TREATMENT OF INGUINAL HERNIAS BY MEANS OF EXTRAPERITONEAL VIDEO-ENDOSCOPIC ALLOPLASTIC CURE

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SUMMARY. The main objective of this paper is the assessment of the efficacy of the inguinal hernia treatment by the totally extraperitoneal video-endoscopic procedure in view of reducing postoperative morbidity and recurrence rate. The study was conducted on 127 patients with uncomplicated inguinal hernia treated by totally extraperitoneal endoscopic alloplastic (TEP) cure in St. Anna Stift’s Hospital in Lönningen during a period of 4 years. The parietal repair was performed by inserting a polypropylene prosthesis in the preperitoneal space which was fixed. The postoperative results were good in 92% of the cases. The main advantages obtained by means of this technique are the diminution of the operative trauma and of the postoperative pain, rapid recovery and short hospitalization period. Postoperative morbidity was insignificant, being represented by a few haematoma (2.4%) and seroma (4.7%). The conversion rate was 3.15% and was due to some dissection difficulties in the case of some recurrent hernias or to the accidental intraoperative opening of the peritoneum. Recurrence appeared in 3.94% of the cases, being generally caused by the absence of the mesh fixation to the abdominal wall. In conclusion, we can say that the TEP technique represents a valuable alternative in the surgical treatment of the inguinal hernia and a progress as far as the diminution of the postoperative morbidity and apparition of recurrence is concerned.

Key words: inguinal hernia, video-endoscopic surgical alloplastic treatment, totally extraperitoneal procedure (TEP).

TRATAMENTUL HERNIILOR INGHINALE PRIN CURA ALOPLASTICĂ VIDEOENDOSCOPICĂ EXTRAPERITONEALĂ

Rezumat

Obiectivele principale ale lucrării constau în evaluarea eficacităţii tratamentelor herniilor inghinale prin procedeul videoendoscop total extraperitoneal în vederea scăderii morbidităţii post operatorii şi a reducerii ratei recidivelor. Studiul a fost efectuat pe un număr de 127 pacienţi cu hernie inghihială necomplicată operaţi prin cură allopasticsă endoscopică extraperitoneală (TEP) în spitalul St. Anna Stift din Lönningen pe o perioadă de 4 ani. Refacerea parietală a fost realizată prin inserţia unei proteze de polipropilenă în spaţiul preperitoneal, fixată. Rezultatele postoperatorii au fost bune în proporţie de 92%. Principalele avantaje obţinute prin această tehnică sunt reprezentate de diminuarea traumatismului operator, diminuarea durerii postoperatorii, vindecare rapidă cu durată de spitalizare mică. Morbiditatea postoperatorie a fost nesemnificativă, reprezentată de câteva hematoame (2,4%) şi serome (4,7%). Rata reconversiei a fost de 3,15% şi s-a datorat unor dificultăţi de disecţie în cazul unor hernii recidivate sau deschideri accidentale a peritoneului intraoperator. Recidivele au fost întâlnite în 3,94% din cazuri, fiind cauzate în general, de absenţa fixării plasei la peretele abdominal. În concluzie se poate afirma că tehnica TEP reprezintă o alternativă valoroasă în tratamentul chirurgical al herniilor inghinale şi un progres în ce priveşte diminuarea morbidităţii postoperatorii şi a recidivelor.

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INTRODUCTION

Inguinal hernias are one of the most frequent pathologies in general surgery, their incidence being rated between 10 and 15%, according to west-European statistics. Although dozens of procedures are used, the issue of inguinal hernia repair has not been completely solved yet. The large number of surgical procedures and the high rate of recurrence indicate that, as a matter of fact, none of the procedures used has all the perfect technical characteristics to solve this problem, reason for which the search for new treatments remains open. In the context of this search the idea of the video-endoscopic method has appeared as a mean of minimally invasive surgical approach in the treatment of inguinal hernias.

The first description of an endoscopic treatment of a hernia was published by Ger in 1990, the surgical principle was the use of stainless steel staples to close the hernia sac. Later new endoscopic procedures have appeared by introducing a mesh cone in the hernia ring (Patch and plug technique) over which a 5x5 cm mesh is applied.

The main objectives of the surgical treatment of hernia by video-endoscopic means are: the diminution of postoperative morbidity and of the recurrence rate.

Three types of procedures are used in the development of video-endoscopic procedures for inguinal hernia repair:

- transabdominal preperitoneal technique (TAPP)
- transabdominal technique with intraperitoneal onlay mesh (IPOM)
- totally extraperitoneal technique (TEP)

All the procedures use the minimal approach of the endoscopic technique, the result being the properitoneal or intraperitoneal placement of a prosthetic material to reinforce the weak portions of the inguinal-femoral area.

We preferred the totally extraperitoneal technique from the video-endoscopic types of procedures; this is presented in this paper.

MATERIALS AND METHODS

The TEP technique was introduced in St. Anna Stift’s Hospital from Löningen in 2003. The patients study group was composed of 127 persons with inguinal hernia, 90 (70.87%) suffered from unilateral hernia and 37 (29.13%) from bilateral hernia. 115 patients (90.55%) had primary hernia, and 12 (.45%) had a recurrence after a conventional technique.

Out of the unilateral hernias 56 (62%) were on the left side, and 68 (76%) of them were indirect hernias and 22 (24%) were direct ones. Out of the 37 cases of bilateral hernias, 11 (30%) were indirect, 9 (24%) were direct ones and 17 (46%) combinations of the two types.

The average age was 51 (patients between 25 – 80 years old). Out of the total number of patients with surgically treated hernia 119 (94%) were male and only 8 (6%) were female.

TEP technique is a video-endoscopic alloplastic procedure that uses the properitoneal approach. We used the laparoscopic surgical kit.

The surgical approach is performed by an approximately 15 mm horizontal incision at the lower part of the umbilicus which permits the visualization and incision of the anterior leaf of the right abdominal muscle sheath. The fascia of the right abdominal muscle on the side with the hernia is laterally pushed by a swab. The working space is created under videoscopic control, in the properitoneal space by a balloon. The balloon is replaced with a 10 mm trocar which adheres tightly to
the orifice and CO\textsubscript{2} is insufflated under a pressure of 11 – 12 mmHg. Under video-endoscopic control the first 5 mm trocar is introduced medially to the epigastric vessels at half distance between the umbilicus and the symphysis pubis. The preperitoneal space is further laterally dissected using a blunt forceps and the second 5 mm trocar is introduced.

In the newly created preperitoneal space of the inguinal area there may be identified the epigastric vessels and the deep inguinal ring laterally. We performed a blunt dissection of the hernia’s sack which was introduced into the abdominal cavity without being resected. The dissection of the preperitoneal space must be complete in order to apply the prosthetic material and the anatomical elements of the region are exposed: the lower edge of transversalis fascia, Cooper’s ligament, the ileopubic tract, the epigastric vessels, the spermatic duct and vessels.

The most frequently used prosthetic materials were polypropylene meshes. We have frequently used the Ultra Pro mesh (monocryl-prolene composite). The mesh rolled inside a reducer is introduced through the 10 mm trocar and then is unrolled by means of the two forceps. The mesh is applied on the spermatic cord so as to cover all the potentially herniated areas. The mesh is fixed on Cooper’s ligament, the ileopubic tract medially from the iliac vessels, on the lateral edge of the right abdominal muscle and on the lower edge of the transversalis fascia.

**RESULTS**

The mean operative time was 70 minutes. The postoperative results of uncomplicated inguinal hernias treated by extraperitoneal video-endoscopic alloplastic cure were good and very good in 92% of the cases. The main advantages of this technique are: decreasing of postoperative pain, short hospitalization period, rapid recovery and resuming of physical activity. From the economic point of view we find that the cost of the laparoscopic cure is higher than that of conventional surgery due to general anesthesia, medical equipment and prosthetic materials used, but there is an economy of days of physical incapacity.

In 9 cases (7.1%) there were minor postoperative complications, such as:

- scrotal seroma – 6 cases (4.7%)
- scrotal haematoma and haematoma of the preperitoneal space – 3 cases (2.4%)
- acute urinary retention – 3 cases (2.4%)

The seroma and haematoma were solved conservatively, except for one case of preperitoneal space haematoma that required a new endoscopic intervention to achieve haemostasis, lavage and drainage of the preperitoneal space.

The acute urinary retentions were treated by temporary bladder probing.

In 4 cases (3.1%) we performed the conversion to conventional surgery with anterior approach, due to the following causes:

- difficulties of hernia sack dissection in some recurrent hernias, due to postoperative scars after conventional surgery – 2 cases (1.6%)
- peritoneum break and CO\textsubscript{2} passage into the abdominal cavity, resulting in the reduction of the preperitoneal working space.

Recurrences appeared in 5 cases (3.9%), following the TEP treatment of a unilateral inguinal hernia (in 4 cases) and following the treatment of a bilateral inguinal hernia (in other 1 case). Of the 5 recurrences, in 4 cases the prosthetic material was not fixed to the abdominal wall. It is known that the recurrence rate is considerably higher in the cases when the mesh was not fixed. All the recurrence cases were solved by conventional surgery.

In the group of patients treated by the TEP technique there were no cases of postoperative mortality.

**CONCLUSIONS**

1. The TEP technique represents a feasible alternative in the surgical treatment of inguinal hernias. It has a series of advantages, such as: low recurrence rate, fewer postoperative complications, minimum postoperative pain, short hospitalization period and rapid return to daily routine.
2. The higher operative costs than the conventional methods are compensated by the shortening of the hospitalization period and rapid return to daily routine.

3. The surgery performed in the extraperitoneal space requires a certain practical experience for the endoscopic dissection of the inguinal area and correct placement of the prosthetic material.

REFERENCES