

Review Article

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Historical essay: An Arabic surgeon, Ibn al Quff's (1232–1286) account on surgical pain relief

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Abstract

This is a review of Ibn al Quff's account of surgical pain relief in his surgical book *Al Omdah*, in which he mentioned the word anesthetic (Al moukhadder) and the involvement of physician (al tabbaaee) to give mixture of drugs to prevent pain in a surgical condition to relieve the patient from pain or to make surgical management possible. Hich indicated one rare occasion to such description in Arabic medical texts. Methods of administration of these drugs were inhalation, ingestion and by rectal suppositories. The drugs used in anesthetic sponges include all the drugs that are recorded in the modern literature of anesthesia. They are as follows: opium, mandrake, *Hyocymus albus*, belladonna, *Cannabis sativus*, *Cannabis indica*, wild lettuce. The anesthetic sponge, mentioned in many references as an inhalation method, may be of symbolic value to surgery.

Key words: Ibn al Quff, Ibn El Quff, Ibn al Koff, Ibn al Kuff. Medieval Medicine, health preservation Surgery, Pain relief. Arabian anesthesia. Anesthetic sponge. Natural Syria

WHO WAS IBN AL QUFF?

Ibn al Quff was born in 630 AH/1232 CE and died in Damascus in 685 AH/1286 CE. He indicated that anesthetics can be given by inhalation and he described the drugs used in anesthetic sponge [Figures 1 and 2].

His full name was *Amin al Dawlah Abu al Faraj Muwafak Al Deen ibn Ya'qub Ibn Ishaq Ibn al Quff Al Malaki Al Karki*. He has authored many books, the most important being a surgical manual "*Al Omdah fi sina'at al jirah*". The book consists of 20 *maqalas* of which *maqala-17* is devoted to traumatology, while *maqala-19* discusses surgical problems and their treatment from head to foot. This book was printed on two occasions, once in India and the other time in Jordan in the 1930s and 1990s, respectively. His other books were manuscripts namely *Al Shafi Fi El Tobb* (The healer in medicine) which can be found in Vatican library and in the British museum, *Jame'e Al Gharad iFi Hifz*

Al Sihah wa Rafi'e Al Maradh (Compodium in preserving health and eliminating disease) found in the British Museum, *Al Oussoul Fi Sharh Al Fousoul* (Foundation in explanation of Hippocratic Collection) found in Cairo, Istanbul and Paris, and printed in Alexandria in 1902 and lastly, *Al Kouliat Fi Kitab Al Qanoun Fi Al Tibb* (Synopsis of Avcina's Qanoun) available in Al Assad Library in Damascus, Syria, where he settled till his death [Figures 2 and 3].

HISTORICAL PROSPECTIVE

In the search for health and cure, human race developed all possible means to achieve this goal.^[1,2]

To trace the development of medical and surgical practice in the old world, it would be logical to follow the development of human societies. World civilization first started along the major rivers of the Middle East, namely

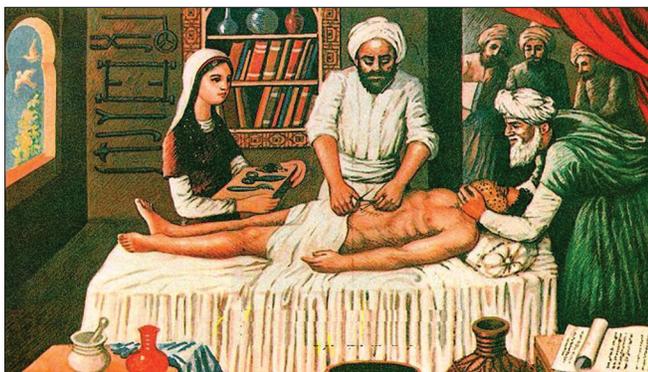


Figure 1: Artistic impression of Arabia anesthetic sponge, in which the surgeon operates and the tabbae keeps the sedoanalgesic soaked anesthetic sponge over the nostril and squeezes the liquid which is absorbed by the mucous membrane of nose and mouth (published with the permission of Pan Arab anesthesia group)

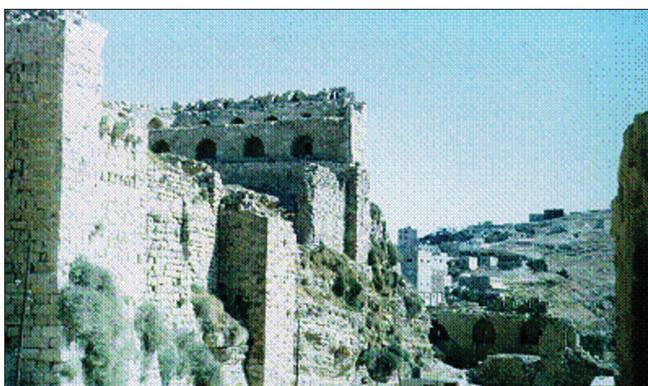


Figure 2: Karak Castle, where Ibn al Quff was born. During his time, it was in Syria, and now it is in Jordan



Figure 3: The first page of Ibn al Quff's manuscript of his surgical book al umdah with his full name and a short biography

the Nile valley, and in between the rivers Euphrates and Tigris in the land of Mesopotamia 4000 years ago. Indian and Chinese civilizations sprouted out almost in the same time in the Far East of Asia. The oldest medical writings are found in cuneiform tablets [the oldest medical handbook] and in Eber pyperus. Both contain medical text describing the medical and herbal treatments. The Assyrians herbal contained belladonna, *Cannabis* and mandrake. The ancient Egyptians used opium poppy for colics and diarrhea. They influenced the Greek medicine. The Assyrian and Egyptian physicians could get artificial sleep for their patients by quickly compressing carotid vessels of the neck; this practice was followed as well by the Greek physicians.^[2-6]

Dioscorides (circa 54–58 CE), a Greek physician and surgeon, recommended patients should take mandrake mixed with wine before limb amputation: "For such as cannot sleep, or are grievously pained, and upon whom being cut, or cauterized they wish to make a not-feeling pain".^[7] Celsus (CE 14–37) in *De Medicina* suggests the use of opium before surgery.^[8]

Surgical knowledge in India was very advanced. The following operations were carried out by Indian surgeons: tonsillectomy, amputation, tumor excision, hernia repair, repair of harelips, removal of bladder stones, couching cataracts, nose repair, and cesarean section. They also developed surgical instruments. They knew the washing and bandaging of wounds. *Hyoscamus* (Henbane) and *Cannabis indica* were used as anesthetics. In some cases, hypnosis was used during surgical treatment. In the ancient Indian work *Sushruta Samhita*, written perhaps as early as 400 BC, alcohol was advised to be used before surgery to produce insensibility to pain.^[9]

The Chinese developed acupuncture and they used opium powders for inhalations.

Greek and Roman medicine was in a way a continuum. The father of medicine, Hippocrates, c.460–c.370 BC, and the great physician Galen of the second century influenced medical thoughts over centuries. According to his recommendations, great care should be practiced with the use of powerful narcotics such as opium, considering it a dangerous drug. It is to be used in colics and in other highly violent pains.^[10]

The Romans used decoction of mandrake in alcohol. Pliny (23–79 CE) has said the following about the juice of mandrake: "Administered in doses proportional to the strength of the patient, this juice has a narcotic effect it is given for injuries inflicted by serpents, and before incisions of punctures are made in the body, in order to insure insensibility to the pain". By the time of Paulus, (7th century) opium and mandrake had fallen into neglect.

Arabic translation of the Greek medicine helped to make Islamic physicians supreme in the Middle Ages.



Figure 4: Chapter 13 in which Ibn al Quff explains the causes of surgical pain and about pain relief. He indicates the presence of al tabbaee to administer analgesia and consultation in ninth word, second line of the fourth paragraph

relieves the pain in four ways: Firstly, by its coolness it blocks the conduits of the spirit and prevents painful sensation from penetration, so it reduces the feeling and the pain is relieved or prevented. Secondly, by its coolness it hardens the essence of the spirit and prevents it from penetration and circulation. Thirdly, painful feeling happens by the presence of heat and moisture, and the anesthetic is cool and dry, thereby antagonizes it. This reduces its force and makes it weak. Fourthly, since the anesthetic has some poisonous effect, the sensory force is reduced, resulting in pain reduction.

The first (true pain relief) way is the beneficial one and has a good outcome, but the second one although can give pain relief or is used in (surgical) treatment, as it reduces pain it reduces the vital force and fixes the painful substance to the organ. So the surgeon should use it only in great tasks” (2024–32).

The Soporific Sponge (Anesthetic Sponge) “Inhalational Anesthesia” (Al Esphanjah al Mourakkidah)

The Arab surgeons' application of botanication analgesic sedatives in operative surgery was debated and discussed by many historians. Modern anesthesiologists would find it difficult to comprehend. This is because medieval physicians lacked the currently existing principles of physiology and pharmacology, though they used sensible approach to explain the principles of inhalation and analgesic effects, governed by existing Greek doctrines of four humors. Ibn al Quff is no exception. Though he lived in a period where some criticism was directed to old theories, it led to the production of new ideas like the explanation of pulmonary circulation by Ibn al Nafis

and the capillary links to venous side of the circulation by Ibn al Quff. Modern anesthesiologists tried to link the past, and thought of inhalational anesthesia even with unsuitable drugs. Opium and other drugs were not volatile to the extent to produce anesthesia, like ether and nitrous oxide, in the middle of the 19th century. This idea of medieval inhalational anesthesia was rejected by some and accepted by others as mucous membrane absorption of squeezed narcotic mixture in the water of the sponge [Figure 1]. Some others indicated that inhalational approach was just a sign of hopeful thinking and it was without effect.^[32] In Ibn al Quff's account on pain relief during surgery, he indicated the dangers and side effects, and in discussing an individual single drug, he had indicated if it was suitable for ingestion, drinking, inhalational method or rectally by inserting soaked suppositories with these drugs.^[25-32]

One author commented as follows: “The use of general sedatives in operative surgery in the Arab anesthetization was unique, true in its action and merciful to the receiver. It differed completely from the alcoholic drinks which the Indians, Greeks and Romans forced on their patients just to reduce the pain but not to relieve them from it. This scientific discovery is attributed to an Italian or the physicians from Alexandria. The truth remains that the technique of use of “soporific sponge” is purely in Arabic and was not known before. The “soporific sponge” was put in juice of hashish, papver, and hyocymine, and then dried under the sun. During use, it was humidified again, and placed at the patient's nose so that it gets absorbed by the mucus membranes, causing deep sleep and relief of surgical pains. The discovery was introduced into Europe and was practiced until the 18th century when modern inhalational anesthesia was introduced in the 1840s”.^[15]

Another author has commented as follows: The principle of anesthetic inhalation was known to Arab Islamic surgeons as described by an Arab medical historian: “Anesthetization was known in the Arab East during Middle Ages. The technique consisted of either inhaling anesthetizing material placed on sponge called “soporific sponge” or placed in a swinging censor spreading odors of anesthetizing materials that are perfumed with Al-Oud. Some were used orally. The technique depended on suggestibility and the use of the following plants: *Conium maculatum* (Hemlock), *Papver somniferum* and *Hyocymus albus*, belladonna, *C. sativus*, *C. indica*.”^[12-19]

CONCLUSION

In conclusion, Ibn al Quff's account on pain relief during surgery gives us a unique opportunity to know about how he dealt with pain in surgery or in surgical conditions. He mentioned the danger of the available drugs and he indicated that they should be used only in great task. He also indicated that al tabee should be there to administer

the drugs and to advise the indication for their use. He definitely indicated that the anesthetic should be used through ingestion, drinking, inhalation and suppositories. All the drugs used through inhalation route were quoted in western literature as a recipe for anesthetic sponge. Ibn al Quff did not give recipes in his book as in the western sources; he only described the recopies of the drugs as a sleep inducing and analgesic opium, mandruk, *Hyocymus albus*, and *Nigra letteci*, belladonna.

He was the first on to give a description on capillary and venule connection, which is known today as microcirculation.

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