

4

Ritual, Punitive, Legal and Iatrogenic Causes

“In numerous tribes ritual mutilation is widely practised, and yet these tribes generally fail to develop medical amputation or other major surgery.”

Ackerknecht, 1967¹

“As for gangrene . . . in fractures which undergo greater compression than is opportune, and in other cases of tight bandaging, the intercepted parts come away in many cases.”

Hippocrates, 4th century B.C.²

“More limbs have been lost by the use of tourniquets than have been saved.”

Watson-Jones, 1943³

Removal of limbs or parts of limbs for ritual, punitive and legal reasons serves no medical purpose, yet this practice has a long history, continuing in some societies today, as a source of community-regulated rites, punishments or legal sentences. By contrast, iatrogenic causes are the consequence of surgical and medical treatments which become complicated by unintended vascular injury or infection with limb failure, leading to amputation as an emergency attempt to preserve life.

Ritual Amputations

In 1967, Ackerknecht wrote:

*“Amputation of the fingers for ritual reasons is well known to us from South and North American Indians. The custom seems even more widespread in Africa and Oceania. In an excellent survey, Lagercrantz mentions no less than fourteen tribes in black Africa practising ritual finger mutilation. Soderstrom gives almost the same number for Oceania.”*⁴

The discovery of “mutilated” human hands outlined in paint on the walls of prehistoric caves in France and Spain suggested, initially, these were paintings of hands with partial amputations of fingers and, surprisingly, thumbs. In the case of the Gargas Cave in France, dated about 25,000 years before the present, 92 hand outlines are readable (Fig. 4.1), and Janssens supposed the missing digital parts had been removed for ritual reasons,⁵ as indeed was known to take place more recently, excepting the thumb, very rarely involved in known ritual amputation. By contrast, Janssens noted that Van den Broeck considered the Gargas representations were a form of signature or “visiting card.” A further study by Leroi-Gourhan suggested the positions of the absent digits corresponded to the most easily flexed finger positions and, hence, the imprints could have been painted from normal hands in various attitudes, acting as a stencil for outline painting. As additional explanation, it was suggested the digital outlines represented hunting signs or a similar code.⁶ A later study by Hooper in 1980 concluded the images were of actual mutilations.⁵

Whatever the explanation of these paintings, ritual finger amputation has been confirmed in a number of societies and, indeed, still occurs in 2005 (see following), and was recorded in 1961 by cine-film among the Dugum Dani tribe, New Guinea, the amputations taking place to express family grief and to placate the ghost of a tribesman killed in battle. The sacrificial victims were little girls, linked to the dead man by blood, who had one or two lesser fingers amputated with a stone adze, without anaesthesia other than a

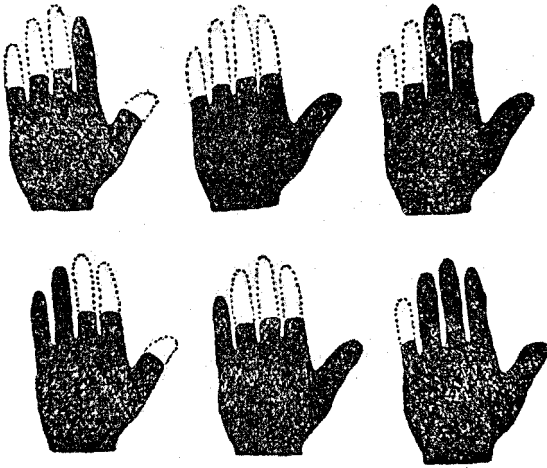


FIG. 4.1. Reproductions of the commonest hand prints showing apparent deformity, in the Gargas cave, c. 30,000 B.P. (From Ref. 5. Copyright the Trustee, The Wellcome Trust, reproduced with permission.)

hard rap on the elbow which may have contused the ulnar nerve to numb the little and ring fingers. The stumps were dressed with ashes and clay, wrapped in leaves and the girls held their hands vertically with clumps of grass at their elbows to soak up oozing blood (Fig. 4.2). Some Dani women were seen to have had all their fingers amputated at the proximal joints and yet remained quite dexterous.⁷



FIG. 4.2. Girls of the Dugum Dani tribe, New Guinea, 1961, immediately after ritual amputations of their little fingers, dressed with ashes and clay, and bandaged; they soak up blood as it trickles down their forearms, with handfuls of grass. (From Majno G. *The Healing Hand*. Cambridge: Harvard University Press, 1975:20–23.⁷ Copyright Peabody Museum Harvard University.)

In similar fashion, several American Indian tribes in northwest Canada sacrifice fingers after serial family deaths in anticipation of halting the mortality. Sollas wrote:

*“... when death is too assiduous in his visits to a family: the survivors... place the little finger on the edge of the coffin and sacrifice the first joint, in order, as they say, ‘to cut off the deaths’.”*⁸

Among Pygmies, finger amputations are performed as a sign of mourning or a means of securing a peaceful death later, and among Hottentots the ring finger is sacrificed to avert serious illness.⁹

An extraordinary sacrifice of a thumb, chronicled in an ancient Hindu legend of the epic battle of Mahabharata, concerned Prince Ekalavya of the lower Hunter’s Caste, an expert archer instructed by Drona, a veteran of fighting techniques. When Drona demanded his teaching fee, he said callously: “O Ekalavya, if thou art really intent on making me a gift, I should like then to have the thumb of thy right hand.” Having promised there was nothing he would not give his teacher and despite the cruel demand, Ekalavya cut off his thumb and gave it to Drona. On resuming archery, his former lightness of hand and accuracy had vanished. Since then, the archers of the tribes of Bhils have made a ritual incision on the right thumb and drawn their bowstrings with their

index and middle finger knuckles.¹⁰ Also in India, Janssens reported:

“In the course of consecration rites among the Indians of the Mandan tribe, the first and fourth fingers of the left hand are amputated; the motive for this unknown.” And: *“In the hope of ridding himself of an enemy, an Indian would cut off three fingers of his left hand.”* And also: *“In India there is a tribe called the Berula Kodo, or ‘finger cutters’. Every three years, during a religious ceremony, they cut off the second and third fingers of some of their women; the reason is not known. Sometimes this mutilation is performed for practical reasons, as where certain tribes of native fishermen remove the fourth fingers of their women to facilitate their task in making nets.”*⁹

Rogers, who considered limb amputation a rarity in non-westernised Africa, nevertheless noted ritual finger amputation among Bushmen as a symbol of mourning. He stated:

*“Hottentots occasionally amputate a finger by first tying the finger with sinew above the joint and then cut through the flesh and ligaments with a knife. A Hottentot widow who marries a second time must have the distal joint of her little finger amputated. Another joint is removed each time she marries.”*¹¹

Rogers also recorded:

*“The Assiniboin and Crows of North America have often amputated fingers as a form of mourning sacrifice. This is done with a sharp knife or with a tomahawk which was struck after the finger was placed on a block. Usually the first and second joints are sacrificed but with men the thumb and middle finger on the left hand and the thumb and two forefingers of the right hand are preserved for the use of bow or rifle. Young Sioux warriors cut off the little fingers of the left hands after the Sun Dance ritual.”*¹²

Such ritual amputations continue, even in sophisticated societies such as Japan where a South Korean doctor was arrested, in 2005, for aiding and abetting a self-inflicted finger amputation by administering a local anaesthetic to a businessman, witnessing the amputation performed with a hammer and chisel, placing the digit in a bottle of formaldehyde which he gave to its former owner and then invoicing the medical costs to the Japanese health system. It was explained that the businessman was bankrupt and indebted to a gangster of the Japanese mafia or “yakuza” for which the ancient punishment was “yubitsume” or

finger-cutting, self-inflicted by the offender to demonstrate his sincerity and tolerance of pain, and, it can be supposed, to identify and expose the offender permanently in society and before his fellows for breaking their rules. “Yakuza” organisations have their origin in medieval guilds of gamblers and pedlars and regard themselves as heirs to the ethics of the “samurai.” Bungling and incompetent “yakuza” sometimes end up amputating more than one fingertip or even most of a finger (Fig. 4.3).¹³

A frankly criminal self-amputation was reported in 2005 concerning a Dutch dentist who chopped off a finger and faked a car crash to make a claim from insurers equivalent to £1.2 million. No particular finger is mentioned in a brief news item but perhaps he weakened his extraction grip? He was heavily fined and given a suspended jail sentence.¹⁴ Another bizarre and doubtless more-ancient method of extracting money is noted by Gillis, who wrote:

“Cases have been reported in the East, where itinerant beggars, in order to arouse sympathy, have, by a process



FIG. 4.3. A member of the Japanese mafia or “yakuza” drinking with the left hand, to demonstrate self-amputated fingers, known as “yubitsume,” for offending the mafia code. (From *London Times*, July 13, 2005.¹³ Copyright Bruce Gilden / Magnum Photos.)

of gradually tightened cords, severed one or both of their feet. These interesting articles were then tied by string around their necks and used as an additional incentive to extricate charity from passers-by. Two such mummified feet are on view in the Museum of the Royal College of Surgeons of England. They were purchased from a footless Chinese beggar and sent to the Museum.¹⁵

Unfortunately, these specimens cannot be traced and are considered victims of the College bombing in 1941. Another approach was taken by an elderly South Korean woman and her son, who severed their little fingers as a means of political protest over a disputed barren, rocky islet lying between Japan and South Korea, without resources itself but important for defining a 200-mile economic zone with fishing rights and potential geological riches. The demonstrations took place in front of the Japanese Embassy in Seoul where the mother used a meat cleaver and her son a pair of secateurs. Such transverse guillotine amputations would heal poorly unless receiving surgical reamputation to promote acceptable healing and comfortable stumps; there is no comment on the after-care of these bizarre auto-amputations.¹⁶

Punitive and Legal Amputations

Differentiation between punitive and legal grounds for amputation is not always clear. Pure and simple punishment of prisoners of war, obvious when victorious opponents attack the defeated whether injured or not, as happened in the Dark Ages, may result in severed limbs (Fig. 4.4). However, many prisoners may be subjected to a form of legalised amputation based on the whim of a king or official, or on religious grounds, yet hardly determined by a fair trial supported by a legal representative. It has proved difficult to isolate purely punitive severances, so often related to ancient unwritten customs towards enemy prisoners.

In the Book of Judges, reference is made to Judas and Simeon, successors to Joshua, having taken the king of Canaan, Adonibesek, as prisoner; they immobilised him by cutting off his two thumbs and two great toes, or according to another interpretation, the extremities of both



FIG. 4.4. Section 58 of the Bayeux Tapestry showing advancing Norman horseman and in the lower margin dead and mutilated English soldiers, one demonstrating 'guillotine' amputation of an arm. (From Bertrand S. *La Tapisserie de Bayeux*. L'Abbaye Sainte-Marie de la Pierre-qui-Vire: Zodiaque, 1966:143. Copyright Desclée de Brouwer.)

hands and feet. Adonibesek was familiar with such punishments, having meted out the same mutilations on his prisoners formerly taken in combat, saying:

*"Three-score and ten kings, having their thumbs and their great toes cut off, gathered their meat under my table: as I have done, so God hath required me . . ."*¹⁷

After the battle of Bannockburn in 1314, it is reported three English soldiers in the King's service suffered punitive amputations of their hands and, subsequently, the Master Brethren of three medieval hospitals (presumably in England) were directed to provide them maintenance for life.¹⁸ And in medieval France, captured English bowmen were subjected to amputation of their bowstring fingers (right index and middle) to prevent further participation in battles. Le Vay reported the following legalised punishment:

"In 1579, on a stage set up in the market-place at Westminster. John Stubbs, a religious writer, and William Page, his publisher, 'had their right hands cut off by the blow of a butcher's knife with a mallet struck through their wrists' for having produced a pamphlet criticising

*Queen Elizabeth's marital ambitions. 'Stubbs, so soon as his right hand was cut off, put off his hat with the left and cried aloud, 'God save the Queen!''*¹⁹

In their study of acquired amputations before the 16th century, Padula and Friedmann based their conclusions on Peruvian practices, largely by their examination of surviving ceramic pieces from the Moche culture of the north coast of Peru, dated between 300 B.C. and 600 A.D. The examples selected show deformities and amputations with evidence, in some instances, suggesting cup-shaped prostheses were worn (Fig. 4.5). They concluded that, although leprosy, leishmaniasis, frostbite and tuberculosis were possible diseases precipitating amputation, punishment for infringing tribal laws was probably the major reason, stating:

"Theft in Peru was punished by amputation of one hand. Both arms were ablated for rebellion. One foot was taken off for laziness . . . amputations of the legs were ankle disarticulations or below knee amputations, primarily ankle disarticulations . . . other pots available show amputation almost invariably through, or above, the elbow. There are a number of figures showing bilateral upper limb amputation above the elbow. These figures . . . have ear plugs and head-dresses indicating that the



Fig. 4.5. Ceramic bottle of the Moche culture, Peru, showing lower limb amputations and a cup-shaped "prosthesis," probably to protect an unhealed stump, circa 300 B.C.–600 A.D. (From Padula PA, Friedmann MD. Acquired amputation and prostheses before the sixteenth century. *Angiology* 1987;38(2):133–141.²⁰ Copyright Westminster Publications.)

*individual was from the upper classes. This seems to indicate that bilateral amputation was probably the punishment for rebellion in upper class individuals.*²⁰

In the late 18th century, Tipu Sultan of Mysore, the staunchly anti-British prince, ordered amputations of the right hands and noses of captured Indian civilians serving the East India Company, for presumed treachery.²¹ Packard noted that the North American Seneca Indians immobilised their war prisoners by performing a very neat amputation of the forefeet so that, although still able to stand and walk awkwardly on their hindfeet, they had no power of positive push-off due to absent toes and were unable to achieve a full running posture and, hence, easy escape was diminished; additionally, they left characteristic footprints making them easy to track, if indeed they did escape.²²

More recently, an Afghan who became a prisoner of the Taleban described in graphic detail his punishment of simultaneous right hand and left foot amputations, actually witnessing the procedures himself. This took place in 1999 in the middle of a football stadium packed with people and supervised by mullahs; the victim suspects he was chosen in place of a rich Pashtun who having committed a crime, paid a sum of money to the mullahs so that a prisoner of war received punishment instead. He said:

*"Seven doctors approached me. They wore grey uniforms, surgical masks and gloves. I could see one was crying. They injected me. After five minutes my body was numb though I was still conscious. Then they put clamps on my hand and foot and began to cut them off with special saws. There was no pain but I could see what they were doing . . . I was transfixed by the sight of my foot being removed. There was a sigh and murmur from the crowd when they finished. It had taken about five minutes.*²³

It is written in the Koran:

*"Those that make war against God and His apostle and spread disorder in the land shall be put to death or crucified or have their hands and feet cut off on alternate sides.*²⁴

However, moderate Muslim scholars today conclude such edicts can no longer be taken literally and should be interpreted within the context of the times when originally written. Moreover,

Islamic societies are not alone in practising punitive hand and foot amputations, as noted earlier in this section and, as recently revealed in the Congo during the Belgian colonial regime. A newspaper report in 2005 does not state any precise reason for hand amputations, although punishment for theft seems likely; it commented:

“... 45 years after the central African country gained its independence the Belgians are finally, and painfully, confronting a very different version of their colonial past: forced labour, mass murder and the routine severing of hands in what was probably the most bloody of all colonial regimes.”²⁵

Perhaps the most ancient reference to judiciary or legal amputations of the hand concerns this drastic penalty for medical practitioners whose treatment contributed to the death of a patient. This reference forms part of the Code of Laws established by Hammurabi, Amorite king of Babylon about 2000 B.C. In addition to specifying precise fees for the treatment of wounds, fractures or eye disabilities, it was stated that if an operation ended fatally or if an eye operation resulted in the loss of an eye, the physician's hands were cut off. However, if the patient was a slave, lesser penalties prevailed so that the physician had to replace the slave, or if an eye was lost the physician had to pay half the slave's value.²⁶ Sigerist considered these laws would have inhibited surgeons from taking any risks and suggests they were a warning for untrained practitioners to be very circumspect and, hence, were not applicable to reputable practitioners. It is unlikely we shall ever know for sure. A supposed edict of a related nature, in this instance for faultless workmanship, determined the cruel fate of the artisans and craftsmen responsible for building and decorating the magnificent Taj Mahal in India who underwent hand amputations to prevent them creating a rival construction in the future; Kunzru however recalls another version.^{26a}

In 1639, Woodall remarked that it had been reported to him by “*sundry credible Surgeons*” who had spent time in the East Indies that they had seen men who had their feet chopped off at the ankles, by censure of the laws of their countries for committing trespass; Woodall then elaborates on their subsequent use of bamboo prostheses.²⁷ Daniell reported legal hand amputa-

tion for female infidelity on the Island of Fernando Po, West Africa in 1849, as follows:

“In amputation of the hands, a cruel penal sentence summarily inflicted on all women guilty of conjugal infidelity, the bleeding is restrained by the application of a piece of iron, or dipping the stumps in boiling oil, the resulting eschar, when separating, not being followed by any ill effects or further haemorrhage. Females thus mutilated may be seen daily wandering about the streets of Clarence.”²⁸

Similar amputations, especially of the hands for theft, have been legally conducted under Sharia law and indeed, in the 21st century, this remains a routine legal penalty in some Moslem countries.

When discussing traditional Ethiopian medicine, Pankhurst stated that in former days amputation was undertaken as a punishment for severe crimes including robbery.²⁹ He referred to a report of Courbon in 1861 who said the operation might be effected with a knife some 18 cm long and 3 cm wide and carried out with dexterity, almost according to the rules of European surgery, presumably an amputation of the hand at the wrist joint. First the skin was cut, then the tendons and finally the ligaments. The wound would then be cauterised with hot irons, or covered with leaves or cinders, or other powder.³⁰ Boyes, one of the few eye-witnesses to leave an account of such a legally sanctioned operation, recalls:

“I was fascinated. I was rooted to the spot. I could not move until the job was finished. There was no excitement, they were all chatting as if nothing untoward was happening. I must admit that he was making a good job of the operation... As soon as the operation was over the stump was dipped in the pot of boiling fat to stop the bleeding.”³¹

Iatrogenic Causes

It is an unfortunate fact that medical treatments prescribed in good faith, usually within limited boundaries of knowledge of certain practitioners, may be complicated by an irreversible interruption of limb circulation or wound infection, or both, to precipitate an emergency amputation to save life. Often the intended initial treatment may be adequate but is continued too long, as in the case of the emergency application of tourniquets.

The causes of iatrogenic amputation include the following.

Misapplied Fracture Splints and Bandages

Misuse of bandaging is one of the commonest reported complications of surgical management and must have an early history lost in the mists of time; it was certainly known to Hippocrates, as a quotation at the head of this chapter confirms. In 1676, Wiseman provided several instances of this complication, stating:

*“Of Gangrenes from strict Bandage you may see several Instances in this Book . . . the cause may be so easily removed by the loosening of the Bandage. I shall give you one Instance here of a fractured Leg set in the Country by one pretending to Bone-setting.”*³²

In this instance, Wiseman found the splints sticking in the skin, the leg much swollen and the foot a dark red colour. After suitable treatment the patient recovered and the fracture healed. Of Wiseman’s other cases of threatened gangrene, subject to tight splintage, he intervened in time to prevent disaster and thus offered no actual examples requiring amputation. Doubtless practition-

ers were reluctant to report such an outcome. In 1798, Folly, a Danish army surgeon working in Tranquebar, near Madras, studied the surgical skills of the Malabar doctors of south India and reported:

*“The Malabar doctors generally bandage fractures in such a way that 19 out of 20 die of gangrene . . . The first cover was a kind of potter’s clay which was very dry and hard, and underneath this I found a lot of thin bamboo sticks close by each other and closely wrapped in twine. Under this, the arm was wrapped in strips of linen which had been soaked in a kind of varnish oil . . . During the time I have been here, I have had five or six cases (of wrist fracture) which had been dressed the same way, and of these, only one, who also had a fractured forearm, was saved by an amputation.”*³³

In 1966, Swann and Walker, reporting on amputation practice in developing countries, drew attention to gangrene following tight splints applied by local bone-setters and about the same time, Hedley Hall observed six children with gangrenous arms after simple fractures, similarly treated, requiring amputation when he worked briefly in Northern Nigeria³⁴ (Fig. 4.6a). In 1988, Ofiaeli reported the details of three similar cases, all three seen in a period of 3 months, and initially

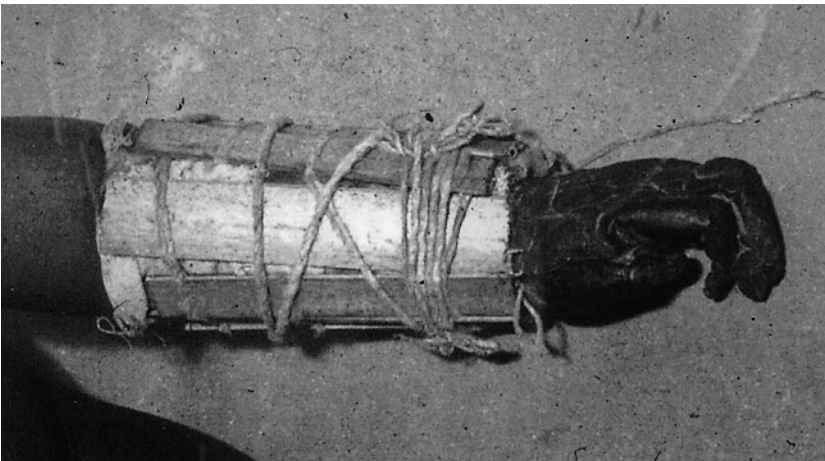


Fig. 4.6. a. Forearm splinted tightly for a simple fracture producing gangrene of the hand, requiring amputation, Ethiopia, 20th century. (From Eschete M. The prevention of traditional bone-setter’s gangrene. *J Bone Joint Surg* 2005;86(B):102–103,³⁶ with permission from *Journal of Bone and Joint Surgery*. © British Edito-

rial Society of Bone & Joint Surgery.) **b.** Gangrenous forearm and hand subsequent to tight elastic rubber tourniquet (Esmarch) for 45 minutes, U.K., 20th century. (From Watson-Jones R. *Fractures and Joint Injuries*, vol 1. Edinburgh: Livingstone, 1943:129–130,³⁹ with permission from Elsevier.

treated by traditional healers of the Igbos, Nigeria. One of these was an 11-year-old boy with a closed fracture of the distal third of the radius (just above the wrist) treated with bamboo splints and tightly bandaged; this resulted in dry gangrene of the forearm and required amputation through the upper arm 15 days after injury. Ofiaeli concluded:

“These practitioners (traditional) are very well patronised all over Nigeria. The reason for this lies in a deep conviction amongst the Igbos and other ethnic groups that orthodox doctors have little or no understanding of the principles of fracture treatment.”³⁵

A recent survey by Eschete, in Southern Ethiopia, described 25 gangrenous limbs after splintage by traditional bone-setters and, subsequently, a marked reduction of gangrene after they attended an educational programme in fracture management.³⁶

Gangrene has also been observed in so-called advanced societies, after the immediate application of closed plaster of Paris casts for fractures which cause tension to rise inside the plaster as natural swelling accumulates and, if not relieved, sufficient pressure to arrest the circulation. Watson-Jones commented:

“The application of an unpadding plaster cast to a fractured limb within a short time of injury and before reactionary swelling has occurred is dangerous. Pressure within the rigid cast may become so great as to obstruct arterial flow and cause not only ischaemic contracture but even gangrene.”³⁷

Experienced practitioners will agree with his advice that all such plasters should be split lengthwise as soon as applied to accommodate swelling, or if the circulation remains in doubt, the front half of the plaster should be removed.

Misapplied Tourniquets

Instances of field tourniquets applied to control arterial bleeding on the battlefield and overlooked under dressings or for lack of communication are a known cause of gangrene. During World War I, a guide for medical officers dated July 1915 reminded them of this hazard.³⁸ In 1943, Watson-Jones was of the opinion that more limbs have been lost than saved by using tourniquets; he had seen tourniquets applied at pressures low enough

to obstruct the veins but not the arteries, or at very high pressure so as to cause irremediable arterial spasm (Fig. 4.6b). For wounds, he believed local pressure over the bleeding point was safer and, if tourniquets were used, these should be of the pneumatic variety with a pressure gauge.³⁹ Even in the calm of civilian surgery, rubber tube tourniquets applied at the base toes, for bloodless field operations, have been left in error, hidden by dressings and overlooked until permanent gangrene was established in the affected toe.

Venesection and Gangrene

In the early 17th century, Fabry (Hildanus) described an observation concerning a man who was bled by venesection at the elbow and subsequently developed a gangrenous arm, presumably as a result of infection. Fabry was obliged to perform amputation close to the axilla, which the patient survived.⁴⁰ In 1771, De La Motte was asked to see a nun in a convent who 4 days previously had been bled by venesection near the foot. He found evidence of gangrene around the venesection site and swelling of the leg which he treated by scarification, fomentation and a cataplasm. Matters did not improve and when she lost all sensation below the knee, the question of amputation was suggested and accepted by the patient. However, she deteriorated very rapidly before the operation was arranged and died, probably of ascending infection.⁴¹

Setons, Issues and Fontanelles

These forms of counter-irritation, popular until the mid-19th century, aimed to produce a controlled discharge from a surgically induced ulcer in the hope of deviating the cause of an illness. For white swellings of joints, that is, tuberculosis, local setons or issues, formed above or below a knee joint, were observed to lead to deep seated infection and local gangrene.⁴² However, no actual case requiring amputation has been traced.

Wound Infections

Despite current knowledge concerning bacteria and methods of avoiding surgical wound infections, suppuration still takes place in hospitals,

especially when associated with septicaemia, more especially with organisms resistant to antibiotics. Such complications of the limbs may cause infection and gangrenous fingers and toes, sometimes ascending to higher levels, necessitating amputation. Before the discovery of bacteria and antiseptic techniques, upper limb infections were not uncommon amongst medical practitioners and students who cut or scratched a hand in the dissecting room, operating theatre and especially in the postmortem room, as we noted in Chapter 3. Amputation was sometimes a desperate last resort to prevent ascending infection.

Lack of Knowledge

Before the discovery of safe methods to control haemorrhage and infection, it is easy to criticise methods which often lead to death after amputation. Yet some practitioners obtained better results than others, as, for example, the Crowther brothers using a wood tar dressing and Alanson, who segregated amputation cases away from infected cases, as noted in Chapter 7. Generally, it was safer to be treated at home rather than in hospitals where cross-infection was frequent and “hospital gangrene” became rife. Unfortunately, lack of communication and blind prejudice often prevented sensible application of improved methods and new discoveries, as in the case of Lister, who, despite Pasteur’s research, had considerable difficulty in persuading many surgeons to pursue a safer prophylactic antiseptic course.

Inappropriate Advice and Poor Choice of Amputating Technique

Before anaesthesia, it was never easy for either surgeons to recommend and, more especially, it was extremely difficult for patients to accept amputation. As Gross observed,⁴³ many limbs were removed unnecessarily and many retained that should have been promptly removed. And even today, there are situations when experienced surgeons find the choice of action an equivocal dilemma. In the past, bad advice could certainly prove disastrous. For example, Usmah, a 12th-century Arabic writer, reported that a crusading knight was receiving treatment for a leg ulcer from a Lebanese physician with some success

when a Frankish physician interfered, asking if the knight preferred to live with one leg or die with two. When the knight replied one leg, the Frankish physician called for an axeman who laid the leg on a block of wood and severed the limb after two blows, the first failing to do so; unfortunately, the knight died, perhaps because of infection.⁴⁴

Summary

Ritual, punitive and legal amputations confer no medical advantage in curing local pain, in removing deformity, infection or gangrene, or in saving lives, and only iatrogenic causes, leading to urgent section, can be considered to approximate to an accidental cause for elective amputation, as discussed in Chapter 3. More than a dozen reasons for ritual finger loss are described, practised by many communities on a worldwide scale, in which process the female is the predominant loser. How long these practices have existed is unknown, whereas it is probable punitive amputations have a more-extensive history arising on the battlefield or within intertribal feuds. Purely legal amputations are likely to be more recent. Instinctive efforts to straighten and bind fractures tightly to stop painful movement must also have a long history, although complications such as established gangrene had no effective remedy until recent centuries.

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