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EFFECTIVENESS OF THE CONCEPT OF FAST-TRAK SURGERY FOR SIMULTANEOUS LAPAROSCOPIC HERNIOPLASTICS AND CHOLECISTECTOMY

Parkhomenko K. Yu.

The aim of the research was to study the feasibility and effectiveness of simultaneous laparoscopic hernioplasty and cholecystectomy in patients with combined abdominal pathology.

Material and methods. Simultaneous laparoscopic hernioplasty and cholecystectomy during 2015–2019 performed on 70 patients, including 49 (70 %) women, mean age 57.3 ± 6.5 g. In 37 patients the principles of Fast-track surgery were applied (group I), including thorough examination for diagnostics of combined abdominal pathology and clinically significant general somatic pathology; if necessary a course of therapy for full compensation of general somatic pathology was prescribed; during the operation of epidural prolonged anesthesia; choice in favor of laparoscopic technology; at the end of the operation – irrigation of the subdiaphragmatic space with local anesthetic; postoperatively: early drainage removal; withdrawal from opioids by prescribing parenteral paracetomol; activation of the patient 6-8 hours after surgery; on the day of surgery – use of chewing gum and fluid intake. In 33 patients the standard complex of perioperative management (group II) is applied. The immediate results of surgical interventions have been studied.

Results. There were no significant complications during the operation and in the early postoperative period. In the first group, seroma (after open alloplasty) was detected in 2 (5 %) cases, and in the second group, small wound complications were detected in 4 (12 %) cases ($p > 0.05$ according to the $\chi 2$ criterion). The duration of inpatient treatment in patients of group I is 4.4 ± 1.2 months, in group II – 7.0 ± 1.3 days ($p < 0.001$ by Student's test).

Conclusion. Application of the principles of Fast-track surgery and accelerated recovery at all stages of simultaneous laparoscopic hernioplasty and cholecystectomy (preparation for surgery, during the operation and in the postoperative period) does not increase the number of postoperative complications and decreased duration of inpatient treatment from 7,0 ± 1,3 in patients with traditional postoperative management to 4,4 ± 1,2 days.

KEY WORDS: cholecystectomy, hernioplasty, simultaneous operation, Fast-track surgery

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INTRODUCTION

The introduction of videoendoscopic technologies into routine practice of abdominal surgery has significantly expanded the possibilities of the operative treatment of various pathologies [1]. Nowadays, volume interventions including those concerning combined pathologies are possible even in severely ill patients. However, there is still no consensus on the feasibility of simultaneous simultaneous surgeries for the correction of combined abdominal diseases. Many researchers report good results of simultaneous surgeries [2, 3, 4], but so far their frequency does not correspond to the prevalence of concomitant pathology [5].

The main argument against simultaneous interventions is the increase in the volume of the surgery, correspondingly increasing the degree of surgical aggression and the risk of adverse events in the postoperative period. This is especially true for elderly and senile patients with concomitant general somatic pathology, in which there is already a high risk of postoperative complications [5]. But this particular contingent is characterized by high comorbidity with the presence of several diseases requiring surgical treatment [6, 7].

Various strategies have been proposed to reduce surgical and anesthetic risk. In recent decades, the strategy of «fast-track surgery» (Fast-track surgery), which aims to reduce the perioperative reaction to stress, the frequency of postoperative complications along with

reducing the cost and duration of hospital treatment through the use of better surgical techniques, anesthesia and postoperative pain management, has become increasingly popular [8, 9].

A variation of this strategy is the Enhanced recovery after surgery (ERAS) concept, which also consists of comprehensive interventions in the perioperative period to improve surgical outcomes. These strategies are becoming increasingly common in hernia surgery and show good results [10, 11].

We don't found studies on the effectiveness of ERAS protocols in patients with simultaneous laparoscopic hernioplasty and cholecystectomy, which indicates the relevance of this problem.

The aim of the study was to investigate the feasibility and effectiveness of simultaneous laparoscopic hernioplasty and cholecystectomy in patients with concomitant abdominal pathology.

МАТЕРІАЛИ ТА МЕТОДИ

The study was carried out on the basis of the surgical departments of the State Institution «Specialized Medical and Sanitary Unit No. 13» Ministry of Health of Ukraine and the municipal non-profit enterprise of the Kharkiv Regional Council «Regional Clinical Hospital». Simultaneous laparoscopic hernioplasty and cholecystectomy during 2015–2019 was performed in 70 patients, including 49 (70 %) women. The mean age of the patients was 57.3 ± 6.5 (95 % CI 54.7; 59.9) (29 to 83 years).

All patients underwent laparoscopic cholecystectomy (LCE) due to confirmed cholecystolithiasis with a history of chronic cholecystitis.

Hernioplasty was performed concomitantly with LHE: chiatal hernias (posterior cruorrhaphy with Nissen or Toupee fundoplication) – 12 (17 %); umbilical hernias – 43 (61 %), including - 14 (20 %) – IPOM (intraperitoneal onlay mesh) plasty, 27 (67 %) – open hernioplasty by Meio, 2 (5 %) – open mesh sub-lay hernioplasty ; postoperative hernia 16 (23 %), including 13 (81 %) cases of IPOM plasty and 3 (19 %) cases of open mesh sub-lay alloplasty; white line abdominal hernia – 3 (4 %) IPOM plasty. In four patients along with LHE simultaneous hernioplasty of chiatal and umbilical hernia was performed. Gynecological surgery was additionally performed in four cases: pangysterectomy type I in 2 women and adnexectomy type I in 2 women.

In addition, 28 (40 %) patients were found to have concomitant hypertension, 10 (14 %) had coronary heart disease, 15 (22 %) were overweight or obese, 8 (11 %) had diabetes, 12 (17 %) were diagnosed with chronic heart failure, and 7 (10 %) had chronic obstructive pulmonary disease.

In 37 patients who were operated on in 2018–2019 in the perioperative period the principles of Fast-track surgery and accelerated recovery after surgery were applied. During preparation for surgery: at the outpatient and polyclinic stage a thorough examination for diagnostics of combined abdominal pathology and clinically significant general somatic pathology; if necessary a course of therapy for full compensation of general somatic pathology was prescribed.

During the operation of epidural prolonged anesthesia; choice in favor of laparoscopic technology; at the end of the operation – irrigation of the subdiaphragmatic space with 0.25 % lidocaine solution (or longocaine).

Postoperatively: early drainage removal (in 10–12 hours). Withdrawal from opioids by prescribing parenteral paracetomol (1000 mg twice a day). Activation of the patient 6–8 hours after surgery. On the day of surgery – use of chewing gum and fluid intake. From the first day – low-calorie liquid food intake.

Standard complex of preoperative preparation and perioperative management was used in 33 patients.

All patients were operated on routinely after a set of mandatory and additional general clinical, laboratory and instrumental investigations according to the existing guidelines. Immediate results of surgical interventions were studied.

The results are given as the absolute number (%) for qualitative indices and $M \pm SD$ (mean and standard deviation of the mean) for quantitative indices. The results were processed using PSRP statistical software package by applying frequency analysis and comparing qualitative data using Fisher exact test and $\chi 2$ criterion, and quantitative data using t-criterion. The

difference between the groups was considered significant at ($p < 0.05$).

First of all, we studied the output data of the patients included in the study (Table 1).

RESULTS AND DISCUSSION

Таблиця 1

Baseline characteristics of the patients included in the study

Index	Group I (n = 37)	Group II (n = 33)	p
Age, years	56,6 ± 11,9	58,1 ± 1,7	> 0,05[1]
Gender, m/w	12/25	9/24	> 0,05[2]
Concomitant pathology:			
Overweight and obesity	10 (27 %)	5 (15 %)	> 0,05[2]
Diabetes mellitus	5 (14 %)	3 (9 %)	> 0,05[2]
Coronary heart disease	5 (14 %)	5 (15%)	> 0,05[2]
Heart failure	6 (16 %)	6 (18%)	> 0,05[2]
Lung disease	4 (11 %)	3 (9 %)	> 0,05[2]
Arterial hypertension	15 (41 %)	13 (39 %)	> 0,05[2]

Note. 1 – t-test reliability; 2 – $\chi 2$ reliability.

In the first group, 28 (66 %) patients underwent all interventions through laparoscopic access, in 9 (34 %) patients – hybrid access with open access hernioplasty of umbilical or postoperative hernias by their own tissues without tension or with the use of a mesh endoprosthesis. Hybrid access was used for small umbilical hernias. In these cases, the main trocar access was subsequently used for open hernioplasty.

In group II patients laparoscopic access was used in 9 (27 %) cases, in most cases hybrid access with open autoplastic hernioplasty – 22 (67 %) cases or alloplastic method – 2 (6 %) ($p < 0.01$ for $\chi 2$ criterion).

There were no significant complications during the operation and in the early postoperative period. Seroma was detected in 2 (5 %) cases in the first group (after open aloplasty), small wound complications were detected in 4 (12 %) cases in group II ($p > 0.05$ by $\chi 2$ criterion).

More indicative was a significant decrease in the duration of patient treatment: in group I, 4.4 ± 1.2 days, and in group II, 7.0 ± 1.3 days ($p < 0.001$ by Student's test). The possibility of discharge to outpatient treatment is evidence of complete recovery of motor activity and gastrointestinal function and other functional indicators, more quickly recovered in group I.

Similar results were obtained by other researchers. In particular, E. Stearns et al. (2018) found a more rapid recovery of bowel function and shorter in patient treatment duration when applying the accelerated recovery protocol after open hernioplasty [12].

W. Ueland et al. (2020) associated a decrease in the duration of hospital treatment with the use of mixed anesthesia and early mobilization [13].

In the first group of patients we used prolonged epidural anesthesia during surgery and in the early postoperative period, the effect of which was enhanced by non-steroidal anti-inflammatory drug administration. The efficacy of anti-inflammatory drugs has been proved in other studies [14, 15]. The positive effect of irrigation of the subdiaphragmatic space with a local anesthetic solution should also be noted, which contributes not only to pain relief, but also has an anti-inflammatory effect [16].

Early mobilization and effective anesthesia without the use of opioids contributed to the rapid recovery of intestinal function. In addition, the prescription of chewing gum in the first day after surgery played an important role. The positive effect

of chewing gum was also noted by other authors [17].

CONCLUSION

Application of the principles of Fast-track surgery and accelerated recovery at all stages of simultaneous laparoscopic hernioplasty and cholecystectomy (preparation for surgery, during the operation and in the postoperative period) does not increase the number of postoperative complications and decreased duration of inpatient treatment from 7,0 ± 1,3 in patients with traditional postoperative management to 4,4 ± 1,2 days.

PROSPECTS FOR FURTHER RESEARCH

It is promising to study different aspects of Fast-track surgery depending on the patient's condition, the presence and severity of comorbidities and the scope of surgery.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this paper.

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ЕФЕКТИВНІСТЬ КОНЦЕПЦІЇ FAST-TRACK SURGERY ПРИ СИМУЛЬТАННІЙ ЛАПАРОСКОПІЧНІЙ ГЕРНІОПЛАСТИЦІ ТА ХОЛЕЦИСТЕКТОМІЇ

Пархоменко К. Ю.

Мета дослідження – вивчення доцільності та ефективності симультанної лапароскопічної герніопластики та холецистектомії у пацієнтів з поєднаною абдомінальною патологією.

Матеріали та методи дослідження. Симультанну лапароскопічну герніопластику та холецистектомію протягом 2015–2019 рр. здійснено 70 пацієнтам, у тому числі, 49 (70 %) жінок, середнім віком 57,3 ± 6,5 р. У 37 пацієнтів застосовано принципи швидкої хірургії (I група), які включали ретельне обстеження для діагностики поєднаної патології черевної порожнини та клінічно значущої загальної соматичної патології; курс терапії для повної компенсації загальної соматичної патології за необхідністю; під час операції застосування епідуральної пролонгованої анестезії; вибір на користь лапароскопічної технології; в кінці операції – зрошення піддіафрагмального простору місцевим анестетиком; після операції: раннє видалення дренажу; відмова від опіоїдів шляхом призначення парентерального парацетомолу; активація пацієнта через 6–8 годин після операції; в день операції – вживання жувальної гумки та вживання рідини. Вивчено безпосередні результати оперативних втручань.

Результати та обговорення. Суттєвих ускладнень під час операції та у ранньому післяопераційному періоді не було. В I групі у 2 (5%) випадках виявлено серому (після відкритої алопластики), в II групі – малі ранові ускладнення виявлено в 4 (12%) випадках ($p > 0,05$ за критерієм χ^2). Тривалість стаціонарного лікування у пацієнтів I групи – 4,4 ± 1,2 дн., в II групі – 7,0 ± 1,3 дн ($p < 0,001$ за критерієм Стьюдента).

Висновок. Застосування принципів швидкої операції та прискореного відновлення на всіх етапах одночасної лапароскопічної герніопластики та холецистектомії (підготовка до операції, під час операції та в післяопераційному періоді) не збільшує кількість післяопераційних ускладнень та скорочує тривалість стаціонарного лікування з 7,0 ± 1,3 днів у пацієнтів з традиційним післяопераційним лікуванням до 4,4 ± 1,2 днів.

КЛЮЧОВІ СЛОВА: холецистектомія, герніопластика, симультанна операція, Fast-track surgery

ІНФОРМАЦІЯ ПРО АВТОРА

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ЭФФЕКТИВНОСТЬ КОНЦЕПЦИИ FAST-TRACK SURGERY ПРИ СИМУЛЬТАННОЙ ЛАПАРОСКОПИЧЕСКОЙ ГЕРНИОПЛАСТИКЕ И ХОЛЕЦИСТЭКТОМИИ

Пархоменко К. Ю.

Цель исследования – изучение целесообразности и эффективности симультанной лапароскопической герниопластики и холецистэктомии у пациентов с сочетанной абдоминальной патологией.

Материал и методы исследования. Симультанная лапароскопическая герниопластика и холецистэктомия на протяжении 2015–2019 гг. выполнена 70 пациентам, в том числе, 49 (70 %) женщин, средний возраст 57,3 ± 6,5 лет. У 37 пациентов применены принципы быстрой хирургии (I группа), которые включали тщательное обследование для диагностики сочетанной патологии брюшной полости и клинически значимой общей соматической патологии; курс терапии для полной компенсации общей соматической патологии при необходимости; во время операции применение эпидуральной пролонгированной анестезии; выбор в пользу лапароскопической технологии; в конце операции – орошение поддиафрагмального пространства местным анестетиком; после операции: раннее удаление дренажа; отказ от опиоидов путем назначения парентерального парацетомола;

активация пациента через 6–8 часов после операции; в день операции - употребление жевательной резинки и употребление жидкости. Изучены непосредственные результаты оперативных вмешательств.

Результаты и обсуждение. Существенных осложнений во время операции и в раннем послеоперационном периоде не было. В первой группе у 2 (5 %) случаях выявлена серома (после открытой алопластики), во II группе – малые раневые осложнения выявлены в 4 (12 %) случаях ($p > 0,05$ по критерию χ^2). Продолжительность стационарного лечения у пациентов I группы – 4,4 ± 1,2 мес., во II группе – 7,0 ± 1,3 дней ($p < 0,001$ по критерию Стьюдента).

Вывод. Применение принципов быстрой хирургии и ускоренного восстановления на всех этапах симультанной лапароскопической герниопластики и холецистэктомии (подготовка к операции, во время операции и в послеоперационном периоде) не увеличивает частоту послеоперационных осложнений и сокращает продолжительность стационарного лечения с 7,0 ± 1,3 дней у пациентов с традиционным послеоперационным лечением до 4,4 ± 1,2 дней.

КЛЮЧЕВЫЕ СЛОВА: холецистэктомия, герниопластика, симультанная операция, Fast-track surgery

ИНФОРМАЦИЯ ОБ АВТОРЕ

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