*nhs*Managers.net | Briefing | 3 August 2026

Medicine for Managers

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Anaesthesia and Surgery

It is hard to conceive how absolutely dreadful any sort of surgical intervention would be without the wonders of anaesthesia. It is estimated that about 60% of the population, both male and female, undergo some sort of surgical procedure in their lifetime. Research suggests that, for patients over age 65, that figure is about 50%. Surgery performed before the development of anaesthesia would have been both excruciating and dangerous.

In the history of health and medicine, the invention and development of anaesthesia is relatively new. In the millennium prior to anaesthesia, those who professed to provide medical care were often confronted by patients in pain and there were a variety of of recipes, concoctions and sedative mixtures available to relieve at least some of the symptoms.

From the time of the Romans to the medieval period of the eleventh century, (and more recently in other parts of the world) there are stories of a mixture called ***dwale***, made from opium and mandrake juice with hemlock, henbane, vinegar and boar bile to induce sleep.

In the middle ages, physicians might have used sponges soaked in opium and mandrake juice, to induce sleep and reduce pain and distress.

Mandrake Juice is a highly toxic substance with effects including abnormal heart rhythm and sometimes death. It is derived from the roots of the ***Mandragora*** plant, which had sedative and anaesthetic properties. It had nothing to do with the resurgence of its use as ***Mandrake Restorative Draught***, in ***Harry Potter***, to cure petrification!

From the 1600s onwards, the use of ***opium*** (*a non-synthetic narcotic derived from the poppy and containing morphine and codeine*) was used medically for pain relief.

> *It was dangerous because of its serious consequences including slow breathing, coma and death when used in unregulated dosage. Laudanum (opium dissolved in alcohol) was also commonly used.*

Whatever substances were employed to ease the pain associated with the surgeon's craft, in essence the most effective way to undergo surgery was to be extremely quick and as precise as possible.

Robert Liston (1794-1847) was known for being a very fast surgeon, some-times undertaking leg removals in less than 30 seconds.

Indeed there is the (*probably apocryphal*) case of the surgeon amputating a leg in 25 seconds, where the patient died of gangrene, the assistant also died of gangrene having had two fingers severed whilst supporting the leg and a spectator died of shock!

A case with a 300% mortality must stand as a record for all time.

Other techniques to render a patient insensible to facilitate surgery included a technique dating back to ancient Greece where physicians would compress (effectively strangle) the carotid arteries in the neck to induce unconsciousness.

The word 'carotid' comes from the ancient Greek word, 'to stupefy'. Unfortunately, death was a frequent 'side effect'.

The Painting by Rowlandson (1786) shows surgeons amputating a leg.

The British Surgeon, John Hunter, around 1785 used nerve compression to induce numbness and reportedly successfully removed limbs without pain.

In about 1775, Austrian Physician ***Franz Mesmer*** produced a theory of 'animal magnetism' where a body fluid could be activated by magnetism.

He would use magnets and place patients in a state of 'suspended animation' to achieve harmonious fluid flow and claimed to render them oblivious to the pain of surgery.

Accused of fraud by Viennese physicians, he left Austria for Paris where he developed 'Mesmerism' which did appear to improve some nervous disorders and led to the use of hypnotism in legitimate treatment.

By the mid nineteenth century, surgeons became increasingly attracted to ***ether***, made by distilling ethanol with sulphuric acid.

In 1846, the American dental surgeon, ***William Morton***, removed a tumour from the neck of a patient publicly using gaseous ether.

Two years later, in 1848, surgeons showed that another agent, ***chloroform***, could ease pain of childbirth and facilitate surgery.

Neither ether nor chloroform is used for surgery nowadays but the drugs did lay the foundation

of modern anaesthesia and the range of modern drugs now used.

Modern anaesthesia uses a combination of intravenous and inhalation drugs to provide rapid onset, control and speedy recovery.

Induction Agents such as ***Propafol*** or ***Ketamine*** rapidly induce sleep with minimal side effects and rapid recovery.

Inhalational Anaesthetics maintain unconsciousness during the surgery and include the well-known ***Nitrous Oxide*** *laughing gas,* or ***Isoflurane*****.**

In addition, opioid drugs for ***Pain Control*** such as ***Fentanyl*** or ***Morphine*** and ***Muscle Relaxants*** such as ***succinylcholine*** to facilitate paralysis result in rapid, smooth, effective, and safe anaesthesia with minimal side effects.

Local Anaesthetic, such as ***lignocaine*** is used for regional nerve blocks to numb specific areas.

How far we have come!

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