ПАРАСТОМАЛЬНЫЕ ГРЫЖИ И ИХ ПРОФИЛАКТИКА (ОБЗОР ЛИТЕРАТУРЫ)

К.З.Салохиддинов.[1], Д.О.Тен.[2], У.К.Сирожиддинов.[3]

[1,2]Андижанский государственный медицинский институт,

[3]Ферганский филиал Республиканский научный Центр экстренной медицинской помощи. Узбекистан.

Для цитирования: © Салохиддинов К.З., Тен.Д.О., Сирожиддинов У.К.
ПАРАСТОМАЛЬНЫЕ ГРЫЖИ И ИХ ПРОФИЛАКТИКА. ЖКМП.-2024.-Т.2.-№2.-С

Поступила: 23.03.2024
Одобрена: 24.04.2024
Принята к печати: 05.05.2024

Аннотация: На современном этапе развития колоректальной хирургии наблюдается тенденция к увеличению числа пациентов со стомой. Создание стомы является фактором формирования парастомальной грыжи, которая часто приводит к серьезным осложнениям, препятствующим полной реабилитации пациента. Чаще всего парастомальная грыжа образуется в ближайшие два года после операции, но возможность образования грыжи сохраняется на протяжении всего послеоперационного периода. В данной статье представлены современные методы профилактики парастомальных грыж, проанализированы результаты клинических исследований и метаанализов. При описании методов акцент делается на их безопасности, эффективности и экономической целесообразности.

Ключевые слова: *парастомальная грыжа, колостома, илеостома, сетчатый эндопротез.*

PARASTOMAL CHURRALAR VA ULARNING OLDINI OLISH (ADABIYOTLAR SHARHI)

K.Z.Saloxiddinov.[1], D.O.Ten.[2], U.K.Sirojiddinov.[3]

[1,2]Andijon Davlat tibbiyot instituti,

[3]Respublika shoshilinch tibbiy yordam ilmiy markazi Farg‘ona filiali. O‘zbekiston.

Izoh: © Saloxiddinov K.Z., Ten D.O., Sirojiddinov U.K.
PARASTOMAL CHURRALAR VA ULARNING OLDINI OLISH. KPTJ.-2024-N.2.-№2-M

Qabul qilindi: 23.03.2024
Ko‘rib chiqildi: 24.04.2024
Nashrga tayyorlandi: 05.05.2024

Annotatsiya: Kolorektal jarrohlik rivojlanishining hozirgi bosqichida stoma bilan og‘rigan bemorlar sonining ko‘payishi tendentsiyasi kuzatilmoqda. Stomaning chiqarish parastomal churra shakllanishining omilidir, bu ko‘pincha bemorning to‘liq reabilitatsiyasiga to‘sqinlik qiladigan jiddiy asoratlarga olib keladi. Ko‘pincha parastomal churra operatsiyadan keyingi ikki yil ichida hosil bo‘ladi, ammo churra paydo bo‘lishi extimoli operatsiyadan keyingi davrda saqlanib qoladi. Ushbu maqolada parastomal churralarni oldini olishning zamonaviy usullari keltirilgan, klinik tadqiqotlar va tekshiruvlar natijalari tahlil qilingan. Usullarni tavsiflashda ularning xavfsizligi, samaradorligi va iqtisodiy maqsadga muvofiqligiga e‘tibor qaratiladi.

Kalit so‘zlar: *parastomal churra, kolostoma, ileostoma, setkali endoprotez.*

PARASTOMAL HERNIAS AND THEIR PREVENTION (REVIEW OF LITERATURE)

Salokhiddinov K.Z.[1], Ten D.O.[2], Sirojiddinov U.K.[3]

[1,2]Andijan State Medical Institute,

[3]Ferghana branch of the Republican research center of emergency medicine. Uzbekistan.

For situation: © Salokhiddinov K.Z., Ten D.O., Sirojiddinov U.K.
PARASTOMAL HERNIAS AND THEIR PREVENTION. JCPM.-2024.P.2.№2-A

Received: 23.03.2024
Reviced: 24.04.2024
Accepted: 05.05.2024

Annotation: At the present stage of development of colorectal surgery, there is a tendency to increase the number of stoma patients. The creation of a stoma is a factor in the formation of a parastomal hernia, which often leads to serious complications that prevent the full rehabilitation of the patient. Most often, a parastomal hernia is formed in the next two years after surgery, but the possibility of hernia formation persists throughout the postoperative period. This paper presents modern methods for the prevention of parastomal hernias and analyzes the results of clinical trials and meta-analyses. When describing the methods, emphasis is placed on their safety, efficiency, and economic feasibility.

Keywords: *parastomal hernia, colostomy, ileostomy, mesh endoprosthesis.*

The steady increase in the incidence of colorectal cancer and other diseases of the colon leads to an increase in the number of operations ending with the imposition of an intestinal stoma [1,2]. In the United States, about 100 thousand people annually undergo surgical interventions with the formation of ileo- or colostomy [3]. In the Russian Federation, the number of patients who have stoma, according to several sources, reaches 120–140 thousand people [4, 5]. The incidence of parastomal hernias is 28.3% for permanent-end ileostomies and 48% for permanent-end colostomies [7]. Most often, a parastomal hernia is formed in the next two years after surgery, but the possibility of hernia formation persists throughout the postoperative period. Some surgeons believe that the formation of a parastomal hernia is inevitable [8]. In most cases of surgical intervention, the stage of stoma formation is not the main one, while the problem of stoma care comes to the fore for the patient [9, 10]. Parastomal hernia, both in ileo- and colostomy [11], is one of the main reasons that impede the full rehabilitation of the patient since it often leads to the development of serious complications that negatively affect the quality of life of the patient [12]. There are many methods of surgical treatment and prevention of parastomal hernias, however, such hernias remain a serious surgical problem [7]. One of the main reasons for the appearance of parastomal hernias is technical errors in the formation of stomas [13]. Proceeding from this, the solution to the problem is seen in the improvement of the technique of imposing a stoma and the development of methods for the prevention of hernias [14]. It is believed that the location of the stoma on the anterior abdominal wall affects the incidence of parastomal hernias. When forming the stomal canal through the sheath of the rectus muscle, the likelihood of their development is less in comparison with pararectal access [15]. There are several options for passing the intestine through the rectus muscle. Traditionally, a cruciform incision is made on the front sheet of the rectus sheath, the back sheet of the sheath with the rectus muscle is split vertically and a stoma is formed. Another option is to place the stoma in the region of the lateral edge of the sheath of the rectus abdominis muscle, in foreign sources - lateral rectus abdominis positioned stoma (LRAPS) [16]. Thus, a study involving 72 patients and a median follow-up of 24 months showed that the risk of parastomal hernia with LRAPS is approximately 10%, and with the traditional method - 40–60% [16]. At the same time, in a review of nine retrospective cohort studies [17], including 761 patients in total, there was no difference between pararectal access and transrectal techniques (relative risk - 1.29%, confidence interval - 95%). Thus, the relationship between the site of stoma creation and the likelihood of parastomal hernia is currently uncertain [8]. The size of the incision during the formation of the stomal canal continues to be discussed [9]. The study by S. Pilgrim et al. [18], conducted with the participation of 33 patients, confirmed the hypothesis that an excessively long incision of the aponeurosis is a constant predictor of the development of parastomal hernia. The authors found that each additional millimeter of incision in the aponeurosis increases the risk of hernia by 10%.

The main rule for the formation of the size of the incision is a tight girth of the intestine without the occurrence of ischemia, however, this factor remains subjective and difficult to assess [19]. It is known that even if the diameter of the intestine carrying the stoma is ideally matched to the fascial incision, the latter tends to expand [20]. On the other hand, as in the case of the expansion of the hernia defect in postoperative hernia [22], dilatation of the stomal canal also occurs due to a metabolic disorder in the connective tissue due to genetic characteristics and the long-term existence of the abdominal wall defect [23]. The main direction in the prevention of parastomal hernias is to strengthen the diastasis of tissues between the fascial aperture of the stomal canal and the intestine carrying the stoma [24]. Most of these techniques are based on strengthening the entire perimeter of the stomal canal with the help of endoprostheses. In this regard, an original method of prevention without the use of a mesh implant is of interest. Instead of a cruciform incision in the formation of the stomal canal, recommended by C.C. Lyon and A.J. Smith [25], it was proposed to perform a linear incision of the aponeurosis, the corners of which are reinforced with two interrupted sutures made of non-absorbable suture material [26]. With sufficient effectiveness of the method, it is worth noting its safety and low cost compared to other prevention methods that use mesh prostheses, bioimplants, or specially designed devices. There is evidence that suturing the stoma-bearing bowel segment to the anterior abdominal wall prevents parastomal hernia formation. So, K. von Smitten et al. [27] reported on 54 patients with terminal sigmostoma, half of whom used this technique for stoma formation.

However, no statistically significant difference was found between the groups. H. Abcarian and R.K. Pearl argue against bowel fixation, which has also not yet been clinically validated [28]. Thus, the available evidence is insufficient to support or refute the hypothesis that closing the lateral space by fixing the stoma-bearing bowel to the anterior abdominal wall reduces the risk of parastomal hernia [7]. In 1958 J.C. Goligher and C.P. Sames simultaneously described an extraperitoneal method for creating end stomas [29]. The operation consisted of the formation of the retroperitoneal canal along the anterior abdominal wall by exfoliating the peritoneum from the muscular-aponeurotic layer to the place of optimal removal of the intestinal stoma to the anterior abdominal wall. This approach preserves the peritoneum on the inside of the stomal canal [8]. Hamada et al. analyzed the data of 37 patients, 22 of whom had a retroperitoneal stoma created during laparoscopic abdominoperineal extirpation [30].

According to the results of this retrospective study, laparoscopic extraperitoneal colostomy leads to the formation of a parastomal hernia in only 4.5% of cases compared with 33% of transperitoneal colostomy ($p = 0.03$). A similar conclusion was made in a meta-analysis by L. Lian et al. [31], covering 1000 patients. It was found that after open surgery, the incidence of parastomal hernias in retroperitoneal stoma is significantly lower ($p=0.002$) compared to the traditional technique. Despite promising results [20], extraperitoneal stomas are not yet recommended for universal use, even in the formation of permanent stomas [8]. The authors agree that further studies are needed to evaluate the effectiveness of this method of preventing parastomal hernias [7]. In 1977 J.D. Rosin and R.A. Bonardi [32] proposed the use of a mesh prosthesis to strengthen the stomal canal. I. Bayer et al. [33] published the first studies of strengthening the anterior abdominal wall with a mesh prosthesis during the formation of a colostomy in 1986. To date, many types of mesh implants are available for the prevention and treatment of parastomal hernias. Most often, polypropylene prostheses are used especially their large-pore lightweight variants [34]. In addition, composite implants containing biodegenerative anti-adhesive molecules are widespread [21]. There were no complications when using a two-component prosthesis [36]. It was noted that the severity of the inflammatory process of the abdominal organs located near large-porous implants is lower [4]. Janes et al. [37], who performed prophylactic implantation of a mesh prosthesis using the sub-lay method, with a median follow-up of 5 years, reported the incidence of parastomal hernias in 13.3% versus 81% in the control group. In the study of A.L. Goncharova et al. [46], the median follow-up was 20–25.5 months. It was found that a modified version of the P.H. Sugarbaker with a composite allograft during the primary intervention is safe and can be used prophylactically, as it can reduce the incidence of parastomal hernia by five times. However, the question of the need for total prevention remains debatable, since 73% of patients in the control group did not develop a parastomal hernia during the observation period.

The effectiveness of the prevention of parastomal hernias with the help of a mesh implant installed during the primary laparoscopic surgery was confirmed. In a randomized clinical trial, X. Serra-Aracil et al. [35] implanted a mesh endoprosthesis for prophylactic purposes using a modified P.H. Sugarbaker. The occurrence of a hernial protrusion was diagnosed using CT of the abdominal cavity. As a result, parastomal hernia was detected in 25% of patients in the experimental group and 64% of the control group. The study by A. Lykke et al. [39] assessed the safety and efficacy of preventing paracolostomy hernias using a mesh prosthesis in emergency surgery. In 48% of cases, the surgical field is contaminated. Despite this, a preventive mesh prosthesis was installed in half of the patients. Even taking into account the contamination of the surgical field, no difference in the development of wound complications was found. In addition, at a median follow-up of 12 months, the incidence of parastomal hernias in the experimental and control groups was the same. It is believed that in case of contamination of the surgical field, which occurs from time to time during the formation of an ileostomy or colostomy, a differentiated approach is necessary. In conditions where the surgical field is infected, the use of bioimplants (much more expensive products than synthetic meshes) is preferable due to their lower propensity for bacterial contamination [8]. In addition, they significantly reduce the risk of developing intestinal parastomal fistulas due to less likelihood of intestinal erosion. In clinical practice, Permacol and Strattice bioprostheses are widely used making sheet pigskin, devoid of antigenic structure and chemically soldered (cross-linking).

As a result of the manufacturing process, an implant is made from this material, which is a pure cross-linked collagen and elastin without cellular structures and adipose tissue [40]. Initially, the use of bioimplants was reported to significantly reduce the incidence of parastomal hernias, although this claim was based on a small number of studies involving a small number of patients [41]. The multicentre, prospective, randomized PAISM trial refuted the initial results. After 24 months of observation, statistically identical results of parastomal hernia formation were obtained in the main group (10.2%) versus 13% in the control group, respectively. The authors concluded that the strengthening of the stomal canal with mesh bioimplants is safe, but not economically justified for routine prophylactic use [42]. In summary, recent clinical studies and meta-analyses on the prophylactic use of mesh implants provide encouraging results. However, in most studies, an insufficient number of patients have been studied, so the probability of errors is high [38]. Additional contradictions are introduced by the results, in which there is no significant difference in the incidence of parastomal hernias when using a mesh endoprosthesis [39]. In this regard, it is recommended to use the obtained data with caution in clinical practice [43]. Studies show that the use of mesh polymer endoprostheses in the treatment of ventral hernias reduces the number of recurrences, but leads to an increase in the frequency of wound complications [44]. In this regard, it is possible that with the prophylactic installation of mesh implants and a decrease in the likelihood of developing a parastomal hernia, an increase in the risk of wound complications in the stoma is also inevitable. This assumption is confirmed by studies that indicate an increase in the number of infectious complications associated with a stoma after operations, during which a mesh implant was placed during its formation [45]. It was also noted that parastomal hernia did not form in 52–73% of patients with a permanent terminal colostomy [7]. We believe that in the presence of several alternative methods of prevention that significantly reduce the incidence of parastomal hernia, the total implantation of a mesh endoprosthesis in all patients with a permanent stoma is not necessary, since such an installation exposes a significant group of patients to an unjustified risk of complications. Further studies are needed to identify groups of patients with varying degrees of risk of developing parastomal hernias to rationally prevent them.

REFERENCES:

1.Ayupov R.T. Modern approaches to the treatment of advanced colorectal cancer. Creative surgery and oncology 2010; 3:32–36.

2.Davydov M.I., Aksel E.M. Statistics of morbidity and mortality from malignant neoplasm in 2000. In the book: Malignant Neoplasm in Russia and the CIS Countries in 2000. M: RONTS im. N.N. Blokhin RAMS; 2002; with. 85–106.

3.Hendren S., Hammond K., Glasgow S.C., Perry W.B., Buie W.D., Steele S.R., Rafferty J. Clinical practice guidelines for ostomy surgery. Dis Colon Rectum 2015; 58(4): 375–387.

4.Sukhanov V.G. Social rehabilitation of patients with stoma. M: Science; 2006.

5.Nazarova D.A. Research, analysis, and development of practical recommendations for nursing care of patients with intestinal stoma. Bulletin of RUDN University. Series: Medicine 2017; 21(3): 347–355, https://doi.org/10.22363/2313-0245-2017-21-3-347-355.

6.Śmietański M., Bury K., Matyja A., Dziki A., Wallner G.,Studniarek M., Fridiger J., Szczepkowski M., Świerblewski M., Wróblewski T., Tarnowski W., Solecki R., Mitura K. Polish guidelines for treatment of patients with parastomal hernia. Pol Przegl Chir 2013; 85(3): 152–180, https://doi.org/10.2478/pjs-2013-0027.

7.Carne P.W., Robertson G.M., Frizelle F.A. Parastomal hernia. Br J Surg 2003; 90(7): 784–793, https://doi.org/10.1002/bjs.4220.

8.Glasgow S., Dharmarajan S. Parastomal hernia: avoidance and treatment in the 21st century. Clin Colon Rectal Surg 2016; 29(3): 277–284, https://doi.org/10.1055/s-0036-1584506.

9.Ermolaev E.I. Comparative evaluation of the results of colostomy. Medicine and Ecology 2010; 4:182–184.

10. Kurdyukova P.G., Popov I.P., Popova N.V. Late complications of colostomy. Bulletin of the East Siberian Scientific Center of the Siberian Branch of the Russian Academy of Medical Sciences 2006; 5:354–355.

11.Vorobyov G.I., Tsarkov P.V. Fundamentals of surgery for intestinal stoma. M: Capital city; 2002.

12.Aquina C.T., Iannuzzi J.C., Probst C.P., Kelly K.N., Noyes K., Fleming F.J., Monson J.R. Parastomal hernia: a growing problem with new solutions. Dig Surg 2014; 31(4–5): 366–376, https://doi.org/10.1159/000369279

13.Shaposhnikov V.I., Ashkhamaf M.Kh., Zorik V.V., Marchenko N.V., Gedzyun R.V. Analysis of technical errors in the formation of terminal colostomy. Kuban Scientific Medical Bulletin 2013; 3:139–141.

14.Timerbulatov M.V., Ibatullin A.A., Gainutdinov F.M., Kulyapin A.V., Aitova L.R., Kyzylbaeva A.I., Abdeev A.A., Fatkhullin A.S. Late complications of intestinal stoma and their surgical correction. Kazan Medical Journal 2012; 93(4): 602–606.

15.Sjödahl R., Anderberg B., Bolin T. Parastomal hernia about site of the abdominal stoma. Br J Surg 1988; 75(4): 339–341, https://doi.org/10.1002/bjs.1800750414.

16.Evans M.D., Thomas C., Beaton C., Williams G.L., McKain E.S., Stephenson B.M. Lowering the incidence of stomal herniation: further follow up of the lateral rectus abdominis positioned stoma. Colorectal Dis 2011; 13(6): 716–717, https://doi.org/10.1111/j.1463-1318.2011.02635.x.

17.Hardt J., Meerpohl J.J., Metzendorf M.I., Kienle P., Post S., Herrle F. Lateral pararectal versus transrectal stoma placement for prevention of parastomal herniation. Cochrane Database Syst Rev 2013.

18.Pilgrim C., McIntyre R., Bailey M. Prospective audit of parastomal hernia: prevalence and associated comorbidities. Dis Colon Rectum 2010; 53(1): 71–76, https://doi.org/10.1007/dcr.0b013e3181bdee8c.

19.Shakeev K.T., Nurbekov A.A., Zhanasova M.M. Evaluation of the effectiveness of the method for the prevention of colostomy. Bulletin of Surgery of Kazakhstan 2010; 1:70–71.

20.Londono-Schimmer E.E., Leong A.P., Phillips R.K. Life table analysis of stomal complications following colostomy. Dis Colon Rectum 1994; 37(9): 916–920, https://doi.org/10.1007/bf02052598.

21.López-Cano M., Lozoya-Trujillo R., Quiroga S., Sánchez J.L., Vallribera F., Martí M., Jiménez L.M., Armengol-Carrasco M., Espín E. Use of a prosthetic mesh to prevent parastomal hernia during laparoscopic abdominoperineal resection: a randomized controlled trial. Hernia 2012; 16(6): 661–667, https://doi.org/10.1007/s10029-012-0952-z.

22.Parshikov V.V., Fedaev A.A. Abdominal wall prosthetic repair in ventral and incisional hernia treatment: classification, terminology and technical aspects (review). Sovremennye tehnologii v medicine 2015; 7(2): 138–152, https://doi.org/10.17691/stm2015.7.2.19.

23.Bogdan V.G., Gain Yu.M. Pathogenesis of postoperative hernias: changes in connective tissue metabolism - cause or effect? Surgery News 2011; 6:29–35.

24.Fedorov V.D., Dultsev Yu.V. Proctology. M: Medicine; 1984; 384 c.

25.Abdominal stomas and their skin disorders. An atlas of diagnosis and management. Lyon C.C., Smith A.J. (editors). UK: Informa; 2010, https://doi.org/10.3109/9780203443996.

26.Hayles K., Almoudaris A. Reducing the incidence of parastomal hernia with a simple surgical technique. Br J Nurs 2017; 26(5): S4–S10, https://doi.org/10.12968/bjon.2017.26.5.s4.

27.von Smitten K., Husa A., Kyllönen L. Long-term results of sigmoidectomy in patients with anorectal malignancy. Acta Chir Scand 1986; 152: 211–213.

28.Abcarian H., Pearl R.K. Stomas. Surg Clin North Am 1988; 68(6): 1295–1305, https://doi.org/10.1016/s0039-6109(16)44687-6.

29.Goligher J.C. Extraperitoneal colostomy or ileostomy. Br J Surg 1958; 46(196): 97–103, https://doi.org/10.1002/bjs.18004619602.

30.Hamada M., Ozaki K., Muraoka G., Kawakita N., Nishioka Y. Permanent end-sigmoid colostomy through the extraperitoneal route prevents parastomal hernia after laparoscopic abdominoperineal resection. Dis Colon Rectum 2012; 55(9): 963–969, https://doi.org/10.1097/dcr.0b013e31825fb5ff.

31.Lian L., Wu X.R., He X.S., Zou Y.F., Wu X.J., Lan P., Wang J.P. Extraperitoneal vs. intraperitoneal route for permanent colostomy: a meta-analysis of 1,071 patients. Int J Colorectal Dis 2012; 27(1): 59–64, https://doi.org/10.1007/s00384-011-1293-6.

32.Rosin J.D., Bonardi R.A. Paracolostomy hernia repair with Marlex mesh: a new technique. Dis Colon Rectum 1977; 20(4): 299–302, https://doi.org/10.1007/bf02586428.

33. Bayer I., Kyzer S., Chaimoff C. A new approach to the primary strengthening of colostomy with Marlex mesh to prevent para colostomy hernia. Surg Gynecol Obstet 1986; 163(6): 579–580.

34. Gögenur I., Mortensen J., Harvald T., Rosenberg J., Fischer A. Prevention of parastomal hernia by placement of a polypropylene mesh at the primary operation. Dis Colon Rectum 2006; 49(8): 1131–1135, https://doi.org/10.1007/s10350-006-0615-1.

35.Serra-Aracil X., Bombardo-Junca J., Moreno-Matias J., Darnell A., Mora-Lopez L., Alcantara-Moral M., Ayguavives-Garnica I., Navarro-Soto S. Randomized, controlled, prospective trial of the use of a mesh to prevent parastomal hernia. Ann Surg 2009; 249(4): 583–587, https://doi.org/10.1097/sla.0b013e31819ec809.
36.Conde-Muíño R., Díez J.L., Martínez A., Huertas F., Segura I., Palma P. Preventing parastomal hernias with systematic intraperitoneal specifically designed mesh. BMC Surg 2017; 17(1): 41, https://doi.org/10.1186/s12893-017-0237-7.
37.Jänes A., Cengiz Y., Israelsson L.A. Experiences with a prophylactic mesh in 93 consecutive ostomies. World J Surg 2010; 34(7): 1637–1640, https://doi.org/10.1007/s00268-010-0492-6.
38.Cross A.J., Buchwald P.L., Frizelle F.A., Eglinton T.W. Meta-analysis of prophylactic mesh to prevent parastomal hernia. Br J Surg 2017; 104(3): 179–186, https://doi.org/10.1002/bjs.10402.
39.Lykke A., Andersen J., Jorgensen L.N., Mynster T. Prevention of parastomal hernia in the emergency setting. Langenbecks Arch Surg 2017; 402(6): 949–955, https://doi.org/10.1007/s00423-017-1596-3.
40. Permacol™ Surgical Implant. Instructions for use.
41.Hammond T.M., Huang A., Prosser K., Frye J.N., Williams N.S. Parastomal hernia prevention using a novel collagen implant: a randomized controlled phase 1 study. Hernia 2008; 12(5): 475–481, https://doi.org/10.1007/s10029-008-0383-z.
42.Fleshman J.W., Beck D.E., Hyman N., Wexner S.D., Bauer J., George V.; PRISM Study Group. A prospective, multicenter, randomized, controlled study of non-cross-linked porcine acellular dermal matrix fascial subway for parastomal reinforcement in patients undergoing surgery for permanent abdominal wall ostomies. Dis Colon Rectum 2014; 57(5): 623–631, https://doi.org/10.1097/dcr.0000000000000106.
43.Cornille J.B., Pathak S., Daniels I.R., Smart N.J. Prophylactic mesh use during primary stoma formation to prevent parastomal hernia. Ann R Coll Surg Engl 2017; 99(1): 2–11, https://doi.org/10.1308/rcsann.2016.0186.
44.Vlasov A.V., Kukosh M.V. The problem of wound complications in abdominal wall arthroplasty for ventral hernias. Modern technologies in medicine 2013; 5(2): 116–124.
45. Geisler D.J., Reilly J.C., Vaughan S.G., Glennon E.J., Kondylis P.D. Safety and outcome of the use of nonabsorbable mesh for repair of fascial defects in the presence of open bowel. Dis Colon Rectum 2003; 46(8): 1118–1123, https://doi.org/10.1007/s10350-004-7290-x.
46.Goncharov A.L., Razbirin V.N., Shalaeva T.I., Cherner V.A., Razbirin D.V., Gurova O.V., Aslanyan A.S. Prevention of paracolostomy hernia. Surgery. Journal them. N.I. Pirogova 2016; 10: 52–56, https://doi.org/10.17116/hirurgia20161052-56.

Информация об авторах:
© САЛОХИДДИНОВ К.З. – д.м.н., доцент кафедры 1 Факультетской и госпитальной хирургии Андижанского Государственного медицинского института. г.Андижан. Узбекистан.
© ТЕН Д.О. – к.м.н., ассистент кафедры 1 Факультетской и госпитальной хирургии Андижанского Государственного медицинского института. г.Андижан. Узбекистан.
© СИРОЖИДДИНОВ У.К. – Заведующий отделением 2 хирургии Ферганского филиала Республиканского научного центра экстренной медицинской помощи. г.Фергана.Узбекистан.

Muallif haqida ma‘lumot:
© SALAXIDDINOV K.Z. – t.f.d., Andijon Davlat tibbiyot institute 1 Fakultet va gospital jarrohlik kafedrasi dotsenti. Andijon sh. O‘zbekiston.
© TEN D. O.– t.f.n., Andijon Davlat tibbiyot instituti 1 Fakultet va gospital jarrohlik kafedrasi assistenti. Andijon sh. O‘zbekiston.
© SIROJIDDINOV U.K.–Respublika shoshilinch tez tibbiy yordam ilmiy markazi Farg'ona filiali 2-jarrohlik bo‘limi mudiri. Farg‘ona sh. O‘zbekiston.

Information about the authors:
© SALOKHIDDINOV K.Z. – (DSc), associate professor of the Department "1-Faculty and Hospital Surgery" of the Andijan State Medical Institute. Andijan, Uzbekistan.
© TEN D.O.– (PhD), assistant of the Department "1- Faculty and hospital surgery" of the Andijan State Medical Institute. Andijan, Uzbekistan.
© SIROJIDDINOV U.K. – Head of the 2nd Abdominal Surgery of the Fergana Branch of the Republican Scientific Center for Emergency Medical Car. Fergana, Uzbekistan.