The prevention of traditional bone setter’s gangrene

A two-year retrospective survey in southern Ethiopia revealed that 49 amputations had been performed, 25 of which were for gangrene following tight splintage applied by traditional bone setters. The aim of this study was to determine if it was possible to reduce this incidence of gangrene by offering one-day instructional courses to bone setters. In ten separate one-day courses 112 tradition healers attended. In addition, two-day courses were given to local health assistants, who also received written instructions for the safe care of fractures. A two-year prospective study revealed a marked reduction in amputations, from 49 to 25, with only seven rather than 25 being required for gangrene.

We found that it is possible to educate traditional healers so that fewer gangrenous limbs require to be amputated.

In many parts of the developing world, a large proportion of fractures continue to be treated by traditional bonesetters, who are readily available and often have a good local reputation. There are few orthodox medical facilities and patients often have to travel as far as 300 km to receive specialist surgical attention. Many arrive on the backs of fellow villagers as road transport is rare. While many fractures do heal properly with traditional treatment, bone setters often do not appreciate the dangers of tight splintage, which can cause gangrene necessitating amputation.1-3

Before receiving formal surgical training I worked for four years in Arba Minch Hospital in southern Ethiopia (505 km from Addis Ababa), and during this time many limbs were amputated as a result of iatrogenic gangrene following management by a traditional bone setter (Fig. 1). When I became a qualified surgeon I decided to assess the number of patients who had lost a limb after treatment by a traditional bone setter, and to try to reduce the incidence of this problem by educating traditional bone setters and other health workers. A prospective survey of amputations performed during the two years following this instruction was made and I report results from both these retrospective and prospective studies.

Patients and Methods
The Arba Minch Hospital with 172 beds is the only surgical service for a catchment area of about 1.5 million people. It is located in a rural area where most people live by subsistence farming. The hospital is closely associated with a non-governmental rehabilitation centre which employs 240 minimally trained community health workers whose main duty is to bring disabled patients to the centre. These workers also assist in preventative care in the villages.

From the two-year retrospective study from 1999 to 2001, it was evident that many limb amputations were the result of the mismanagement of relatively simple closed fractures by traditional bone setters. With the cooperation of the rehabilitation centre, the sub-Regional health office and the hospital, I was able to give one-day instructional courses to small groups. In total, 112 traditional bone setters, 15 non-medical ‘local leaders’ and ten community health workers received instruction. For geographical reasons, the courses were conducted on ten separate occasions over a month. Some of this teaching was given in schools and clinics outside the city, and a few in the hospital. Similar but more advanced two-day courses for health assistants working in the rural areas were conducted. The medical workers were given a supply of plaster, cotton padding and bandages as well as brief written instructions. Written instructions could not be given to traditional bone setters as nearly all were unable to read. These two courses were immediately followed by a two-year prospective study of amputations performed in the hospital between 2001 and 2003 in order to assess the success of the courses.
Results
The patients were considered in two groups. In the retrospective study, there were 49 amputations of which 25 (51%) had been required because of tight splintage applied by a traditional bone setter. In the second prospective group, there were 25 amputations of which seven (28%) followed tight splintage.

It seems that the instruction received by the bone setters resulted in a marked decrease in iatrogenic gangrene, from 25 to seven during the study period. The total number of amputations was reduced by about a half after the instructional courses from 49 to 25.

Three people died in the retrospective group, two from sepsis and one from tetanus. In the prospective group, one patient died from sepsis and one from tetanus.

Discussion
Traditional bone setters often use splints made from split bamboo or strips of wood tightly bound around the limb, occasionally including local joints.

Unfortunately, these splints may not be removed when pain increases after immobilisation. Thus a compartment syndrome with its permanent sequelae, or death of tissue and gangrene may follow. For these latter cases, amputation with delayed primary or secondary suture is the only possible treatment. Death may result from such complications as tetanus and septicaemia.

These problems are due to a lack of awareness among bone setters about the dangers of tight splints. These healers are secretive and it is thus difficult to teach them how complications can be avoided.

However, with the cooperation of ‘local leaders’ and health workers it was possible to arrange one-day instructional courses, which were well attended. Our hospital has seen a considerable decrease both in the number of gangrenous limbs requiring amputation, and a decrease by half in the total number of amputations performed in a two-year prospective trial period.

When approached by local leaders who had received an explanation of the project, the traditional bone setters were at first fearful that this was an attempt to put them out of business. However, with the appropriate encouragement and explanation, attendance at the instructional courses was good.

It seems that the incidence of traditional bone setter’s gangrene can be reduced by educating the healers.

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References