

ORIGINAL ARTICLE

Hernia Repair in Golden Islamic Era; Review of Albucasis (*Al-Zahrawi*) Methods in Hernia Repair

Abstract

Inguinal hernia is one of the oldest known diseases in medicine. The first documents of the diagnosis of this disease are seen in Egypt and Mesopotamian civilizations. Razi in book *Al-Hawi* and Avicenna in book *The Canon of Medicine* well described this disease and its medical treatment methods. The excellent treatment level of this disease can be found in the writings of Zahrawi, who not only well treated it with non-surgical method, but also completed its surgery with his genius and expertise. Given the writings of Zahrawi on the inguinal hernia in *al-Tasrif* book, as the surgery is described in detail and the side effects of any surgical procedure are explained, it is inferred that he has treated many patients by surgical procedure and of course, the patients have improved after the surgery, indicating the magnificence of surgical knowledge at the age of this scientist.

Key words: Inguinal hernia, Albucasis, Al-Zahrawi, Golden Islamic Era

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Introduction

Inguinal hernia is one of the oldest known diseases in medicine.¹ The first documents of the diagnosis of this disease are seen in Egypt and Mesopotamian civilizations. Dating back to 1550 BC, the Papyrus Ebers book has explained the condition of a patient with inguinal hernia when coughing. Another part of this book provides a brief explanation of the use of cauterization to treat these patients.² Furthermore, reviewing the Greek and Ancient Roman medical sciences shows that Hippocrates suggested reasons such as eating water from large rivers and trauma to the abdomen for the inguinal hernia.³

After the Greek age and with the emergence of Islam, the Muslim scientists of this era translated and promoted the Greek knowledge, and in addition, they themselves achieved significant findings and improvements.^{4, 5} Hernia treatment was not an exception, as Razi in book *Al-Hawi* and Avicenna in book *The Canon of Medicine* well described this disease and its medical treatment methods.^{6, 7} In *al-Hawi*, Razi added his own views besides collecting and expressing the views of Greek old scientists.⁸ For instance, Avicenna well described the hernia reduction procedure, so that they placed the patient in a supine position and attempted to reduce the hernia using warm towels or water, as well as softener medicines. Of course, it is noteworthy that he avoided the surgery as much as possible.⁹

The excellent treatment level of this disease can be found in the writings of Zahrawi, who not only well treated it with non-surgical method, but also completed its surgery with his genius and expertise.¹⁰ Famed as Albucasis in the west and born in the Golden Age of Islamic Knowledge in Spain, Zahrawi (936-1013) left a 30-volume book, *Al-Tasrif*, with his attempts in collecting medical sciences of the day. It is a complete medical encyclopedia; its 30th volume in three chapters is dedicated to surgery and its tools. Hernia-related operations are from the surgical operations expressed in this book.¹¹

Surgical treatment of hernia needs the combination of anatomical knowledge and surgical skills largely. One of the common therapeutic methods in Zahrawi's time was to

- 1- Arregui et al, 1994:185-190.
- 2- Nunn, 1996: 89-92.
- 3- Van Hee, 2011: 342-50.
- 4- Pourahmad, 2010: 93-99.
- 5- Falagas, 2006: 1581-1586.
- 6- Avicenna, 1988: 95.
- 7- Abu bakr Mohamad ibn Zakariya Râzi, 1990:
- 8- Modanlou, 2008: :673-7.
- 9- Avicenna, 1998: 131.
- 10- Van Hee, 2011: 342-50.
- 11- Bashir, 2011:104-8.



use a cauterizer so that the doctor reached his target place by creating a scar and adhesion in the desired location. It is worth noting that the use of this method is one of the oldest therapeutic methods in medical history.¹² For treating inguinal hernia by cauterization method, Zahrawi states that the patient should not eat food for one day and use laxatives in order to empty his intestines. Then, he should be placed on his back in front of the doctor, his legs should be gotten far from each other and put under his body; an assistant should overlook the patient's legs and hold them, and a third assistant seats over the patient's head and puts his hands in the same condition of his legs. Then, the patient is asked to hold on his breath so that his intestine and peritoneum enter the scrotum, then the doctor brings it back into the abdomen with his finger and one of the assistants places his hand on the end of intestinal tract (anus). Then, under the hernia, a semicircular-like sign with two heads up to the top of the body is drawn with ink (cicatrization); the sign should be cauterized in the same form with a cauterizer (the tool for making a cicatrix). It should be hot enough to get white and spark. Then, the physician takes the cauterizer in his hand while standing upright, pushes it so that it reaches the pubic bone, and if it cools down and does not reach the target, the cauterization work is repeated.¹³

Zahrawi warns about the side effects of this therapeutic method including the prolapse of intestines or their injury due to the burn, leading to the patient's death. After the treatment, it has been said that the patient should lie on his back for 40 days, so that the wound would be healed; he should use soft foods in order not to squeeze the intestine and cause its prolapse. After this period, the patient can return to his activity, but he should use banding on his abdomen and close it firmly for 40 days. The burn location has been treated by various drugs, and Zahrawi has explained it in detail; hence, such a treatment seems to have been extensively used and, of course, it has been consequent.¹⁴

Zahrawi expresses the cause of the inguinal hernia as, "this hernia is originated from a gap drawn in the peritoneum. This gap prolapses a part of the intestine on one of

12- Savage-Smith, 2000: :307-21.

13- Zahrawi, 2006: 40-6.

14- Ibid.



the two balls, and it is developed from cracking or stretching of the peritoneum; these two have many causes; they are resulted from a hit, jumping, shouting or lifting heavy weights, and so on.¹⁵

For surgical treatment of inguinal hernia, Zahrawi returned the intestines to the abdomen manually. Then the patient lay in front of the doctor in the supine position, bending his legs. The scrotum was rent parallel to scrotal raphe to reach the tunica vaginalis (the hard white curtain was appeared from all sides). He separated testis from the surrounding tissues and completely removed the intestine from the inguinal channel by his finger, stitched and closed the ends of the inguinal channel in the form of a cross (+). This was done in two layers, so that spermatic cord was also closed. He then separated the testis and pulled it out with the remainder of spermatic cord. He says that in case of severe hemorrhage from tunica vaginalis or other sites during the surgery, he could control hemorrhage by cauterization.¹⁶

After the surgery, to prevent the relapse of hernia, until the wound healed, a piece of wool wetted in the olive oil or rose oil was placed in the gap and another piece of wool wetted in wine and olive oil were placed on it so that they covered the testis and under the umbilical area in the abdomen. All them were covered by linen and tied with the six-headed bands.¹⁷

Then, he had to take two pieces of fabric, sew them to each other, form it as below, fill it with wool, and attach some bands around it; the bands were made of cotton or soft wool and attached to the waist of pants or pajamas. One of the bands passed through the back, and the other went upward from the pudendum, the two side bands went downward to the thighs, and the remaining two went to the groins; and they were all tightened to the trouser belt.¹⁸

Zahrawi also spoke about a type of hernia that cannot be definitely said that he really meant Femoral Hernia; however, he described it as “sometimes a hernia occurs in the groin, and this part gets bumps, and let nothing go out of the intestines into the scrotum”¹⁹. In order to conduct surgical treatment in this type of hernia, he made a transverse

15- Zahrawi, 2006:134-42.

16- Ibid.

17- Ibid.

18- Ibid.

19- Ibid.



cut of about 5 cm (three-finger width) in the hernia and cut the tissues sufficiently to reveal the peritoneum (white curtain). He then placed a bar on the excrescent part of peritoneum and pressed it in order to return the hernia to the abdomen. Afterwards, he stitched and connected the two excrescent parts of the peritoneum alongside the bar, and then pulled the bar out. He notifies that the peritoneum should not be damaged and cut off in this surgical procedure.²⁰

This research indicates that unlike the view of many researchers in medical history²¹, Muslim surgeons have had a good knowledge of inguinal hernia, and known the inguinal channel anatomy to some extent, and well explained the pathology of development of the inguinal hernias.

Given the writings of Zahrawi on the inguinal hernia in al-Tasrif book, as the surgery is described in detail and the side effects of any surgical procedure are explained, it is inferred that he has treated many patients by surgical procedure and of course, the patients have improved after the surgery, indicating the magnificence of surgical knowledge at the age of this scientist.

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20- Ibid.

21- Sanders, 2012: 1-7.



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