



M. Basheer Ahmed, MD

Abu Qasim Al- Zahrawi Albucasis (936-1013)

During the eighth to 15th centuries, when Europe was in the Dark Ages, a great civilization was flourishing in the Middle-East and southern part of Europe under the Muslim empire. It was from Muslim Spain, that the era of modern civilization dawned over the whole of Europe. Cordoba was the capital of Spain in the ninth century and became the center of learning. The city had several teaching institutions and had the largest collection of books in the then-known world which included the original works of Aristotle and other great philosophers and scholars. European scholars flocked to the universities in Baghdad and Cordoba and returned home to spread the knowledge they gained. During this period a great surgeon who is truly recognized as the father of surgery was born just outside the city of Cordoba. Abu Qasim ibn al-Zahrawi, also known in the West as Abul Casis, was born in the town of Al Zahra located six miles northwest of Cordoba, Spain. His ancestors were Arabs who settled in Spain in the eighth century and he lived most of his life in Cordoba where he received his education. He taught and practiced medicine and surgery in Cordoba and became the physician of Caliph. The street where he lived is named after him (Calle Albucasis) and his house has been preserved by the Spanish government. Al-Zahrawi is considered to be the father of surgery as he became famous throughout Europe for teaching new methods of surgery and inventing several instruments which were used in most of Europe until the 17th-18th century. In addition to his knowledge of medicine and surgery he was very skilled in the use of simple and compound remedies and thus he was also known as the "Pharmacist Surgeon". He wrote extensively on cardiac drugs, emetics, laxatives and cosmetology. Translation of Al-Zahrawi's work "Liber Servitoris" provides readers an explanation of preparing simple and compound complex drugs that were generally used in those days¹.

His greatest contribution to the history of medicine is his famous book "Kitab-al-Tasrif," a thirty volume

encyclopedia on medicine which is based on his personal experiences in the practice of medicine for 50 over years. It was first published in the year 1000 and covered a broad range of topics from dentistry to child birth. He had a sound knowledge and understanding of the relevance of anatomy in surgical procedures. In the introduction of his book, "Kitab-al-Tasrif," Al-Zahrawi stated that learning the art of surgery is lengthy, and a good practice in surgery requires sound knowledge of anatomy. "He who devoted himself to surgery must be versed in the science of anatomy."² However, the anatomical study of the human body was problematic because it required dissection. A number of religious scholars opposed the dissection of the human body since it implied mutilation and disrespect of the diseased person. In spite of this opposition, Al-Zahrawi and other scholars made frequent references to dissection of both animal and human bodies³. This shows an intellectual open-mindedness in earlier Islamic times. During this period of Islamic history, the Muslim scientist created a non-dogmatic atmosphere that encouraged people to debate, share ideas, seek new knowledge and examine evidence⁴.

The first two volumes of the Al-Tasrif were primarily devoted to surgery. The first dealt with cautery which was used extensively in Arabia and it also contained a detailed description of the use of various instruments. There was also an extensive description of incisions, perforations, wounds, and the healing process. Al-Zahrawi made several useful additions to the art of surgery. He described various types of thread (including catgut) for stitching wounds, which is still practiced in modern surgery. He pointed out for the first time the dangers associated with amputation above the knee and above the elbow. He was one of the



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first physicians who explained hemorrhage which cannot be easily controlled, the disease known today as hemophilia. He also pointed out the hereditary nature of this disease.

The second volume of Al-Tasrif was devoted to the description of lithotripsy, lithotomy, fractures, dislocations, and special treatment of fractures of the pelvis. He wrote extensively about injuries of bones and joints, fractures of the nasal bones and the vertebrae. In fact Kocher's method for fixing a dislocated shoulder was explained by Al-Zahrawi long before Kocher. He also described tonsillectomy and tracheotomy operations he had performed⁴.

The third volume described detailed techniques of performing ophthalmic operations including cataract surgery. Al-Zahrawi was also an expert dental surgeon. He discussed non-aligned teeth and showed a way to correct them. He also developed a technique of replacing defective teeth.

Over 100 chapters were devoted to describing the details of various operative procedures including amputation, and the crushing of bladder stones. He used the grooved probe for dislodging urethral obstructions and the invented sponge tipped probe for dislodging foreign particles from the throat. He also used a syringe for irrigation of the bladder and cleaning of the ear. Al-Zahrawi also wrote about obstetrics and described several instruments used for delivery. He was the first to describe the Walcher position in obstetrics. His book contains pictures of gynecological instruments used in the 10th century e.g. the vaginal speculum and instruments to bring out a dead fetus⁵. He was the first to write about ectopic pregnancy. Al-Zahrawi also treated hydrocephalus in young children by making a small hole in the skull by

means of cauterization to extract the fluid.

The last volume of his encyclopedic book Al-Tasrif contained a description of 200 surgical instruments. The majority of these instruments were devised, designed, and used by Al-Zahrawi himself.^{6,7,8} He included illustrations of the surgical instruments. These figures probably were the first of their kind and they constituted a unique contribution to the history of surgery.

Al-Zahrawi was considered one of the early leading "plastic surgeons" as he performed many plastic surgery procedures. In the 11th chapter of volume 30 of his book he described many principles in that surgical field⁹.

His writings were translated into Latin and were used as the standard book of medicine in Europe for several centuries. His writings on anatomy and surgery raised him to the level of Hippocrates and Galen. In fact, his work represented the first step toward surgery as an independent specialty away from medicine, grounded on the knowledge of anatomy. Al-Tasrif became famous in the universities of Europe in the middle ages and was the chief reference work for surgery in the universities of Italy and France.¹⁰

Al-Zahrawi was the first in Muslim Spain to establish a large medical school. He was very meticulous about maintaining a high standard of education and medical ethics. Al-Zahrawi emphasized the importance of a good doctor-patient relationship, ensuring the safety and trust of the patient irrespective of their social status. Al-Zahrawi was one of the first scholars in Islam to promote nursing and encouraged women to become midwives. Because of his enthusiasm and devotion, good hospitals and nursing care

were enhanced in Andalusia (Spain)⁹.

Guy de Chauliac, a fourteenth century French surgeon, quoted Al-Tasrif over 200 times in his book, "The Great Surgery" or "Chirurgia magna." Pietro Argallata, a 15th century European surgeon, said of Al-Zahrawi, "Without doubt he was the chief of all surgeons." Jaques Delechamps, another 16th century French surgeon, made extensive use of Al-Zahrawi's writings in his elaborate commentary, confirming the tremendous contributions of Al-Zahrawi in the field of surgery.

Al-Zahrawi's work was initially translated into Latin by Gerard of Cremona in 1187 and over the next five centuries it was translated in Hebrew, French, English and other European languages. After the introduction of printing press, a good number of Arab writings were published in Latin translation. Quite a few of these books passed through many editions in a very short period of time. Many of these translated books are still available in the libraries in Berlin, London, Paris and Washington D.C.¹¹. These additions no doubt constitute a proof as to the wide readers of these books through out the world.

Dr. Basheer Ahmed is a former Professor of Psychiatry at UT Southwestern Medical School in Dallas and has been in the private practice of psychiatry in Fort Worth since 1980. He is the founder and chairman of Muslim Community Center for Human Services of North Texas which provides free medical and social services to indigent residents in this area. He has recently edited two books "Muslim Contribution to World Civilization" and "The Islamic Intellectual Heritage and its Impact on the West" He can be reached at mbahmedo3@hotmail.com.

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