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THE EFFECT OF VARIOUS METHODS OF HERNIOPLASTY ON THE FERTILITY OF PATIENTS

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ABSTRACT

The elimination of PG should be carried out mainly by laparoscopic method, since this GP method provides a low percentage of relapse, complications, which allows to restore the QOL of patients in the shortest possible time and increase the reproductive function of operated patients.

KEYWORDS

Hernioplasty, laparoscopic, patients' reproduction.

INTRODUCTION

According to statistics, hernia carriers are 3-4% of the population, which is 530-570 million people on the globe [1,3,5,7,9,11], of which 6-7% are men with inguinal hernias, 2.5% are women. In almost 80% of patients, hernia has inguinal localization [2,4,6,8]. More than 2 million operations are performed annually in the world for abdominal hernias [10,12,14,16]. Hernia section (HS) for inguinal hernias occupies the 3rd place in frequency among planned and emergency interventions, which is

24-66% of all operations of general surgical profile [13,15,17].

The introduction of new progressive technologies into clinical practice in recent years has made it possible to achieve some success in the treatment of inguinal hernias. However, despite the successes achieved and a large number of existing techniques (more than 600 methods), the results obtained are not always satisfactory. Currently, the requirements of patients

for the quality of life (QOL) have increased many times, taking into account its physical and emotional and mental components [18]. Dissatisfaction of patients with QL pushes surgeons to search for new technical and tactical solutions in hernioplasty (GP). Like any surgical intervention, inguinal GP is associated with the possibility of non-specific (formation of hematomas and seromas, suppuration of postoperative wounds, formation of ligature fistulas) and specific (damage to the bladder, femoral vessels, dropsy of the testicular membranes, inguinal-genital neuralgia, recurrence of hernia) complications, which account for 1-30% [1,2]. Specific complications of inguinal hernia section include deterioration of reproductive function in men.

The purpose of the study. To improve the results of surgical treatment of patients with inguinal hernias based on the study of patients' reproduction.

Materials and methods of research. The study was based on the analysis of the results of surgical treatment of PG in 448 patients hospitalized and operated in the basic surgery departments of the regional hospital of the Department of Faculty and Hospital Surgery, Urology (head of the department - professor B.Z.Hamdakov) for the period from 2017 to 2021.

Criteria for inclusion of patients in the study: - Voluntary consent to surgical treatment of PG; - planning of surgical intervention for PG; 640 patients hospitalized during the specified period of time met these criteria.

Criteria for excluding patients from the study:

- the presence of relative and absolute contraindications to any type of hernioplasty provided for by this study (13 patients);

- a history of surgery for varicocele or dropsy of testicular membranes (6 patients);
- detection of a history of spermatogenesis disorders before the development of a hernia (1 patient);
- cryptorchidism (1 patient);
- refusal of the patient to participate at any stage of the study (lack of informed consent to participate in a scientific study) (124 patients);
- the age of the patient is less than 18 years and more than 76 years (47 patients)

The following scope of research was mandatory for the planned operation: clinical and biochemical blood tests, general urine analysis, electrocardiography, chest fluorography, markers for hepatitis B and C, coagulogram, ejaculate volume, sperm concentration and the number of mobile forms, determination of the function of external respiration, reserve capabilities of the cardiovascular system, X-ray and ultrasound studies of abdominal organs (ultrasound scanners were used: Aloka Prosound 6, GE Vivid S5, GE Logic.), fibroesophagagogastrroduodenoscopy. Other research methods were performed according to indications.

We did not use the principle of randomization in the distribution of patients into comparison groups, since the preferences of patients were taken into account when choosing the GP method. Nevertheless, the analysis of the structure of patients in all three groups allows us to consider the groups relatively homogeneous (comparable to each other) and generally representative. The study of the quantitative and qualitative composition of the ejaculate was carried out by the classical method, the gold standard in the diagnosis of "men's health", which reflects the state of spermatogenesis – spermography.

The results of the study were subjected to statistical analysis using the Statistica-6.0 application software

package from StatSoft, Inc 1984-2001. When conducting statistical processing, all the requirements of the concept of evidence-based medicine are taken into account. The quantitative data obtained in the course of the study were preliminarily evaluated for the type of distribution using the Kolmogorov-Smirnov agreement criterion. Parametric data are presented in the form $M \pm a$, where M is the arithmetic mean and ct is the standard deviation. In patients with unilateral hernias, right-sided PG was mainly observed ($\chi^2=5.8$, $p=0.02$). Thus, unilateral hernias were observed in 398 (88.8%) patients: left-sided - in 189 (47.5%) patients, right-sided - 209 (52.5%). Bilateral hernias were observed in 50 patients, only in men and mainly in the older age group and accounted for 11.5% of the total number of hernias. Oblique PG was observed in 351 (78.3%) patients, straight - in 97 (21.7%). The duration of the postoperative period in the hospital after musculoaponeurotic GP was 8.7 ± 2.23 days, after Lichtenstein surgery - 8.0 ± 2.19 days ($p=0.0026$), after LH - 4.3 ± 1.5 days ($p<0.0001$). Due to the small number of complications, it is not necessary to talk about the reliable advantages of one or another GP method. The absence of a statistically significant difference in the frequency of complications of the immediate postoperative period, in our opinion, is due to the low statistical power. However, the trend towards a decrease in the frequency of complications in LH is emerging. The immediate results of surgical treatment of PG are as follows: total complications in 30 patients (6.7%). Of these, 13 (11.2%) patients of group I, 16 patients (5.5%) of group II and 1 patient (2.2%) of group W. Relapses were detected in 10 patients (2.2%): 6 (5.2%) after muscular-aponeurotic plastic surgery, 4 (1.4%) after non-tensioning plastic surgery. There were no relapses after endoscopic hernioplasty. In types I-II of hernias, good results were obtained both with traditional muscular-aponeurotic GP and with a non-stretching technique. However, with the type of

hernia, the recurrence rate is significantly higher with muscular-aponeurotic GP and is 3.4%. It should be noted that mainly relapses in groups I and II were observed in patients operated on for bilateral hernias - 4 patients (3.3%) and 3 patients (1.0%), respectively. Since the characteristics of the comparison groups as a whole did not have fundamental differences among themselves, the initial results of the QOL survey of patients turned out to be quite low. The average indicators on the total scales of physical (PHs) and mental (MHs) components of health were reduced by about two times compared to the proper: 51.0% and 39.7%, respectively. Low indicators characterizing various aspects of the physical and mental functioning of the patient, in general, indicate a low self-esteem of QOL in the studied group of patients. Undoubtedly, low QL on all scales is a consequence not only of the presence of PG in the patient. Most of the patients, especially the older age group, had a number of concomitant chronic diseases that limited physical and mental activity. As demonstrated by the data obtained during the correlation analysis, the indicators on individual scales have a statistically significant and significant association with the age of the patient. In particular, the greatest degree of association with age was revealed on the scale of physical health ($g8 = -0.43$; $p = 0.00$). Noteworthy was the degree of association of the patient's age and the indicator of role functioning due to the physical condition of the patient (CR) ($g2 = -0.09$; $p = 0.054$). A slightly less strong inverse association with age is observed on the scales of mental health (MP) ($g8 = -0.2$; $p = 0.00002$), vital activity (UT) ($g5 = -0.13$; $p = 0.007$) and the physical component of health in general (RNz) ($G5 = -0.14$; $P = 0.003$).

According to the other scales, a reliable degree of association of indicators with the age of the patient was not revealed. The results of the QOL assessment in dynamics 4 months after Gp are as follows. Changes in

values on the QL scales in all patients 4 months after Gp were observed in 29.7-40.4% of cases. The ratio of patients with positive and negative dynamics of indicators according to the SC scales in the first group shows predominantly negative dynamics. The worst changes in this group were noted on the scale of role functioning due to physical health (CR) - 28.9%, the total indicator of the physical component of health (RNz) 27.7%, the total component of mental health (MNH) 34.0%.

Compared with this group, in group II of patients, and in the group of patients who received LH, cases with positive dynamics exceed the number of cases with negative dynamics. This is indicated by the total indicators of physical and mental functioning (RNz, MNz), respectively, 42.2% and 67.2%. A comparatively more pronounced positive dynamics of QOL in the 4 months after GP was noted in patients of the third group, where cases with positive dynamics ranged from 61.1% (RNz scale) to 83.3% (MNz, UT, OH, PP scales) of cases. In general, the indicators of physical and psychoemotional functioning in patients with PG are reduced to 39.7-75% of the proper. In other cases, the dynamics were not noted, which indicates the previous self-assessment of their own abilities for physical activity and the preservation of the psychoemotional status in most patients in the first months after surgery. A relatively large number of patients who have a decrease in QOL indicators 4 months after surgery is due to the absence of any pain manifestations from the hernia before surgery in most cases. The weak dynamics of indicators (on average by 0.7-5% on different scales) generally indicates a low contribution of PG as a pathology that has a negative impact on QOL in the patients included in the study. After Liechtenstein Gp, negative changes in sperm concentration and motility are significantly less pronounced than after traditional Gp. The average

concentration of spermatozoa per unit volume of ejaculate after surgery decreases by 7.8 ± 10.9 million / ml, which is approximately 9% of the baseline. Moreover, by the end of 12 months after Lichtenstein surgery, the concentration of spermatozoa decreases even more - on average by 15.3 ± 20.9 million/ ml ($p = 0.00$), which is approximately 17% of the initial value. The relative number of mobile forms also decreases by 6.6%. Probably, the continued decrease in sperm concentration is negatively affected by the endoprosthesis, which "accompanies" the vas deferens for a longer period. The decrease in sperm motility according to the data for 4 and 12 months after the Liechtenstein Gp is not so pronounced, although statistically significant ($p < 0.001$).

After LH, no negative dynamics was observed both in terms of sperm concentration and in terms of their mobility. On the contrary, according to the mobility index, by the end of 12 months after surgery, there is a slight increase in the relative number of motile spermatozoa. To assess the degree of influence of operational equipment on the reduction of the level of Tc, we analyzed the indicator in various groups before and after surgery. Initially, the Tc level was reduced in all three groups, thus, the groups turned out to be homogeneous in this indicator. This makes it possible to interpret subsequent changes as changes due to the peculiarities of the Hs method and Hernia gate plastic surgery. In general, without taking into account the peculiarities of PC plastic surgery in various variants of surgery, the dynamics of spermogram indicators after surgery turned out to be negative. After 4 months, the Tc level was 2.5 ± 2.4 nmol/l lower than the initial one.

The above confirms that carrying out GP by a stretch method has a negative effect on the reproductive function of male patients. Performing LH practically does not worsen the studied indicators, which should

be taken into account when determining indications for various methods of surgical treatment of PG in men.

CONCLUSIONS

1. A comparative analysis of the traditional criteria for the results of hernioplasty revealed the superiority of non-stretching methods over muscle-aponeurotic methods. Recurrence rates for 1-2 types of inguinal hernias after various Gp methods do not significantly differ, but with 3-4 types of hernias after musculoaponeurotic plastic surgery, the recurrence rate is 7.0% (Dirh: 0.00%- 13.7%) higher than with non-protracted Gp methods. The probability of a relapse-free course after muscular-aponeurotic plastic surgery decreases in the long-term postoperative period earlier and at a faster rate than after Lichtenstein and LH surgery.
2. Indicators of physical and psychoemotional health in patients with PG decreased from 39.7% to 75% of the required. The elderly age of patients negatively affects the quality of life after GP with inguinal hernias. By the year after GP, QOL indicators, regardless of the method of surgery, significantly improved in 31.7-64.3% of patients. The improvement of QL indicators after LH in comparison with other methods occurs much faster, and reach maximum values by the end of 4 months after surgery.
3. Muscular-aponeurotic Gp of the inguinal canal is fraught with a large number of complications, relapses, which reduces the quality of life. In this connection, it is necessary to selectively carry out these hernioplasty techniques depending on the age of the patient and the type of hernias, that is, this plastic surgery is indicated for men of reproductive age and women with 1-11 types of hernias.

4. The elimination of PG should be carried out mainly by laparoscopic method, since this Gp method provides a low percentage of relapse, complications, which allows to restore the QOL of patients in the shortest possible time and increase the reproductive function of operated patients.

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