

PAIN: AGONY AND TRIUMPH

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by

J. A. O. MAGBAGBEOLA
Professor of Anaesthesia
University of Ibadan, Ibadan

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A young man goes to his doctor complaining of pain in the abdomen. This immediately generates a series of leading questions

- What sort of pain is it, sharp or dull?
- Where exactly does it hurt?
- Is it localized or does it radiate in any particular direction?
- How long has it been present and have there been intervals of complete freedom?
- If so, for how long?
- What is its relation to meals (if any)?
- Does it occur at night?
- What factors aggravate or afford relief from pain?

This simple interrogation, if carefully conducted, could change what was seemingly a meaningless term—"pain,"—to a most valuable one. It could help in directing the mind of the physician to determine the exact cause of the patient's agony and methods of providing relief.

Whichever of the theories of origin of the human race we believe in, there is reason to admit that pain is as old as mankind, as is man's search for an escape from it; and it is inherent in any life linked with consciousness.

Before considering the history and means of pain relief, it is worth considering the nature of pain and why its remedy is of great importance to mankind. Pain has been defined as a symptom, a pointer to or indicator of disease. The *Concise Oxford Dictionary of Current English* describes pain as "suffering, distress, of body or mind". Sherrington, the famous physiologist, aptly defined pain as the "psychical adjunct of an imperative protective reflex". The word was derived from the Latin "poena", meaning "penalty". Thus pain is not simply a physical affliction, but can affect the mind and all our behaviour. It has played an important part in the

survival of man under adverse conditions and attention to the warning has at one time or another preserved the life of virtually every individual. It is a painful burn in childhood that teaches a child to have some regard for a flame, a painful toe or finger that makes the sufferer seek medical attention, and the pain of a fractured arm or leg that causes involuntary immobilization of the affected part and subsequent limitation of tissue damage until medical treatment can be obtained.

Pain can be initiated from many different parts of the body by a variety of mechanical or chemical stimuli such as pressure, trauma, extremes of heat or cold, severe oxygen lack and marked alkalinity or acidity. Sensitivity to pain varies greatly amongst different people, and in the same person under different environmental or emotional conditions. A few persons are apparently insensitive to stimuli which produce pain in the vast majority; in spite of intact normal sensory nerve endings, others may be hypersensitive. The absence of the sensation of pain, such as can occur in advanced syphilis, or diabetic neuropathy, or in leprosy, removes the protective reflex and leads to self-inflicted wounds and extensive tissue damage. Generally speaking, the reaction of a person to the pain of disease or an injury also depends on the cause of the pain, its site, its severity, his pain threshold, his mental disposition or the personal significance of an injury to the victim. Beecher observed:

To the wounded soldier who had been under unremitting shell fire for weeks, his wound was a good thing (it meant the end of the war for him) and was associated with far less pain than was the case of the civilians who considered their need for surgery a disaster.¹

Those of us who were privileged to serve the nation in the treatment of the casualties during the last civil war may recall the high incidence of gunshot wounds to the left hands of the soldiers. The precise cause for this was not known although it was more than possible that these wounds were self-inflicted in order to escape the rigours and obvious dangers of the battlefield.

Pain sensation is initiated by a variety of stimuli and is mediated by free sensory nerve endings through the nerve trunks and spinal cord to the subcortical and cortical centres of the central nervous system. The nervous pathway is rather complex, and for the sake of the medically uninitiated in the audience, the process can be

compared with that of the telephone system, with the telephone exchange representing the subcortical or the reticular formation in the midbrain. It is important to remember that pain in a particular area of the body is essentially "felt" in the cerebral cortex in the brain and is only secondarily localized to the site of its production. In the newborn infant, cortical activity is not developed and subcortical centres remain dominant. Consequently, although pain can be felt without demonstration of motor activity under certain circumstances (such as in a curarized adult), failure of reaction in small infants is probably due to an actual inability of the cortex to perceive or register pain. Some parts of the body which exhibit marked sensitivity and which have a good nerve supply (such as the index finger or face) have the largest cortical representation and it is in these areas that we can most accurately localize a painful stimulus. However, the complexity of the central nervous system—and here the analogy with the telephone system becomes less helpful—, sometimes results in pain being felt in areas other than those affected by the causative stimulus; examples of these are pain in the hipjoint, gall bladder and tooth being felt in the knee, shoulder and ear respectively. In rare circumstances, patients may suffer agonizing pain in a "phantom limb"—that is a limb which is no longer present because of a previous amputation.

There is hardly any one in this audience who, at one time or the other, has not suffered pain, as did many famous men of the past. Columbus was tortured with gout on his third voyage to the West Indies; Beethoven suffered terribly from gallstone colic. Michelet, the celebrated French historian, describing the reign of Louis XIV, divided it into two periods: "before and after the monarch suffered from fistula." The fate of Napoleon at the Battle of Waterloo was reported to have been influenced by his painful piles and gastric crises. Sir Francis Bacon was so seriously afflicted by pain that he wrote in his essays:

I esteem it the office of a physician not only to restore health, but to mitigate pain and dolours.

Similarly, John Milton's description of pain in *Paradise Lost* can only reflect his personal experience:

Pain a perfect misery, the worst of all evils; And excessive overturns all patience.

Sakya Muni announced in one of his sermons at Benares :

This is the noble truth of suffering, that to be born is to suffer, to die is to suffer, and to fall sick is to suffer.²

The concept that pain was related to sin and punishment has influenced man's attitude to the subject of pain relief. In some civilizations, pain was supposed to be inflicted by the angry gods for sins committed either by the patient or his close relations. In others, particularly among Nigerians and Africans in general, pain and disease are still believed to be caused by "enemies" in the community or at work, because of disputes over property such as land, houses and wives, or for positional advantage. Consequently, methods of pain relief are in the hands of the priests or worshippers of the gods. Along with natural remedies, the priests or the native "doctors" rely on sacrifices to the gods and sometimes scarification. The gods or devils "causing" the disease and pain, appeased by the supplications of the priests or the native doctors, eventually grant relief of pain after sacrifices have been duly made. Similar beliefs were held by the Babylonians, Assyrians, the ancient Egyptians and the Greeks.

After the birth of Christianity, there developed a new concept based on Divine Healing through the laying of hands and prayer. This is now being increasingly used along with modern medical methods for the treatment of pain and disease among every social class in this country as well as in other parts of the world. Today more and more Nigerians seek remedies for all types of diseases and pain from the formidable array of religious sects in the country.

From the brief discussion of the physiology of pain, it is obvious that many of the causative factors are amenable to treatment and removal of the cause is the cardinal principle in the relief of pain. This may take considerable time or may require surgery. Furthermore, there is another group of patients for whom curative treatment is impossible with the present state of medical knowledge, and all efforts should be made to alleviate their agony by any reliable method possible.

The broad principles of pain relief as practised today can be summarized in the following tables:

TABLE 1

COMMONLY USED METHODS

<i>Method</i>	<i>Principle</i>	<i>How Produced</i>	<i>Uses</i>
1. General anaesthesia	Controlled reversible loss of consciousness insensibility to pain \pm muscle relaxation	Drugs given by injection and/or inhalation	Any operation. Child birth. Painful investigations.
2. Analgesia, partial or complete	<ol style="list-style-type: none"> 1. Generalized pain relief with dullness of consciousness. 2. Decreased emotional disturbance 3. Increased pain threshold. 	Drugs by mouth, injection or inhalation of low concentration of some general anaesthetic agents.	Any form of pain except operative surgery.
3. Local analgesia	Localized insensibility to pain without loss of consciousness.	Drugs injected into vicinity of nerves or sprayed on the mucous membrane.	Most operations. Relief of localized pain. Childbirth.

TABLE 2

LESS COMMONLY PRACTISED METHODS

<i>Method</i>	<i>Principle</i>	<i>How Practised</i>	<i>Uses</i>
1. Hypnosis	State of altered consciousness; heightened suggestibility. Reduction of sensory intake.	Repetitive stimuli, auditory or tactile. Combination of suggestion with use of sedative drugs.	Operations. Childbirth. Painful procedures. Any form of painful conditions.
2. Acupuncture analgesia	Diminution of pain sensation in specific or desired areas to a level sufficient for surgical analgesia	Manipulation of the acupuncture needles at certain specific points of the human body; \pm basal sedation.	Operations. Childbirth. Painful procedures. Any form of pain.

The first three methods are complementary to each other and can be employed together as shown in a previous publication³ from our department at Ibadan, entitled "Effects on respiration of a combination of light general anaesthesia and inter-costal nerve block during upper abdominal surgery". Armstrong Davidson in his introduction to a history of anaesthesia⁴ remarked:

No discovery ever made in medicine has proved more beneficial to the human race than the discovery of anaesthesia,

not only because of the immense suffering which it has prevented during surgical operations, but also because the whole structure of modern medicine has drawn strength from its success, and surgery itself has been able to accomplish, with its aid, a greater advance in the last century and a quarter than in all the preceding millennia.

Genesis II, verse 21 reads as follows:

And the Lord God caused a deep sleep to fall upon Adam, and he slept; and He took one of his ribs, and closed up the flesh instead thereof.

This verse contains a remarkable description of pain-free thoracic surgery but there is no evidence that this was other than a trance or hypnosis. The first use of the word 'anaesthesia' in English dates from 1721 and it was presumably employed to indicate a loss of sensation in a limb or any part of the body. About four months prior to the public demonstration of ether anaesthesia by Morton in 1846, Elliotson delivered a Harverian Oration in which he said:

The loss of common feeling — anaesthesia, is but a form of palsy, and in it wounds give no pain. If this condition can be induced temporarily by art, we of necessity, enable persons to undergo surgical operations without suffering.

However, it is to Oliver Wendell Holmes, the physiologist, anatomist, and philosopher, who later became Dean of the Harvard Medical School, that we owe the present use of the word 'anaesthesia'. Similarly, the credit for the practical application in medicine of anaesthesia belongs to William Thomas Morton, a Boston dentist who first publicly demonstrated the anaesthetic use of ether (at that time referred to as sweet vitriol) although the evolution of anaesthesia was the result of the work of others.

The concept of general anaesthesia, a controlled reversible loss of consciousness associated with insensibility to pain, was only formulated in the years after 1864, although some mention of states similar to anaesthesia was made in ancient writings. It must be concluded that, in the prehistoric era, there was no knowledge of pain-allaying drugs, the rational basis of all pharmacology was entirely lacking and the borderline between medicine and sorcery was, at best, hazy.

Neither the scientific period which began with Greek civilization towards the end of the sixth century B.C., nor the

subsequent technological advances of the Romans, could rationalize on a logical approach to the conquest of pain. Hippocrates was aware of the pain-relieving effects of cold, and refrigeration analgesia was tried on and off until the middle of the nineteenth century. In 1807, Napoleon's surgeon-general, Baron Dominique Jean Larrey, observed that amputation could be painlessly performed on soldiers who had lain for some time in the snow at the battle of Preuss-Eylan, which was fought in the depths of a Polish winter.⁵ However, it was James Arnott, a Brighton physician, who in 1852 published a series of articles on the use of cold as a means of producing local insensibility, while in 1938 Fay described cryotherapy for the relief of pain.

Man was no more successful with drug-induced analgesia than with physical methods. Opium had been known to the Greeks from about 400 B.C. but, from all records, it never seems to have been used to diminish the pain of surgery. Some factors limiting its use at that time include its uncertainty of action and lack of proper standardization, for the amount which would relieve pain or even be ineffective in one person might cause death in another. It is also on record that the physician who caused the death of his patient in an attempt to relieve his pain was likely to be suspected of murder and, in any case, the repugnance of doctors to taking life, so clearly stated in the Hippocratic Oath, would make them wary of so dangerous a preparation. More important was people's attitude to pain which, as among some patients today, was regarded as providing an opportunity for a display of fortitude rather than something to be avoided. Thus in the early seventeenth century the use of pain-relieving drugs was a triviality to people. A rapid superficial operation must have seemed a triviality. During that period, all operations were superficial and surgeons worked with great speed. Another reason was the marked difference in status between the physician and the surgeon in the seventeenth century. It was accepted that the surgeon was an unlettered craftsman as the name by which they were then known implies (barber), while the learned physician would not demean himself with the use of the knife or even assist so humble a person as the surgeon. The surgeon was therefore strictly limited in the amount of treatment which he was able to carry out, partly by his lack of learning and partly by rules enforced by superior

authority of the physicians' guilds and colleges. Thus the surgeon was completely debarred from administering any internal medicine, anaesthetics or opiates. Surgical operations in those days were so horrible that the world-renowned anatomist, John Hunter (1728-93) referred to surgery as "a humiliating spectacle of the futility of science", and this same authority of his day, whose brother William Hunter was a famous surgeon, described a surgeon as "a savage armed with a knife"! These various factors prevented medical men from making any determined attack on pain until the end of the eighteenth century A.D.

Large amounts of alcohol were known by the ancients to produce insensibility and diminish the perception of pain, and there is evidence that both the Romans and Jews semi-anaesthetized their victims with alcohol prior to execution. The kindly women of Jerusalem gathered money to buy wine and frankincense to give criminals on the eve of their execution. "Vinegar was given to Christ instead of wine probably in mockery."⁶ Another remarkable step in the struggle to alleviate pain was the introduction of laudanum by Paracelsus in the sixteenth century; he also demonstrated the pain-relieving properties of sweet vitriol (ether) in chickens. It was in the middle of the eighteenth century that the need and desire for anaesthesia began to be felt, at first feebly, and then, after another hundred years, compellingly. The most significant expression of the changing ideas of philosophers was the acceptance of the doctrine by Galileo that "Science is measurement". Consequently, a rational approach to the administration of drugs by inhalation or by intravenous injection was attempted. Anaesthesia was eventually to be produced by drugs not only in the form in which they existed readily in nature but as gases, vapours and injections. It has been said, with some truth, that there was an element of luck in the discovery, but as with any other discovery, good fortune is most likely to visit the prepared mind, working in the prepared environment.

Anaesthesia was inspired principally by dentists for toothache and obstetricians for pain from childbirth. Surgeons were not really keen; speed was their goal and some even felt that painless operations would reduce their manual dexterity. The evolution of anaesthesia took almost a century and it is worth considering it in some detail.

Inhalational Anaesthesia

The era of inhalational anaesthesia began in 1754 with the discovery of carbon dioxide or "fixed air" by Joseph Black of Belfast, who laid the foundation of the atomic theory by showing that a given weight of calcium carbonate always yielded a definite quantity of carbon dioxide, which could, in turn, be reunited with calcium hydroxide to form the original quantity of calcium carbonate.

In 1771, oxygen was isolated by Joseph Priestley, the son of a nonconformist cloth-dresser, a Londoner and himself a unitarian minister. In the following year, he discovered nitrous oxide—the famous "laughing gas" and a commonly used general anaesthetic. Priestley experimented on laboratory animals and at one of his public demonstrations of the anaesthetic property of nitrous oxide, his house was set on fire by an angry mob. His unpopularity was found to be due to his liberal political opinions, for he favoured the principles of the French revolutionaries. In 1794 he was forced to emigrate to the United States of America, where he became a farmer; he died of carcinoma of the oesophagus ten years later. His work on oxygen and nitrous oxide was quickly taken over by Abbe Fontana, Lavoisier, Scheele, and the Rev. Stephen Hales.

Thomas Beddoes, a graduate in arts and medicine of the University of Oxford, founded a hospital, known as the Pneumatic Institution, in the city of Bristol for the relief of diseases and pain by means of gases. With the help of his friend James Watt of steam engine fame, he designed an apparatus for the manufacture of his gases. To Beddoes must go the credit for conceiving the possibility of medication by inhalation and the discovery of Humphry Davy, the son of a wood-carver, and an able assistant, who discovered the pain-relieving properties of nitrous oxide. Like many drugs used in anaesthesia and in the relief of pain, nitrous oxide was branded as a dangerous gas, probably because of its inability to support life. Dr Lathan Mitchell, an American physician, was a powerful critic whose authority was hard to challenge until Davy started experimenting with nitrous oxide at the Pneumatic Institution. Davy reported on the pleasurable sensations following inhalation of the gas, the state of mild intoxication it produced and its remarkable

pain-relieving effect when inhaled in adequate concentration.

In addition to administering nitrous oxide to several of his literary friends, he showed that continued inhalation of nitrous oxide could lead to loss of consciousness. Davy had become a nitrous oxide addict, a form of addiction which is occasionally met with today. At the age of 22, he delivered his inaugural lecture on the subject of laughing gas, in which he said that nitrous oxide "produces the same sort of cheerful intoxication when administered by the lungs as alcohol does when absorbed by way of the stomach".

Mention must be made of Henry Hickman for his vision of the possibility of and need for painless surgery. In a letter to T.A. Knight in 1824 Hickman wrote:

There is not an individual who does not shudder at the idea of an operation, however skilful the surgeon or urgent the case, knowing the great pain that the patient must endure and it is frequently lamented by the operator himself that something has not been done to tranquilise fear and diminish the agony of the patient.

To another colleague he further said:

How silly to be a doctor and not discover a way of preventing pain.

On 10 December 1844, Gardner Quincy Colton successfully demonstrated the analgesic effect of laughing gas to the public, and the following day Horace Well, a dentist from Hartford, Connecticut, allowed Colton to administer the gas to him for tooth extraction by John M. Riggs. Wells confirmed that he felt no pain during the extraction and was so thrilled that he got Colton to teach him how to prepare the gas. Having used the gas with success in many cases, Wells gave a public demonstration of its action at Massachusetts General Hospital in Boston before the students at Harvard and the medical faculty of the university. This was carried out on a student, who was only partially under the influence of the drug when the tooth was extracted. The bag of nitrous oxide was withdrawn too soon, the student yelled with pain and the demonstration was a failure. The audience pronounced Wells a humbug, and he was booted out of the hospital.

Wells was a man of vision and zeal who believed in painless surgery. The demonstration in Boston was a failure because the drug he employed was a weak one which might well fail under similar circumstances today. Whatever the reason for his fiasco, the surgeons of the hospital (like their contemporaries in many parts of the world) took no further interest in Wells or his technique and he returned home discouraged. He left Boston next morning for Hartford. In Hartford he gave another demonstration and administered a larger dose of nitrous oxide. This time he produced too profound an insensibility, and the patient nearly died. So disappointed was he that he relinquished practice as a dentist to become a bird fancier, travelling from one town to another with a troupe of singing canaries. Although Wells realized the analgesic effect of nitrous oxide he lacked the courage and persistence that were required to carry the scheme to a successful conclusion. Today, nitrous oxide is widely employed as one of the pain-killing drugs for major surgical operations, dentistry, and the relief of pain in labour. The latest advance in the use of nitrous oxide to relieve labour pain is the introduction and perfection of pre-mixed gases containing nitrous oxide and oxygen in cylinders (Entonox).

One of the audience at the unfortunate demonstration of nitrous oxide analgesia by Wells in Boston was William Thomas Morton, Wells's one-time pupil and later partner in dental practice. Morton was an astute observer and had a keen eye for business. Following these events, Morton sought a substance more powerful and reliable than nitrous oxide. With the help of Charles Jackson, a chemist of some repute, Morton painlessly extracted Eben Frost's tooth with diethyl ether on 30 September 1846 and got him to sign a statement to this effect in the presence of a witness, Dr Hayden. He further made sure that the incident was reported in the Boston Daily Journal on the following day. Morton subsequently claimed to be the sole discoverer of ether anaesthesia and this led to a fierce squabble between Morton, Jackson and other claimants. Morton sought permission of John Warren, a famous surgeon at the Massachusetts General Hospital, to try the new anaesthetic agent for the purpose of rendering a patient insensitive to pain during a surgical operation. He called the agent "Letheon", for he selfishly wanted to hide its identity for a large financial

benefit. The success of his demonstration of Letheon, carried out before an audience of students and staff of the Massachusetts General Hospital on 10 October 1846, can be judged by the words of the astonished surgeon, John Collin Warren:

Gentlemen, this is no humbug. It is the most valuable discovery ever made, because it frees suffering humanity from pain.

Another surgeon present was Dr Henry Jacob Bigelow who exclaimed:

I have seen something today which will go round the world.

Indeed, it did go round the world and this inaugural lecture bears testimony to Bigelow's prediction. Morton was so interested in a large financial return on the drug that he refused, for sometime, to reveal its nature. Instead, he distributed a pamphlet to Boston doctors to draw their attention to his availability for the administration of anaesthetics for private profit. Critical as we may be about Morton, it took a man of his drive and even ruthlessness to get anaesthesia firmly on its feet and win it due recognition in medicine. As William Osler pointed out:

In science, the credit goes to the man who convinces the world, not to the man to whom the idea first occurs.

About December 1846, there were reports of ether anaesthesia in London for the extraction of a tooth, for the painless amputation of a thigh and evulsion of a great toe nail.

Our next terrain was Scotland. Prior to 1847, James Young Simpson (the son of a baker), an Edinburgh obstetrician and later a Professor of Midwifery at Edinburgh University had been using ether for the purpose of relieving the pain of childbirth. However, on 4 November 1847, he demonstrated the anaesthetic property of chloroform and used it for childbirth rather than for surgery. He showed a dislike for ether because of its smell and sought a less pungent agent. The idea of painless childbirth with chloroform sparked off a controversy which had few equals in the history of medicine.

Child-bearing had been accepted from time immemorial as a natural process, but often treated with indifference and brutality. Although the art of caring for the child-bearing woman

was well developed at the height of the Egyptian, Greek and Roman civilizations, the standard of the care of the mother deteriorated with the decline of these civilizations. Medieval Christians saw in childbirth the result of carnal sin to be expiated in pain as contained in the primal curse of Genesis iii, 16:

Unto the woman He said I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children.

Simpson was a great advocate of pain relief in childbirth, having previously tried mesmerism and ether analgesia with some success. He was criticized by his fellow doctors but this was nothing compared with the opposition from the Church. It was asserted that his discovery was contrary to divine will. From the pulpits and in the press, women were warned that should they allow Dr Simpson to administer chloroform, the children born would be refused the sacrament of baptism. Many who supported the clerical view by the theory that pain was a biological necessity warned:

For tens of thousands of years births have taken place without any means of allaying pain. Has not nature disclosed the wisdom of God in her conduct of the process of birth? Assuredly, it is most presumptuous for man to have recourse to such innovations in the belief that he can improve upon the Creator's handwork.

The Church sent a circular letter to the physicians in Edinburgh

To all seeming, Satan wishes to help suffering women, but the upshot will be the collapse of society, for the fear of the Lord, which depends upon the petitions of the afflicted, will be destroyed.

More condemnation came from citizens who were probably influenced by the church and were concerned about public morality:

The pangs of childbirth are a moral guarantee of maternal affection, which is one of the sacred foundations of society. We feel sure that a mother will show self-sacrificing love only for a child to whom she had given birth in pain. Moreover, it is incompatible with the sanctity of the act of birth that so holy a place as the lying-in chamber shall become a stage where mothers are made drunk with chloroform, for it is impossible that children born in so immoral an atmosphere shall ever grow up into pious men and women.

Simpson, who was convinced he was rendering a service to mankind, rather than disobeying the wish of God, announced to the women:

Not in sorrow shalt thou bear children.

Many who would have benefited from pain relief in labour were prevented by their religious scruples. Simpson was convinced that God could not be a vindictive God, and that an everlasting curse could not be God's will. He therefore did a thorough search of the Bible and found a suitable reply to his critics from the Epistle of James IV, 17:

Therefore to him that knoweth to do good and doeth it not, to him it is sin.

Simpson further sought to show that in the original Hebrew the word translated as sorrow means physical effort rather than bodily pain, and words used elsewhere in the Bible for the pain of childbirth differ from those in the passage in Genesis. In order to incriminate him, the 1881 Revised Version of the Old Testament stuck strictly to the same word:

I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children.

Future translations supported this view. Simpson's practice of painless childbirth received less criticism after his reply although some felt he should have ignored the accusations. Others who felt chloroform was justified since ergot of rye had been used for years to decrease the duration of agony replied:

Whosoever shall keep the whole law, and yet offend in one point, he is guilty of all. (James ii, 10).

His victory was complete when, in 1853, Queen Victoria received chloroform during the birth of Prince Leopold. In St. Andrew's Chapel, Westminster, close to the Davy memorial, there is a marble statue of Simpson with the inscription.

To whose genius and benevolence the world owes the blessings derived from the use of chloroform for the relief of suffering. LAUS DEO.

The search for further methods of relieving labour pain continued. The work of Dr R.J. Minnitt of Liverpool in the 1930s, with his popular gas and air apparatus, deserves mention. In 1942, J. Elam reported the use of trichloroethylene analgesia in obstetrics using concentrations of between 0.35 and 0.5% in air. Since then various modifications of the machines for administering this agent have been described and used extensively all over the world.

Regional block

In contrast to the use of narcotics or inhalational agents in the relief of pain in childbirth, epidural lumbar block can provide an uninterrupted and completely painless labour. This method was introduced in obstetrics by Graffagnino and Seyler in 1938 and the continuous technique by Flowers, Hellman and Hingson in 1949. The technique has been popular in the United States and Canada for many years. In recent years this service has been offered in an increasing number of British hospitals and has become more popular since the introduction of Bupivacaine, a long acting local analgesic agent of which the author has had considerable experience.⁸

Regrettably, only a few patients have benefited from this painless revolution in Nigeria, but it is my hope that this service of "childbirth without tears" will be enjoyed by many more Nigerian women when more anaesthetists with experience in the technique of epidural block are available. There is no doubt that this practice has been shown to be conducive to emotional well-being and to less maternal exertion, that the mother remains awake during a painless labour and delivery and can experience the pleasure of actively participating in the birth of her child.

Management of Post-operative Pain

Reference has already been made to post-operative pain. Every operation produces some discomfort while most produce pain of varying severity. Patients in pain are restless during the period immediately preceding the return of consciousness. They are often frightened and disorientated, and usually find sleep evasive particularly in the first few days after

surgery. Pain produces tension and tension more pain and it is the duty of the doctor, for humanitarian reasons, to reduce the agony to tolerable proportions.

Unfortunately, the treatment of post-operative pain is badly managed in most hospitals except perhaps in the wards where some of the medical personnel have undergone a major surgical experience. In Nigeria, and probably in all black Africa, there is a tendency to prescribe inadequate doses of pain killing drugs to our patients with the result that the pain is at no time completely abolished. This practice originated from clinical impressions and assumptions that Africans living in the tropics are more sensitive to opiates than Caucasians living in a temperate climate.⁹ Recent studies by the author have disproved this.¹⁰ The treatment of post-operative pain must be started long before the patient undergoes severe agony, and drugs must be given in adequate dosage. Thomas Sydenham in 1680 remarked :

Among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium.

This statement is still true today. As sleep is of the utmost importance following surgery, if morphine is given in adequate dosage to control pain, the hypnotic effect of the drug will normally be sufficient to ensure enough sleep. Although a reliable and potent analgesic, morphine is not free from undesirable effects but this can be said for all drugs. It can cause distressing vomiting, obstinate constipation, and its repeated use can lead to tolerance and addiction. To the sufferer, tolerance is a greater problem than addiction. The other effective derivative of morphine, diamorphine (heroin) is also one of the greatest drugs of addiction. Pethidine, which next to morphine is the most widely used analgesic today, was discovered accidentally by two German chemists of the Bayer Organization. The world production of pethidine is about 26 tons annually, corresponding to approximately 280 million doses. This drug is not a very satisfactory analgesic although it is often prescribed as the sole analgesic, especially by newly qualified residents, physicians and many surgeons, who seem to have been indoctrinated with a fear of morphine.

In recent years, more synthetic analgesics have been introduced into clinical practice and have been found potent though with fewer side-effects and shorter duration of action than the opiates. These drugs include fentanyl (sublimaze), and pheneridine (operidine). Despite all the numerous pain-killing drugs already in use, there is a continuous search for newer agents since all these compounds fall far short of the ideal properties of analgesics.

Mention should be made of the popular, non-narcotic analgesic agents. In the eighteenth century, willow bark, which contains salicin, was used for fever and pain relief as a cheap substitute for cinchona bark. The latter half of the nineteenth century saw the first use of sodium salicylate (commonly prescribed by the older clinicians as 'sodii sal') in acute rheumatism; and the preparation and introduction of acetyl-salicylate (aspirin) by a German chemist, Dreser, in 1899.¹¹ Aspirin is still the most widely used pain-relieving drug. It is estimated that between 8,000 and 10,000 million tablets of the drug or preparations containing it are consumed in Nigeria every year. Although it is also effective in lowering body temperature, aspirin will only relieve pain of low intensity arising from somatic structures such as the skin, muscles, bones, and joints. A number of other substitutes, such as phenacetin, paracetamol (a metabolite of phenacetin with less adverse side-effects than phenacetin), and amidopyrine derivatives are available. This lecture would not be complete without a warning against the indiscriminate use of these notoriously advertised drugs. Haemorrhage, as evidenced by occult blood in the stool, has been found to occur in about 70 percent of people taking aspirin, and hypoprothrombinaemia (a type of bleeding tendency with impaired clotting) occurs with large doses. Chronic administration of phenacetin, an active ingredient in Phensic and Cafenol, has been shown to cause met- and sulphaemoglobinaemia, haemolysis, and the insidious onset of chronic nephritis which is often fatal. It would seem therefore that phenacetin is a drug that could well be discarded, for it has no unique advantages, and its continued existence in the market in a developing country like Nigeria where health education is negligible, even among the enlightened populace, is hazardous. The administration of proprietary preparations containing

amidopyrine is dangerous and they should never be used. The chief toxic effect is agranulocytosis (a condition in which there is a deficiency of white blood cells with a resulting threat to the body's capacity to combat superimposed infection.)

Acupuncture analgesia

Acupuncture analgesia has been extensively used in China for well over fifteen years and several hundred thousand patients have now been allegedly operated upon successfully under this form of anaesthesia.

Acupuncture analgesia is induced by needling with a special acupuncture needle or needles at certain specific points of the human body either manually or through electro-acupuncture stimulation producing bodily reactions. The patients under such anaesthesia remain mentally clear throughout the entire course of the operation; their various bodily sensations and physiological functions remain essentially normal. The pain sensation has been so numbered or diminished that such patients can undergo painful surgical operations without suffering from pain.

This method of anaesthesia has been claimed to be safer than drug-induced anaesthesia when operating on the seriously ill or debilitated and aged patients, to cause few post-operative complications and relatively rapid convalescence. It is also claimed to be simple, economical and practical, requiring neither expensive potent anaesthetic drugs nor complicated equipment, and therefore found to be suitable for medical workers in rural areas.

Nevertheless, at present there are still some deficiencies in the technique. It has not yet been perfected to the level of producing complete freedom from pain in all situations. In some instances there is either incomplete relaxation of muscles or the patient could still feel an unpleasant sensation of retraction of the internal organs.

Thus the struggle to perfect the technique as well as to disseminate the knowledge to the whole world for the benefit of mankind continues.

Pain Clinics and Intractable Pain

The value of pain relief in clinical medicine has reached such a dimension as to warrant the establishment of pain clinics in many hospitals in Europe and North America for the management of intractable pain. Clinicians engaged in such practice are expected to approach the patients with the utmost of delicacy and compassion. The management of patients with chronic pain is one of the most challenging situations with which a clinician is faced. As mentioned earlier, pain may signal a pathological condition which must be removed where possible to effect permanent relief in addition to actively relieving the patient of distress. In the majority of cases, the causative factors may be unknown or incurable as in malignant disease. The clinician must then employ the entire gamut of therapy available to stop this unnecessary suffering. It is not intended to elaborate on the various methods used in the relief of such agony. It will suffice to mention that any of the following, or a combination of them, may be used: analgesic drugs, tranquilizers and nerve blocks with agents such as bupivacaine, alcohol, phenol, ammonium compounds, and either hypothermic, hyperosmolar or hypo-osmolar solutions. In recent times, as a result of the theoretical possibilities of the "gate control theory of pain" new therapeutic approaches to pain relief are being introduced into clinical medicine with apparently promising results. In 1967, Wall and Sweet reported pain relief in eight patients by electrically stimulating the larger fibres of the peripheral nerves in painful extremities. Other available methods still involve the anatomical interruption of the pain pathways while new approaches based on expanding neurophysiological data are appearing.

Modern anaesthesia and pain relief are available only in a small number of hospitals in Nigeria today. It is my hope that these facilities will be made available everywhere. This makes it mandatory therefore that all doctors to be engaged in the health care delivery service be adequately exposed to anaesthesia and methods of pain relief because one of the greatest services a doctor can do his patients depends on his acquiring skill in the management of pain. Hippocrates himself believed that "divinum est opus sedare dolorum" (divine is the work to subdue pain), because in the words of John Dryden (1631-1701):

For all the happiness mankind can gain, is not in pleasure, but in rest from pain.

Today, we have all heard of Davy, Morton, Wells, Simpson, and many other great benefactors of suffering creation. They have all achieved triumph over pain. It is gratifying to mention also that within the relatively short period of the establishment of the Department of Anaesthesia in this university, some notable contributions have been made which have received international recognition. These include respiratory physiology in sickle-cell patients during and after anaesthesia,¹² regional analgesic technique for surgery of direct inguinal hernia,¹³ response to muscle relaxants in patients with multiple neurofibromatosis,¹⁴ and anaesthetic technique for surgery in difficult situations such as in remote areas or an ill-equipped hospital.¹⁵ I believe that with receptive minds and a congenial environment, perhaps the next lecturer from the department may report on the achievements of the Department of Anaesthesia of this university in particular and Nigeria in general in his inaugural lecture with an equally appropriate quotation about the triumph over pain.

The conquest of pain was indeed "a victory, not for today, not for our own time, but for another age and all time; not for one nation, but for all nations, from generation to generation as long as the world shall last"¹⁶.

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