Surgical scalpel used in the treatment of “infantile hydrocephalus” by Al Zahrawi (936–1013 A.D.)

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Hydrocephalus is a term derived from the Greek words “hydro” and “cephalus” meaning water and head, respectively; therefore, this condition is generally named as “water on the brain” [5]. It was first described by the ancient Greek physicians Hippocrates (5th century B.C.), the father of medicine, and Galen (130–200 A.D.) as a disease caused by an extraaxial accumulation of water rather than enlargement of the ventricles [3, 5]. For the treatment of hydrocephalic children, surgical evacuation of superficial intracranial fluid was first described by the Muslim surgeon Abu al-Qasim Khalaf ibn al-Abbas Al-Zahrawi (936–1013 A.D.), the father of surgery, known in the western medical literature as Abulcasis or Albucasis (Fig. 1) [3, 4, 6]. He lived and practiced surgery and medicine in the city of Al Zahra, the capital of Al Andalus in the 10th century [4]. He was the personal physician to Abd Al-Rahman III, the Andalusian caliph who built Medinat Al Zahrah, and to his son and successor Al hakam II [4]. Al Zahrawi was the first medical author to provide illustrations of instruments used in surgery [4]. He wrote a total of 30-volume treatise on medicine in which he recommended decompression–trepanation for the treatment of hydrocephalus between the skull and brain tissue over 1,000 years ago [2].

In his book, Al Zahrawi emphasized the importance of a good “physician and patient relationship”, took great care to ensure the safety of his patients, and win their trust irrespective of their social status [4]. Interestingly, it is important to note that he addressed his students as his

Fig. 1 Drawing of Abu al-Qasim Khalaf ibn al-Abbas Al-Zahrawi (936–1013 A.D.). Reprinted with permission of Dr. Rachel Hajar, the editor of *Heart Views* [4]

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“sons”, meaning the generation him in the medical profession, in his book [4]. Al Zahrawi was not a compiler but also a skillful pioneering surgeon; he added clinical observations of his own to the medical treatises inherited from the Greeks. Today, it is accepted that Al Zahrawi’s

Fig. 2 Cover picture shows a surgical scalpel used for the incision and decompression of the head of the infant possibly due to congenital hydrocephalus from Marsh (*right*) and Huntington (*left*) manuscripts of *al-Tasreef*. Reprinted with permission of the Wellcome Institute of the History of Medicine, London from Spink MS & Lewis GL [1]

innovations and modifications shaped European surgical practice, especially for Italian and subsequently French and English surgeons, in Middle Ages Europe up until the Renaissance period [4]. The cover picture illustrates the surgical scalpel proposed by Al Zahrawi in the 10th century (Fig. 2). There are about 200 such drawings of surgical instruments, many of which were of his own design, in his book [1, 2, 4].

In clinical practice, it is well known that infants with hydrocephalus have abnormally large heads because of the presence of high pressure of the fluid upon the individual skull bones. In his textbook *al-Tasreef*, Al Zahrawi nicely described the tool used in the treatment of “infantile hydrocephalus” on his book on surgery [1]. In fact, a great variety of surgical techniques and instruments was described in the medical literature since the middle of 19th century. However, the treatment of hydrocephalus still remains problematic due to its high complication rate at present.

References

1. Albucasis (1973) On surgery and instruments, a definitive edition of the Arabic text with English translation and commentary (trans: Spink MS, Lewis GL). The Wellcome Institute of the History of Medicine, London, pp 170–173
2. Al-Rodhan NR, Fox JL (1986) Al-Zahrawi and Arabian neurosurgery, 936–1013 AD. *Surg Neurol* 26:92–95
3. Aschoff A, Kremer P, Hashemi B, Kunze S (1999) The scientific history of hydrocephalus and its treatment. *Neurosurg Rev* 22:67–93
4. Hajar R (2007) Al Zahrawi: father of surgery. *Heart Views* 7:154–156
5. <http://en.wikipedia.org/wiki/Al-Tasrif>
6. Lifshutz JJ, Johnson WD (2001) History of hydrocephalus and its treatments. *Neurosurg Focus* 11:E1