodes of pneumonia,

malaria, enteritis, and the beginning of crawling, which may make the children sick from touching contaminated soil and objects.[1,5,8,9]

Although it is believed that tooth bud gouging dates back to prehistoric times, most authors suggest that it is actually relatively new, possibly having started within the last 2 or 3 decades.[1,3,6,7] It seems to have been shaped by the macro social forces of poverty, political unrest, and war which break down the formal health care system and displace people. As they come in contact with different traditions in their own country or elsewhere in the continent, they tend to adopt new beliefs in an active and sincere attempt to deal with diseases.[3,7-9,15] Even families belonging to privileged social and cultural classes rely on these traditional practices.[8] The perpetuation of the folk belief is also encouraged by healers and practitioners who charge a fee for the procedure.[1-3,15] The myth is also reinforced as an oral communication. If the children who had their tooth buds removed survive their childhood ailments, for example, then the community agrees that it was the procedure that saved them. If they die, it was the "killer tooth" that caused it. In Tanzania, 83% of the parents felt that their children's condition improved 1 week postoperatively, while in Ethiopia, 65% shared the same opinion.[1,5]

The purpose of this study was to discuss the case of two Somali siblings who had tooth buds enucleated at a young age with damaging consequences to their dental health.

CASE REPORT

Two healthy Somali siblings presented for a 6-month recall with no complaints. They were taking no medications, had no known drug allergies, and used optimally fluoridated drinking water. The extraoral examinations showed no temporomandibular joint problems, and neither reported headaches, earaches, or oral habits. The girl was 10 years, 2 months old and had generalized mild gingivitis consistent with a fair oral hygiene. She had a convex profile, bilateral Class I molar relationship, Class III left canine occlusion, no crossbites, lower midline deviation of 4 mm to the right, 50% overbite, 4 mm overjet, space loss in the upper left quadrant and excessive spacing in the lower right quadrant. The significant findings in the clinical and radiographic exams were:

1. missing teeth nos. 23 and 27; and
2. caries on teeth nos. 3 and 19, which were filled subsequently with a composite material (Figure 1).

The boy was 11 years, 4 months old and presented with good oral hygiene and no caries. He had a convex profile, bilateral Class II molar relationship, Class I left canine occlusion, no crossbites, no midline deviation, 50% overbite, 2-mm overjet and adequate spacing. The significant findings on the clinical and radiographic exams were:

1. ectopic eruption of tooth no. 18;
2. impaction of a dilacerated tooth no. 27;
3. lingual-facial-distal enamel hypoplasia in the incisal third of tooth no. 26; and
4. bone loss in the lower anterior area (Figures 2 and 3).

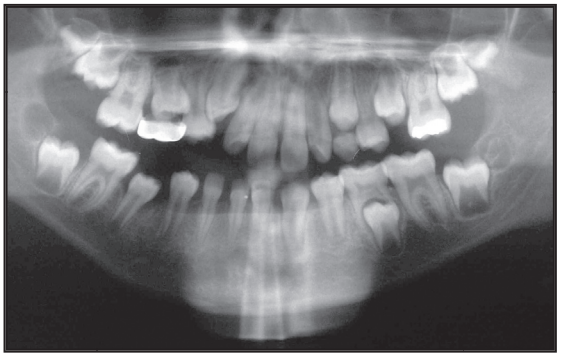

Figure 1. Panaromic radiograph of a female subject showing missing teeth nos. 23 and 27.

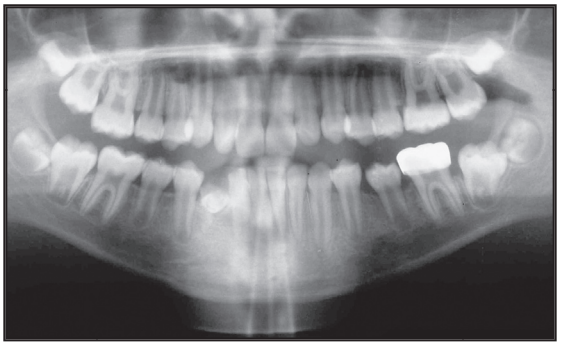

Figure 2. Panoramic radiograph of a male subject showing the impacted, distracted tooth no. 27 and enamel hypoplasia of tooth no. 26

Figure 3. Radiograph showing the impacted tooth no. 27 and bone loss in the lower anterior area.

The lower incisors presented no mobility and both the patient and parent denied a history of trauma. It was decided to observe tooth no. 18. Teeth nos. 24 and 25 tested vital on electric pulp testing and ice. Tooth no. 26, however, was nonvital and received a root canal treatment followed by a composite restoration. Tooth no. 27 was extracted uneventfully. The diet, oral hygiene, and postoperative local anesthesia instructions were reviewed with the patients and the parent at every visit.

The mother was interviewed regarding the missing teeth, and revealing that both children had "some baby teeth" extracted between 3 and 6 months of age by a traditional healer in their Somali village to prevent them from becoming sick. She could not remember what instruments were

used. There were no postoperative complications, and she thought the extractions were "somewhat helpful." A family centered consultation was carried out to discuss the harmful consequences of the procedure and the proposed treatment, including orthodontic and prosthetic evaluations, which the family declined due to financial reasons.

DISCUSSION

This case highlights the importance of being culturally sensitive to understand what patients may present with and to negotiate care in an effective manner. When immigrant patients have missing or deformed teeth without any obvious reasons, dental professionals must consider cultural practices and exercise diplomacy to elicit a positive history. This is because many parents may display incomprehension or reluctance to discuss them.[13] These harmful practices may continue in their new communities abroad, as is seen with Ethiopian Jews in Israel and Ugandan and Somali immigrants in the United Kingdom.[3,4,6,13] Our patients' family was not aware of any healers in the community and did not know whether the procedure was being executed here.

Although the upper canines and lower incisors may also be removed, most often it is the lower canines that are extracted because their bulging in the gingiva is more easily identified by parents and healers.[2,4-6,10,12,13,15] A survey of 14-year-old students in Uganda, however, revealed that missing canines were 3 times more common in the maxilla, but the authors presented conflicting information in their discussion.[7] The improper enucleation of primary tooth buds can lead to several problems, such as hypoplasia of the adjacent permanent teeth, dilaceration of the permanent canine and occlusal imbalances, as seen with these siblings. The fact that the girl had tooth no. 22 present and a missing tooth no. 23 was probably due to an accidental extraction or removal of the incorrect tooth bud, which has been reported by some authors.[4]

A survey of Somali children residing in the UK showed that lower permanent incisors were commonly missing.[13] If the dental lamina is not completely removed, it may continue to develop, resulting in a dysplastic or maldeveloped tooth as seen with the canine dilaceration and incisal hypoplasia of this study's male patient. Other possible sequelae include:

1. retention of the primary lateral incisors with distal eruption of the succedaneous teeth;
2. hypoplasia of the adjacent primary and permanent teeth;
3. development of odontoma-like structures;
4. midline and occlusal discrepancies;
5. failure of development of the succedaneous tooth;
6. displacement and impaction of the permanent teeth;
7. enamel hypoplasia;
8. ectopic eruption;
9. development of peg-shaped or invaginated teeth;
10. transpositions; and
11. early eruption of permanent teeth where the primary buds were removed.[2,4,5,10,13]

Although lower teeth are most often removed, Welbury et al. found that the prevalence of sequelae to the permanent dentition was similar in both arches.[5] The damaging effect of cultural extractions on the occlusion was seen in Maasai adolescents who had their permanent central incisors extracted. All mean values of their mandibular measurements, except for the intermolar distance, were significantly reduced.[16] Damage can also be done to the surrounding bone and soft tissue.[6] Loss of vitality in teeth adjacent to the extracted bud without any other history of trauma has been reported.[13] This may explain the bone loss in the lower anterior area and the lack of vitality of tooth no. 26 in this study's male subject.

Despite the fact that the practice is still widespread, in some areas people have shown a behavioral change towards it, possibly due to governmental awareness campaigns and the families' own realization of its harmful consequences. Healers in certain areas of Tanzania seem to have shifted over time from an invasive (extraction) to a noninvasive (rubbing of herbs) form of treatment.[1] In Eastern Uganda, mothers have learned that if the bud is removed, a tooth may not erupt in the area. Thus, these mothers have preferred that the healers limit the procedure to just a gingival incision followed by the rubbing of herbs.[3] Furthermore, interesting interactions have arisen between the formal health care system and this traditional practice. A new kind of practitioner has appeared in Uganda, mixing herbs and Western medications such as antibiotics and injections to stop the diarrhea, similar to what has been reported in Ethiopia.[3,5] These people often have some educational background and may be school teachers and nurse aids.[3] In other places, although mothers have not abandoned the practice, many have learned to bring the child to the hospital immediately after it to prevent complications.[9] Postoperative hemorrhage, bronchopneumonia, anemia, fever, septicemia, meningitis, facial swelling, osteomyelitis of the jaws, and tetanus have led to significant morbidity and mortality.[1,3,5,6,8,9,15] Complications of tooth gouging were among the leading causes of admission and death in the pediatric ward of a Ugandan hospital.[8,9] The complications may be under-reported, however, since many deaths may occur before any referral to a health facility is made.[9] A major public health concern is the potential bacterial and viral transmission, including HIV, as the procedure can be performed on several successive children in a short period of time using the same instrument.[2,8,14,17]

The primary responsibility to stop these harmful practices lies with the governments to implement educational campaigns against it as well as effective public health measures to improve their citizens' health and quality of life. As families begin a new life overseas, however, it is important that dentists and dental hygienists become involved in their education regarding the damaging outcomes of such practices. The goal is to help them realize on their own what is harmful, irrelevant, or useful in their daily lives.[9] Therefore, it is paramount that dental students and residents receive a culturally sensitive education to prepare them to deal more effectively with these situations.

REFERENCES

1. Kikwilu EN, Hiza JFR. Tooth bud extraction and rubbing of herbs by traditional healers in Tanzania: Prevalence and sociological and environmental factors influencing the practices. Int J Paediatr Dent 1997;7:19-24.
2. Graham EA, Lynch H, Egbert MA. Dental injuries due to African traditional therapies for diarrhea. West J Med 2000;173:135-7.
3. Megensen HO. False teeth and real suffering: the social course of "germectomy" in Eastern Uganda. Cult Med Psychiatry 2000;24:331-51.
4. Holan G, Mamber E. Extraction of primary canine tooth buds: Prevalence and associated dental abnormalities in a group of Ethiopian Jewish children. Int J Paediatr Dent 1994;4:25-30.
5. Welbury RR, Nunn JH, Gordon PH, et al. "Killer" canine removal and its sequelae in Addis Ababa. Quintessence Int 1993;24:323-7.
6. Dewhurst SN, Mason C. Traditional tooth bud gouging in a Ugandan family: A report involving three sisters. Int J Paediatr Dent 2001;11:292-7.
7. Bataringaya A, Ferguson M, Lalloo R. The impact of ebinyo, a form of dental mutilation, on the malocclusion status in Uganda. Community Dent Health 2005;22:146-50.
8. Iriso R, Accorsi S, Akena S, et al. 'Killer' canines: The morbidity and mortality of ebino in northern Uganda. Trop Med Int Health 2000;5:706-10.
9. Accorsi S, Fabiani M, Ferrarese N, et al. The burden of traditional practices, ebino, and tea-tea, on child health in Northern Uganda. Soc Sci Med 2003;57:2183-91.
10. Pindborg JJ. Dental mutilation and associated abnormalities in Uganda. Am J Phys Anthrop 1969;31:383-90.
11. Hodes RM. Cross-cultural medicine and diverse health beliefs–Ethiopians abroad. West J Med 1997;166:29-36.
12. Hiza JFR, Kikwilu EN. Missing primary teeth due to tooth bud extraction in a remote village in Tanzania. Int J Paediatr Dent 1992;2:31-4.
13. Rodd HD, Davidson LE. "Ilko dacowo": Canine enucleation and dental sequelae in Somali children. Int J Paediatr Dent 2000;10:290-7.
14. Chindia ML. Traditional dental practices [editorial]. East Afr Med J 1995;72:205-6.
15. Hassanali J, Amwayi P, Muriithi A. Removal of deciduous canine tooth buds in Kenyan rural Maasai. East Afr Med J 1995;72:207-9.
16. Hassanali J, Amwayi P. Biometric analysis of the dental casts of Maasai following traditional extraction of mandibular permanent central incisors and of Kikuyu children. Eur J Orthod 1993;15:513-8.
17. Jolles S, Jolles F. African traditional medicine–potential route for viral transmission? Lancet 1998;352:71.