“Killer” canine removal and its sequelae in Addis Ababa

R.R. Welbury* / J.H. Nunn* / P.H. Gordon† / C. Green-Abate**

Children and adolescents, aged 2 to 18 years, from 300 poor families in Addis Ababa were examined to determine the prevalence of the traditional practice of primary canine tooth removal. Fifteen percent of the primary canine teeth were found to have been affected, and 7% of the permanent canines had been damaged by this practice. A questionnaire to a subset of 40 families revealed some of the reasons that this procedure is still carried out, in spite of the considerable associated morbidity. (Quintessence Int 1993;24:323-327.)

Introduction

In parts of Africa it is believed that the unerupted primary tooth is the cause of diarrhea, vomiting, and fever in infants. This belief is so strong that treatment with modern medicines for such conditions is either held in contempt or given second place to traditional practices that reflect the belief that removal of the offending tooth is the only effective cure for these dangerous illnesses. It is therefore common practice to remove these “killer” teeth.

In 1932, Seligman and Seligman, in their monograph detailing the pagan rites of the Nuer tribe in Sudan, reported that the primary canine tooth germs of infants of a few days to 1 month old were dug out of the jaw with a piece of iron. The reason for this was unknown. However, in 1966 Pindborg examined more than 300 Acholi tribesmen in Northern Uganda and found that 16% had abnormal permanent canine teeth because of the ritual extraction of the primary canine teeth—usually the mandibular canines. The removal of the primary canines was attributed to a belief that infantile fever originated from these teeth. The primary canines were removed in such a crude fashion that malformation, noneruption, or premature eruption of the underlying permanent canines resulted.

Halestrap, also working in Uganda, confirmed Pindborg’s report that the mandibular primary canines were more commonly enucleated than the maxillary canines and provided more information about the extraction technique. The tooth was extracted either by the village “tooth drawer,” who used a specific instrument, or by the baby’s mother, who used her fingernails, assisted by finger knives. The secrets of the tooth drawer’s technique were closely guarded and handed down through several generations.

More recent reports from Sudan and Tanzania suggest that the removal of primary canine teeth is still prevalent, despite improvements in primary health care in these countries. Selassie distributed a health questionnaire within five regions of Ethiopia: Addis Ababa, Eritrea, Arussi, Hararghe, and Gojjam. In all five regions more than 70% of the respondents were aware of the practice of primary canine tooth removal, but only in Eritrea did the majority of respondents recognize the practice as beneficial and one to which they would subject their own children. However, new, unpublished, work suggests that the incidence of missing primary canines in Addis Ababa may be as high as 20%.

Unfortunately, children suffering from the consequences of killer canine extraction present with bleeding, bronchopneumonia, osteomyelitis, or tetanus, in
addition to the original underlying illness for which treatment was sought. The elimination of this particular traditional practice would therefore be beneficial to both the general medical and dental health of children.

The aim of this study was to investigate the prevalence of killer canine extraction practices and their sequelae among infants and adolescents being cared for by the Ethiopian Gemini Trust in Addis Ababa. The Trust is an independently funded charitable organization that looks after the medical and social welfare of destitute mothers with twins in Addis Ababa.

**Table 1 Sound and killer primary canine teeth**

<table>
<thead>
<tr>
<th></th>
<th>Maxillary</th>
<th>Mandibular</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Sound</td>
<td>637 (93)</td>
<td>496 (77)</td>
<td>1,133 (85)</td>
</tr>
<tr>
<td>Killer</td>
<td>46 (7)</td>
<td>151 (23)</td>
<td>197 (15)</td>
</tr>
<tr>
<td>Total</td>
<td>683</td>
<td>647</td>
<td>1,330</td>
</tr>
</tbody>
</table>

**Table 2 Sound and damaged (killer-related) permanent canine teeth**

<table>
<thead>
<tr>
<th></th>
<th>Maxillary</th>
<th>Mandibular</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Sound</td>
<td>260 (94)</td>
<td>319 (93)</td>
<td>579 (93)</td>
</tr>
<tr>
<td>Killer-related</td>
<td>17 (6)</td>
<td>24 (7)</td>
<td>41 (7)</td>
</tr>
<tr>
<td>Total</td>
<td>277</td>
<td>343</td>
<td>620</td>
</tr>
</tbody>
</table>

ded as a killer tooth if it was absent from the maxillary arch in a child between the ages of 2 and 9.9 years and from the mandibular arch in a child between the ages of 2 and 8.9 years. Primary canines with evidence of hypoplasia or hypoplasia with superimposed dental caries were also included in the category of a killer tooth. There were 665 children who fulfilled the age criteria in this primary group. In the permanent dentition, maxillary canine teeth were assumed to be missing as a result of killer canine treatment to the primary dentition if they were not palpable and not present in the mouth at 14 years of age. Mandibular permanent canine teeth were assumed to be in the same category if not present at 13 years of age. As in the primary dentition, any permanent canine with evidence of hypoplasia or hypoplasia and dental caries in the absence of hypoplasia in adjacent teeth was assumed to have been affected by the practice of killer canine removal. There were 310 adolescents who fulfilled the age criteria in the permanent group.

Data from all forms were subsequently entered onto a computer disk in Addis Ababa before transfer to Newcastle Upon Tyne, United Kingdom, for analysis.

**Results**

The number of sound and killer canine teeth in the primary dentition group is shown in Table 1, while the number of sound and damaged (killer-related) teeth in the permanent dentition group is shown in Table 2.
There was no statistically significant difference (chi squared analysis) between males and females in either of these two categories. More children underwent removal of the mandibular primary canine (23%) than of the maxillary canine (7%) but the prevalence of sequelae to the permanent dentition was similar in both arches (6% and 7%, respectively).

Figure 1 shows the absence of both mandibular primary canines and in addition the absence of the mandibular left lateral incisor. This latter tooth was either removed at the same time as the canines or significantly damaged during extraction of the canines, resulting in noneruption. Figure 2 shows absence of the mandibular left primary canine and hypoplasia of the mandibular right primary canine. The latter presumably resulted from attempted removal. Figure 3 shows ectopic eruption of a hypoplastic primary canine and a normal permanent canine in the mandibular right labial segment. Damage and displacement of the developing primary canine must have occurred during its attempted enucleation, and this has resulted in the ectopic eruption of the permanent canine. Figure 4 shows absence of the mandibular left permanent canine and hypoplasia and rotation of the adjacent lateral incisor, and Figure 5 shows hypoplasia of both erupted permanent canines. All of these injuries of permanent teeth presumably arose from primary canine enucleation.

Statistical analysis of the social worker's records showed that, with regard to the practice of killer canine removal, only the background variable of marital status reached significance ($P < .05$; chi squared analysis). More children of married mothers had undergone killer canine removal. However, this result
should be treated with caution because of the small size of the sample. The small sample was due to difficulty in collecting accurate information, especially with regard to the men.

Results from the questionnaire to a subset of 40 families gave an insight into the practice of killer canine removal and also enabled one of the instruments used in this practice to be photographed (Fig 6). Ninety-five children in the subset (44.0%) had their mandibular primary canines removed between the age of 16 days and 24 months (mean of 6.5 months). The reasons given for removal of canines were diarrhea and vomiting (97.0%), itching of gums (10.0%), fever (2.5%), and weight loss (2.5%). In addition, in 47.5% of cases, other medicines were given in conjunction with the extractions. In some cases these may have been antibiotics. In 20.0% of children an injection (unknown contents) was given prior to tooth removal, and in 12.5% a warm poultice of butter, mustard, and garlic was applied to the wound. The parents reported that in 65.0% of cases, there was an improvement in the original condition after removal of the primary canine teeth.

Discussion

In spite of the comprehensive primary health care available to the families looked after by the Gemini Trust, it is evident that some parents still rely heavily on traditional health practices. The prevalence of damage to the permanent dentition in this study (7%) is higher than that reported in Tanzania (0.2%), but lower than that in Uganda (16%). There are no previous comparable studies on the primary dentition with which to compare the prevalence of killer canine extractions found in Addis Ababa in this study (15%).

Like most African countries, Ethiopia has a male-dominated society, but it is the woman who is more commonly exposed to health care services. The incidence of killer canine removal was found to be higher in children whose mother was married. It is possible in this situation that the man, more conversant with and trusting of traditional practices, has overridden new health care information learned by his wife.

The belief that the unerupted primary canine is the source of illness and death has probably arisen from the high incidence of diarrheal illnesses among teething infants. The illnesses themselves have no connection with the eruption of teeth, but are related to the poor health, nutritional, and sanitary states in which the children are reared. It is interesting that 65% of parents in this study reported an improvement in health after killer canine extraction. This underlines the strong belief in traditional practices that forms an essential part of the daily life, language, and perception in most countries of Africa. Ethiopia would appear to be no exception to this, and any attempt to eradicate practices such as killer canine extraction can only be made by continued education and learning to destroy the support for such belief and ritual.
Acknowledgments

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References


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