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History of inguinal hernia surgery

Historia operacyjnego leczenia przepuklin pachwinowych

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S u m m a r y

Abdominal hernia has accompanied human for centuries. The history of inguinal hernia operations goes back to antiquity. We find the first evidence of the treatment of this disease in ancient Egypt. For decades, the method of inguinal hernia repair has been constantly evolving. The ineffectiveness of the performed procedures forced the search for new surgical techniques.

For many years, hernia repair was associated with a high risk of recurrence, infectious complications, pain and patient's injury (orchidectomy on the operated side). It was only the 19th century that brought a breakthrough in hernia management. The development of modern inguinal hernia surgery can be divided into two periods. The first one, characterized by the use of patient's own tissue for reconstructive surgery and the period of tension-free treatments. Eduardo Bassini was the first surgeon who performed successful inguinal hernia surgery. Irving Lichtenstein is considered to be the father of the tension-free inguinal canal surgery. He carried out the first successful inguinal hernia repair using a synthetic implant.

Nowadays, inguinal hernia repair procedures are characterized by high periprocedural safety and a small number of complications (especially recurring hernias). Bassini's and Lichtenstein's works have been subject to many modifications, but their idea and main assumptions are still valid.

S t r e s z c z e n i e

Przepukliny brzuszne towarzyszą człowiekowi od wieków. Pierwsze dowody leczenia tego schorzenia odnajdujemy w starożytnym Egipcie. Przez dziesięciolecia sposób terapii przepuklin pachwinowych ulegał ciągłej ewolucji. Nieskuteczność przeprowadzanych zabiegów wymuszała poszukiwanie nowych technik operacyjnych.

Przez wiele lat operacja naprawcza przepuklin wiązała się z ryzykiem nawrotu schorzenia, powikłaniami infekcyjnymi, bólem oraz z okaleczeniem pacjenta (usunięciem jądra po operowanej stronie). Dopiero wiek XIX przyniósł przełom w terapii. Rozwój nowoczesnej chirurgii kanału pachwinowego możemy podzielić na dwa okresy. Pierwszy, cechujący się wykorzystaniem tkanek własnych pacjenta do operacji rekonstrukcyjnej, oraz okres zabiegów beznapięciowych. Eduardo Bassini był pierwszym chirurgiem, który przeprowadził skuteczną operację przepukliny pachwinowej. Za ojca chirurgii beznapięciowej kanału pachwinowego uważa się Irvinga Lichtensteina. Przeprowadził on pierwszy, skuteczny zabieg naprawczy przepukliny pachwinowej z użyciem wszczepu syntetycznego.

Obecnie, zabiegi naprawcze przepuklin pachwinowych cechują się dużym bezpieczeństwem okołozabiegowym oraz małą ilością powikłań (zwłaszcza nawrotów przepuklin). Prace Bassiniego oraz Lichtensteina doczekały się wielu modyfikacji, jednak ich idea oraz główne założenia są nadal aktualne.

ANCIENT HISTORY

Abdominal hernia has accompanied human for centuries. The very first historical records of this disease are dated back to ancient Egypt and Mesopotamia. Mummification of Phineoh Merneptah (1224-1214) was the oldest discovered attempt to treat this disease (1). The first description of the occurrence of inguinal her-

nia (protrusions evident during coughing) are found in Ebers' Papyrus (1550BC) (1-4). Another ancient civilization indicated new descriptions of hernia cases and new techniques of treatment. Hippocrates recommended drainage of the contents of hernia sac and wearing a belt to prevent the recurrence of ailments (400 BC) (4). Aulus Cornelius Celsus (AD 50) (fig. 1) applied surgical



Fig. 1. Aulus Cornelius Celsus (25BC-50AD) (7)

treatment of hernia. The operation consisted of separation of hernia sac from the spermatic cord (saving the testicle). The wound was left without stitching to the process of granulation (the scar was supposed to strengthen the abdominal wall and prevent recurrence) (1, 5, 6).

MIDDLE AGES

The medieval period was marked by ineffectiveness and high operational mortality in inguinal hernia treatment. Most of the procedures performed were associated with the loss of the testicle (the method was introduced by Galen). Guy de Chauliac (1298-1368) described six contemporary methods of treatment of inguinal hernia and developed a method for draining the contents of the hernia sac in Trendelenburg position (1, 5, 8, 9).

RENAISSANCE – ENLIGHTENMENT

The period of Renaissance and Enlightenment has brought another advance to effective healing of inguinal hernia. Undoubtedly, these were the years of great anatomists. Works by Pott, Richter, Littre, Camper, Scarp Morton, Gimbernat, Cooper, Colles, Halsselbach, Hunter, Lancisi contributed to the knowledge of inguinal canal anatomy and the classification of hernia (among others division into simple and oblique inguinal hernia – R.L. Heister) (10). Ambrose Pare (fig. 2) described the technique of hernia

surgery consisting in the removal of the contents of the sac and the sewing of the peritoneum with gold strands (1). Unfortunately, despite the progress of knowledge in the field of anatomy and pathology of hernia formation, the operations were of little effectiveness. Lack of knowledge on asepsis and antiseptics as well as anesthesia led to high mortality rates following surgical procedures.

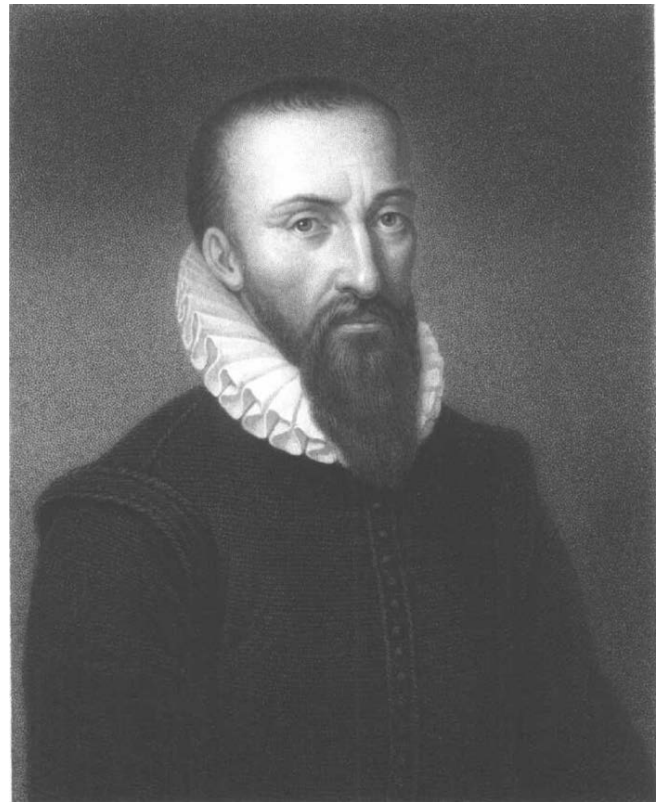


Fig. 2. Ambroise Paré (1510-1590) (11)

19TH CENTURY – THE PERIOD OF INGUINAL HERNIA REPAIR UNDER TENSION.

Other breakthroughs in the development of modern surgery were Lister's discoveries – antiseptics (1870), Mickulicz – asepsis (1904) and Crawford Long – anesthesia (1842) (8). Knowledge on etiology and the ability to prevent perioperative infections as well as the ability to conduct painless surgery caused a rapid development of surgical techniques. V. Czerny (1876) (fig. 3) performed the procedure of removing the stump of the hernia sac and stitching the hernia with single stitches. Lucas-Championnière (1881) performed anterior wall surgery of the inguinal canal (4). Recurrent hernia and ineffectiveness of prevention and treatment of infections forced surgeons to continue research on new methods of hernia treatment. The first successful operation was conducted by Eduardo Bassini (1844-1924) (fig. 4). His treatment relied on reconstruction of the posterior wall of the inguinal canal and the placement of the spermatic cord superiorly.

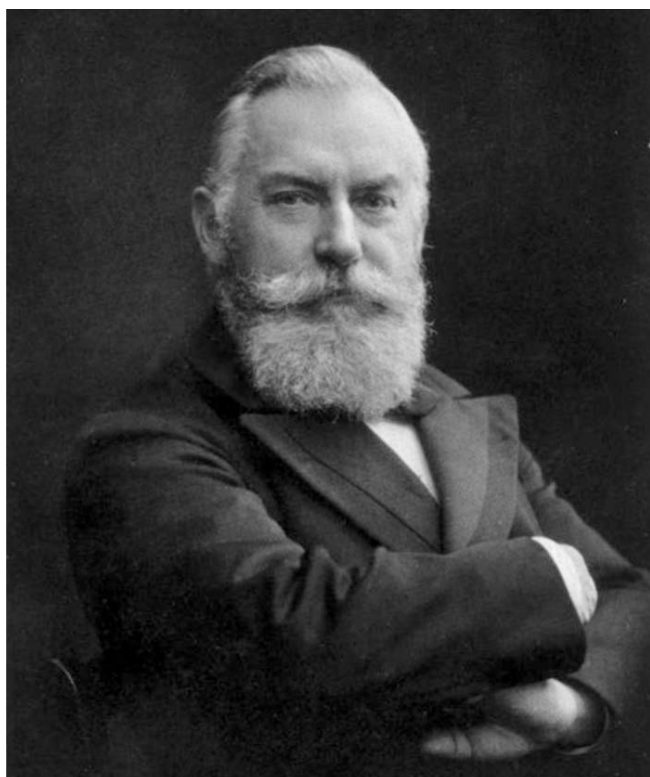


Fig. 3. Vincenz Czerny (1842-1916) (15)

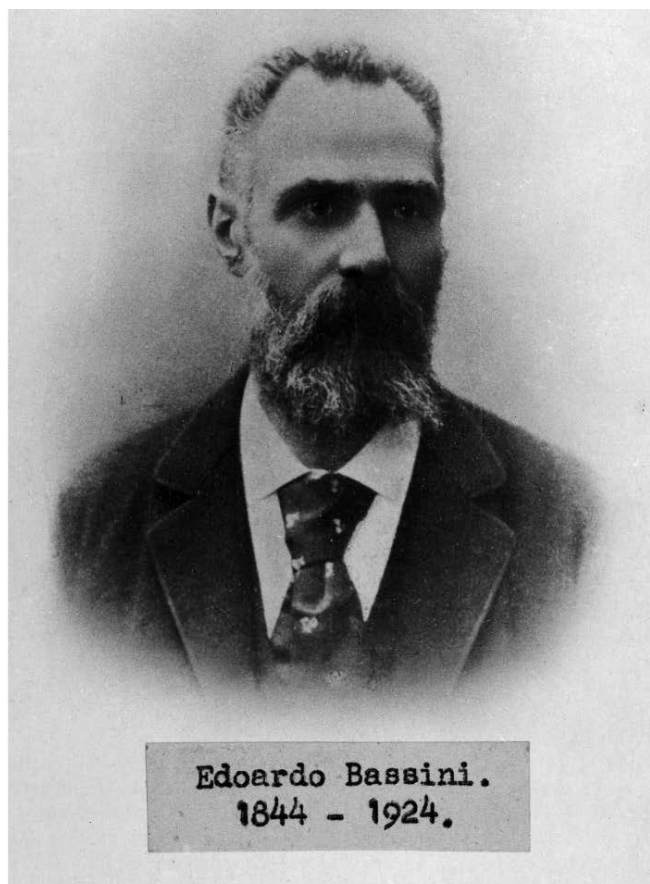


Fig. 4. Eduardo Bassini (1844-1924) (16)

American surgeon William S. Halsted conducted a similar operation. His treatment also involved the re-

construction of the posterior wall of the inguinal canal, but the spermatic cord placed superior to the external oblique muscle (1). The Bassini method has been received by many modifications (e.g. Giard's method), but the rate of relapse was still unsatisfactory. Another method was developed by McVay. He used Cooper's ligament in the inguinal canal as additional strengthening to prevent relapse (2, 12). Canadian surgeon Edward Earle Shouldice applied a method which decreased the problem of hernia recurrence (13). The effectiveness of the proposed procedure resulted in a rapid increase in its duration popularity. Over time, the Shouldice method has become the gold standard for hernia treatment. In addition to the new type of treatment, Shouldice created the first hernia classification inguinal system based on three variables: Type, Stage and Dimension (8, 14). Also, Polish surgeons they have signed up in the history of treatment of axillary hernia. Works by Weglowski (1901), Szarecki (1910), Ostrowski (1937 – Polish method) are known.

20TH CENTURY – TENSION-FREE INGUINAL HERNIA REPAIR

The next step in the development of surgical treatment of hernias was the use of various materials to strengthen the abdominal wall. The pioneers in this field were Kirschner (1903) – he used the thigh fascia and Loewe and Rehn – they used skin grafts (8, 17, 18). There are known attempts to implant xerostomic material (Marcy – the kangaroo tendon), but their ineffectiveness forced to search for other materials (8, 19). Discovery of synthetic polymers enabled dynamic development of inguinal hernia repair based on the mesh. Francis Usher was the first to use polypropylene mesh during surgery (1958) (20). Another surgeon Irving Lichtenstein used the synthetic meshes for the treatment (21). The Lichtenstein method significantly reduced and simplified inguinal hernia repair, decreased the frequency relapses, local infections and severity of postoperative pain. It quickly gained popularity by becoming the method of choice among tension-free operational techniques. Other authors of tension-free surgery also include Gilbert and Rutkow. We describe the surgical treatment methods as anterior approach. Stopp and Rignault have developed treatments using posterior approach. This type of surgery is characterized by the location of the retroperitoneal mesh.

The final stage in the evolution of hernia operations was the use of minimally invasive techniques. The first laparoscopic operation was performed by P. Fletcher (1979) and R. Ger (1982). The treatment method used special clips (Michel staples) to close the hernia sac. Unfortunately, the operation was highly inefficient (1, 6, 8, 22, 23). In the 1990s new methods were created – laparoscopic inguinal hernia – TAPP (Trans Abdominal Preperitoneal) and TEP (Total Extra Peritoneal).

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