THE HISTORY OF GROIN HERNIA*

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SUMMARY

In the first century AD Celsus described a method of recognition of groin hernia. It was not until Casper Stromayr (16th century) published his work on hernia that the distinction between a direct and indirect inguinal hernia was appreciated. Stromayr also introdueed a hernia truss which was designed to prevent a groin hernia from appearing. It is now almost 100 years since Eduardo Bassini revolutionized the surgery of hernia repair when he introduced the operation of herniorrhaphy. This operation (in a slightly modified form) is still advocated by most surgeons as the ideal form of treatment for most patients who have an inguinal hernia.

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Repair of a hernia is one of the commonest of surgical operations and can now be performed with low morbidity and mortality rates. It is only relatively recently, however, that any surgical operation could be undertaken without undue risk. In the distant past most operations were per-

formed by people who did not possess adequate medical training, lacked technical skill, and were often unscrupulous. Furthermore, the importance of asepsis was not appreciated, and anaesthesia was a hazardous undertaking. The purpose of this paper is to present a review of the principles of management of groin hernias throughout the past 2 000 years.

The first accurate account of the anatomy of the inguinal canal appears to have been that of Celsus[1] in the first century AD, who showed a clear understanding of the features of groin hernias. Celsus belonged to the school of Encyclopaedists, and was not a physician as such. He lived in Rome and documented his knowledge of medicine in *De Attibus* between 25 and 35 AD.

Celsus surmised that a defect in the layers covering the spermatic cord would permit the intestine or omentum to enter the scrotum and thus produce a hernia (enterocoele). He noted that a hernia could be made prominent by straining, over-eating or shouting, and that at times it could become irreducible, its contents red, green or black. He also appreciated the need for treating certain cases of groin hernia by surgery. He described a method whereby the hernial sac could be identified, its contents returned to the abdominal cavity and the possibility of severe haemorrhage reduced by ligating the larger vessels with flax thread. In dealing with the management of groin hernias, Celsus does not mention any form of herniorrhaphy at the time of operation, but does describe a method whereby the testis and its vascular supply could be preserved.

One of the most prolific and outstanding medical writers following Celsus was Claudius Galen,[2] who was born in Pergamon in Asia Minor in 130 AD. Galen refers briefly to 'enterocoele' in his erudite discussion on pathological swellings. He chided the younger physicians who used the term hernia for any type of swelling of the scrotum. He maintained that this term should be used for those conditions where bowel contents or omentum passed down towards the scrotum.

After the Galenic period, medical knowledge in the Western Empire declined and the further progress was mainly confined to the Byzantine Empire. Much of this knowledge was documented by the Encyclopaedists: Paul of Aegira[3] (7th century) compiled an excellent account of surgical principles of past and contemporary authors. The description of hernia operations differed from that of Celsus as it was considered essential to remove the testicle in their procedure.

In the era soon after the Middle Ages, surgery as an art was devoted almost entirely to wounds, and the practice of other forms of operative surgery was as a rule avoided. Most of the attempts at surgery were made by charlatans, unscrupulous 'specialists' who passed from place to place claiming to have particular knowledge in the care of multiple surgical conditions. Pierre Franco[4] (16th century) was an outstanding exception. He was a modest, religious man, and devoted much of his time to perfecting his skill as a surgeon. He modified an operation to treat groin hernia and performed it on over 200 patients. He also described the clinical picture of strangulated hernia and the surgical method of its cure. The operation was facilitated by introducing a rounded, grooved probe to prevent accidental incision of the bowel wall. As in the case of Celsus, the surgeons of this period carried out herniotomy, but made no attempt to devise a herniorrhaphy procedure.

In the 16th century, a relatively unknown German surgeon, Caspar Stromayr,[5] made a valuable contribution to the understanding of hernia in his manuscript *Practica Capiosa*. It is beautifully illustrated, with many diagrams describing the procedure of hernia surgery. *Practica Capiosa* contains the first record of a clear differentiation between indirect and direct hernias. The indirect hernia follows the spermatic cord, whereas the direct variety does not. Stromayr recommended the following procedure to determine whether a patient's hernia was of the direct or indirect variety: 'stand the patient upright, push the testicle on the side of the rupture upward between the skin and thigh to the groin as high as you can, then you will see that the testicle makes a separate swelling from that of a direct rupture, which otherwise does not occur, for whenever a rupture accompanies the *vera didymi* [epididymus] when it is out, and you push the testis upwards, as described, there would be no special swelling next to the rupture for it would go into the same swelling, which otherwise would not be the case'. It is interesting to note this simple test is omitted from the section on hernias in most of the general surgical textbooks published in recent times. I have used this test in 12 patients with groin hernias and found it true in all of them.

Stromayr also designed a truss to keep a groin hernia reduced. His truss was, in fact, very similar to those in use today. In the surgical management of hernia he advised that the testicle should not be removed if it was of the direct variety, but should be removed if it was an indirect hernia. He emphasized the importance of removing the hernial sac and ligating its neck at the level of the internal ring. His advice that a groin incision should be used rather than a scrotal incision was a considerable advance in the surgical treatment of hernias.

In the 19th century the operation of herniorrhaphy was introduced. The inguinal and femoral canals had been accurately described by previous anatomists such as Poupart, Gimbernat, Astley Cooper and Hesselbach. The more reputable surgeons reserved hernia operations for those cases in which the contents of the hernia could not be reduced spontaneously, or where strangulation of bowel contents was anticipated. The recurrence rate, reported by Bull[6] of New York in 1890, was given as 40% during the first year and 100% within the first four years following surgery.

The high recurrence rate following hernia operations was of great concern to surgeons in different parts of the world, and in particular, to the famous Italian surgeon, Bassini.[7] Eduardo Bassini had fought for the liberation and unification of Italy in 1866, and developed a faecal fistula in the groin as the result of a bullet wound sustained during the war. When he recovered he spent some time in England before returning to Italy in 1875. In 1884, he was one of the first surgeons to introduce antiseptic techniques into Italian surgery. In 1888 he was appointed Professor of Clinical Surgery at Padua University, and in the same year reported to the Italian Surgical Society the results of hernia operations on 102 patients using his method of repair.

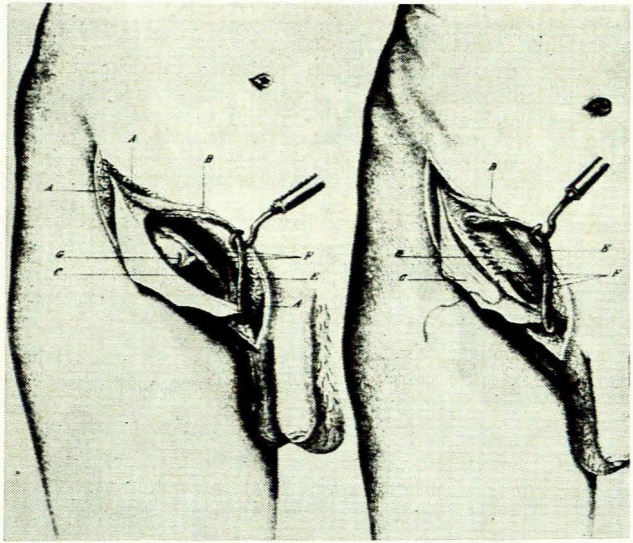

Fig. 1: Bassini's original description of herniorrhaphy. (A) subcutaneous tissue, (B) external oblique, (C) fascia transversalis, (E) spermatic cord, (F) transversus, internal oblique and fascia transversus, (G) hernia sac. (From Bassini's *Über die Behandlung des Leisten-bruches,* Langenbecks Arch. klin. Chir., Vol. 40.)

Bassini appreciated the importance of strengthening the posterior abdominal wall. He advised that the hernia sac should be excised and ligated as high as possible. The next step in the operation was to separate the external oblique from the internal oblique, and the transversus muscle and fascia transversalis from the preperitoneal fat. The herniorrhaphy consisted of uniting the three layers (internal oblique, transversus and fascia transversalis) to the inguinal ligament below with interrupted black silk sutures. The sutures located at the most medial part also passed through the outer edge of the rectus sheath. The internal ring was reconstituted so that it was situated lateral to the external ring to ensure that the obliquity of the inguinal canal was maintained (Fig. 1).

In 1890, Bassini reported his experience with 262 consecutive cases who had had a hernia repaired according to the new method he described. Out of 251 cases where strangulation had not occurred, all survived the operation. The recurrence rate was less than 3% of those cases who had been followed up for between one month and four years.

The operation described by Bassini has made a great impact on the surgery of inguinal herniae, and although many different procedures have been described, none has had a similar world-wide acceptance. The Bassini operation has withstood the test of time, and proof of its value lies in the fact that it is still used today by many surgeons in different parts of the globe.

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