Melnychenko M., Gudz V., Antonyuk V. Results of sparing omentum resection in children with apendicular peritonitis. Journal of Education, Health and Sport. 2018;8(1):309-319. eISSN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.1322744
http://ojs.ukw.edu.pl/index.php/johs/article/view/5726

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26.01.2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 23.01.2018. Revised: 26.01.2018. Accepted: 31.01.2018.

UDC 616.382-089.873-06 : 616.381-002]-053.2

RESULTS OF SPARING OMENTUM RESECTION IN CHILDREN WITH APENDICULAR PERITONITIS

M. Melnychenko, *V. Gudz, V. Antonyuk

Odessa National Medical University of the Ministry of Health of Ukraine, Odessa, Ukraine
***MI "Odessa Regional Children's Clinical Hospital", Odessa, Ukraine**

Abstract

Introduction. Among treatment methods of omentitis in children are applied incisions on the altered omentum and its drainage, classical resection, conservative therapy, etc. These methods do not prevent the occurrence of complications at appendicular peritonitis. The choice of the most advanced method of treatment of this disease is currently being debated.

Purpose: To improve surgical treatment method of omentitis in children with appendicular peritonitis by sparing resection**.**

Material and methods. The novation group included 36 patients with appendicular peritonitis, in which resection of the destructive omentum was performed according to the developed method. The control group was formed by 78 children, who underwent the classical resection method of the large omentum.

Results. Among children of NG, who underwent the primary resection of the inflammatory omentum according to the developed technique, postoperative intra-abdominal infiltration arose at one child, but its course was favorable: the relief of pain syndrome,

disappearance of palpated "tumor" and normalization of the total body temperature were in 2 - 2.5 times faster compared to the control group, which did not require repeated surgical intervention and resulted in a decrease in the duration of inpatient treatment to 12.1 (2.3) days, respectively.

Conclusions. Lack of "unsatisfactory" result in children of the NG indicates the advantage of using the developed method of destructively altered epiploon resection and preventing the development of infiltrates of the abdominal cavity.By using a stepwise resection of a destructively modified large epiploon was possible to minimize blood loss and time of surgical intervention, remove the inflammation cell from the abdominal cavity and prevent the development of postoperative omentitis. Application of the proposed methodology of stepwise sparing resection of inflammatory altered omentum in children with appendicular peritonitis as a way to prevent the formation of omentitis in the postoperative period and its abscess formation, contributed to the implementation of the general pediatric surgery principle - saving attitude to the tissues, thus ensuring "good" direct result in 94,4% cases and no "unsatisfactory" results ($p \leq 0.0001$).

Key words: children, omentum, resection, appendicular peritonitis.

РЕЗУЛЬТАТИ ЩАДНОЇ РЕЗЕКЦІЇ САЛЬНИКУ У ДІТЕЙ З АПЕНДИКУЛЯРНИМ ПЕРИТОНІТОМ

М. Г. Мельниченко, * В. А. Гудзь, В. В. Антонюк

Одеський національний медичний університет МОЗ України, м. Одеса, Україна
***КУ «Одеська обласна дитяча клінічна лікарня», м. Одеса, Україна**

Резюме

Вступ. Серед способів лікування оментиту у дітей відомими є нанесення насічок на змінений сальник та його дренування, проведення класичної резекції, консервативна терапія та ін. Вказані методи не запобігають виникненню ускладнень при апендикулярному перитоніті. Вибір найбільш досконалого методу лікування цього захворювання до теперішнього часу дискутується.

Мета: удосконалення способу хірургічного лікування оментиту у дітей з апендикулярним перитонітом шляхом щадної резекції.

Матеріал і методи. До новаційної групи увійшло 36 пацієнтів з апендикулярним перитонітом, у яких проведена резекція деструктивного сальнику за розробленою методикою. Контрольну групу утворили 78 дітей, у яких виконано метод класичної резекції великого сальника.

Результати. Серед дітей НГ, у яких первинно резекція запально зміненого спальника проведена за розробленою методикою, післяопераційний інтраабдомінальний інфільтрат виник у однієї дитини, але його перебіг був сприятливим: і купірування больового синдрому, і зникнення пальпованої «пухлини», і нормалізація загальної температури тіла були у 2-2,5 рази скорішими у порівнянні з групою контролю, що не потребувало повторного оперативного втручання та привело до зменшення терміну стаціонарного лікування до 12,1 (2,3) діб відповідно.

Висновки. Відсутність «незадовільного» результату у дітей з НГ свідчить про перевагу застосування розробленого власного способу резекції деструктивно зміненого сальнику та запобігання розвитку інфільтрату черевної порожнини. Використання покрокової резекції деструктивно зміненого великого сальнику надавало можливість мінімізувати крововтрату та час оперативного втручання, видалити осередок запалення із черевної порожнини та запобігти розвитку післяопераційного оментиту. Застосування запропонованої методики щадної покрокової резекції запально зміненого сальнику у дітей з апендикулярним перитонітом, як способу профілактики формування оментиту у післяопераційному періоді та його абсцедуванню, сприяло реалізації головного принципу педіатричної хірургії – ощадливого ставлення до тканин, що забезпечувало «добрий» безпосередній результат у 94,4 % випадків та відсутність «незадовільного» результату ($p \leq 0,0001$).

Ключові слова: діти, сальник, резекція, апендикулярний перитоніт.

РЕЗУЛЬТАТЫ ЩАДЯЩЕЙ РЕЗЕКЦИИ САЛЬНИКА У ДЕТЕЙ С АППЕНДИКУЛЯРНЫМ ПЕРИТОНИТОМ

М. Г. Мельниченко, * В. А. Гудзь, В. В. Антонюк

Одесский национальный медицинский университет МОЗ Украины, г. Одесса, Украина

***КУ «Одесская областная детская клиническая больница», г. Одесса, Украина**

Резюме

Введение. Среди способов лечения оментита у детей известны нанесения насечек на измененный сальник и его дренирование, проведение классической резекции, консервативная терапия и др. Указанные методы не предотвращают возникновение осложнений при аппендикулярном перитоните. Выбор наиболее совершенного метода лечения этого заболевания до настоящего времени дискутируется.

Цель: усовершенствование способа хирургического лечения оментита у детей с аппендикулярным перитонитом путем щадящей резекции.

Материал и методы. В новационную группу вошло 36 пациентов с аппендикулярным перитонитом, у которых проведена резекция деструктивного сальника по разработанной методике. В контрольную группу вошло 78 детей, в которых выполнен метод классической резекции большого сальника.

Результаты. Среди детей НГ, в которых первично резекция воспалительно измененного сальника проведена по разработанной методике, послеоперационный интраабдоминальный инфильтрат сформировался у одного ребенка, но его течение был благоприятным: и купирование болевого синдрома, и исчезновение пальпируемой «опухоли», и нормализация общей температуры тела были в 2-2,5 раза быстрее в сравнении с группой контроля, что не требовало повторного оперативного вмешательства и привело к уменьшению срока стационарного лечения до 12,1 (2,3) суток соответственно.

Выводы. Отсутствие «неудовлетворительного» результата у детей НГ свидетельствует о преимуществе применения разработанного способа резекции деструктивно измененного сальника и предотвращает развитие инфильтрата брюшной полости. Использование пошаговой резекции деструктивно измененного большого

сальника предоставляло возможность минимизировать кровопотерю и время оперативного вмешательства, удалить очаг воспаления из брюшной полости и предотвратить развитие послеоперационного оментита. Применение предложенной методики щадящей пошаговой резекции воспалительно измененного сальника у детей с аппендикулярным перитонитом, как способа профилактики формирования оментита в послеоперационном периоде и его абсцедирования, содействовало реализации главного принципа педиатрической хирургии – щадящего отношения к тканям, что обеспечивало «хороший» непосредственный результат в 94,4 % случаев и отсутствие «неудовлетворительного» результата ($p \leq 0,0001$).

Ключевые слова: дети, сальник, резекция, аппендикулярный перитонит.

Introduction. Adequate surgical tactics has a decisive importance in the treatment of acute inflammatory diseases of the abdominal cavity. However, consequences of such diseases depend not only on the volume and nature of surgical intervention, but also on the involvement of body tissues in the inflammatory process. It is the inflammatory changes of the epiploon (omenitis) that provide postoperative complications, for example, the formation of intra-abdominal infiltrates [1, 2, 4, 6].

Among treatment methods of omentitis in children are applied incisions on the altered omentum and its drainage, classical resection, conservative therapy, etc. [1, 2, 6, 7, 8]. These methods do not prevent the occurrence of complications at appendicular peritonitis. Classical resection of the epiploon is used more often: clamps are applied on the omentum, the part over the clamp is removed and under - it is stitched and tied [1, 2, 5, 7, 8]. A disadvantage of this method is the large stump of omentum, which more often leads to its inflammation and abscessing. The choice of the most advanced method of treatment of this disease is currently being debated.

Purpose: to improve surgical treatment method of omentitis in children with appendicular peritonitis by sparing resection, which prevents the appearance of a large remained part, in which there is a violation of the blood circulation, and conditions are created for the continuation of inflammation and the emergence of postoperative omentitis.

Material and methods. There were 114 children aged 2 to 18 years with appendicular peritonitis under our supervision, who were in the purulent-septic surgery department of the MI "Odessa Regional Children's Clinical Hospital". The criterion for selecting children in the study group was the formation of local intra-abdominal changes in the form of periapendicular abscesses of varying degrees of severity and the involvement of the epiploon

prior to their delimitation, requiring the resection of the destructive particle of the omentum. Intraoperative periapendicular abscesses were detected in children, both in the widespread, and in the local peritonitis. To evaluate the efficacy of surgical treatment of omenitis in children with appendicular peritonitis, we divided all patients into two groups - control (CG) and novative (NG) (Table 1). 36 patients with appendicular peritonitis were included to the NG, in which was conducted resection of the destructive omentum on the developed methodology [3]. CG was formed by 78 children, who undergone a classical resection of the epiploon during surgery on onappendicular peritonitis but in the postoperative period all children had PII. There were no differences by gender, age, and by the presence of pathology in comparison groups.

Table 1 **Distribution of children of the studied groups depending on the primary nosology**

Studied groups		Nosology		Total
		Spread peritonitis	Local peritonitis	
Novative group (n=36)	Abs	6	30	36
	%	16,7	83,3	100
Control group (n=78)	Abs	11	67	78
	%	14,1	85,9	100
χ^2=0,82 p=0,93				

At admission all children with appendicular peritonitis had an ultrasound examination of the abdominal cavity, which helped to visualize intra-abdominal localization of the inflammation cell (periapendicular abscess I-III, peritonitis) and to determine the indications for emergency surgery.

Ultrasound examination in all cases determined the reduction of echogenicity of tissues, clarity of contours, and thickening of the intestinal walls due to swelling of tissues of organ structures as signs of inflammation. A large omentum in the infiltrate was represented by an epo-positive formation of irregular shape with a fuzzy contour and a characteristic cellular structure.

Treatment results were evaluated in three levels: "good", "satisfactory" and "unsatisfactory". Under the "good" result one understood that children did not have complaints, no violations on the part of the gastrointestinal tract were determined, no infiltrates of the abdominal cavity. The "satisfactory" results were scored when the children complained on discomfort and abdominal pain, sometimes there was a violation of the intestine function."Unsatisfactory"results included the emergence of complications that led to

abnormalities in the organs of the abdominal cavity: abscessing of infiltrates in the abdominal cavity, adhesive obstruction of the intestine.

Results. Conducted analysis of the presence of local and general specific and nonspecific clinical features in children of the studied groups during hospitalization showed that the leading complaint of all patients was subjective and provoked abdominal pain (110 patients, 96.5%), which varied according to age and timing of the disease, but the localization of pain reliably more often pointed on the inflammatory process: pain on the right was observed in 2 times more often (68.3%) than around the abdomen - 31.7% of cases. Symptom of palpated "tumor" occurred in 74,6% of all patients and was more often manifested in the complicated course of peritonitis, that is, in the formation of abscess I-III.Violations of defecation occurred only in every fifth child, and the hanging of the anterior wall of the rectum at rectabdominal bimanual examination was present at formation of postoperative intra-abdominal infiltrate.

We have developed a method of sparing resection of the large omentum at its inflammation in order to prevent postoperative intra-abdominal infiltrates. During laparotomy at appendicular peritonitis, macroscopically determine the border of inflammatory infiltrate of the larger omentum. Leaving 1.5-2 cm within the unaltered tissue of the epiploon, stepwise proximally and distantly apply clamps to a length of 1.5-2 cm of epiploon tissue, cut off the omentum over the proximally superimposed clamping machine, sew and tie the proximal part of the omentum with polyamide (3 / 0, 0.4). Remove omentum infiltrate with such steps (Picture 1).

Fig. 1 Method of sparing stepwise resection of the epiploon

The use of sparing stepwise resection of a destructively altered large epiploon provides the opportunity to minimize blood loss during surgery, remove the inflammation of the abdominal cavity and prevent the development of postoperative omentitis. The method is executed quickly, is available to medical institutions of any accreditation levels [3].

If in the postoperative period there was a complication in the form of intra-abdominal infiltration, the child had specific clinical signs of direct infiltration of the abdominal cavity. The leading symptom of PII in all patients was subjective and provoked abdominal pain (80 patients, 70.2%), symptom of palpable tumor (80 patients, 70.2%), localization of which reliably pointed on the topic of intra-abdominal infiltration and 4 times more often pain was observed on the right (76, 66.7%) than in the lower abdomen (28; 15.1%) at infiltrate of the small pelvis. Irritation of the peritoneum and "defense muscular" were present only at abscessing of PII over the place of its localization (CG - 26,9%), generlly appeared in 2.5 times more often to the right than at the bottom of the abdomen.

Among children of NG, who underwent primary resection of the inflammatory omentum according to the developed technique, postoperative intra-abdominal infiltration arose in one child, but its course was favorable: relief of pain syndrome, disappearance of the palpated "tumor", and normalization of the total body temperature were at 2 -2.5 times faster compared to the control group, which did not require repeated surgical intervention and resulted in a decrease in the duration of inpatient treatment to 12.1 (2.3) days, respectively.

Table 2 presents the structure of complications in children of the studied groups during in-patient treatment. As can be seen from the data in Table 2, it is statistically likely that the suppurative postoperative wound was observed in NG at 5 times less frequently. Early adhesion obstruction occurred in 7.2% of cases in patients in the control group, whereas among patients with NG adhesion obstruction was absent.

Table 2 **Structure of direct complications in children of the studied groups**

Complications	Control group (n=78)		Novation group (n=36)	
	abs	%	abs	%
Suppuration of the postoperative wound	14	14,4	1	2,8
Abssess of intra-abdominal infiltrates	24	24,7	-	-
Postoperative intra-abdominal infiltrate	78	100	1	2,8
Early adhesive obstruction of the intestines	7	7,2	-	-
Outer abdominal complications	10	10,3	-	-
Complications, in total	55	56,7	2	5,6
χ^2=41,1 P = 0,0001				

In addition, the proposed comprehensive treatment of PII in the hospital reduced the abscissation of intra-abdominal infiltrates by 7.3 times: in comparison groups abscesses accured in 3.8% of children, while in patients at CG - in 24.7% of cases.

Final analysis of the results of inpatient treatment on a three-scores scale was carried out among all the children observed, and showed the following: the direct "good" result of

treatment was achieved in 94.4% of patients in the novative group and in 2.5 times less in patients at CG - 38.5% (Table 3).

Table 3 **Direct results of complex treatment of children of the studied groups**

Group	«Good»		«Satisfactory»		«Unsatisfactory»		Total
	abs	%	abs	%	abs	%	
Control group (n=78)	30	38,5	27	34,6	21	26,9	78
	CI 28,5 ÷ 49,6		CI 25,0 ÷ 45,7		CI 18,3 ÷ 37,7		
Novative group (n=36)	34	94,4	2	5,6	0	0,0	36
	CI 81,8 ÷ 98,4		CI 1,6 ÷ 18,2				
Total	120		39				186

"Unsatisfactory" result of patients in the control group took place in 26.9% of cases, while among children of NG were no "unsatisfactory" results.

We also consider it possible to estimate the use of the proposed method of spontaneous step-by-step resection of the inflamed omentum in children with appendicular peritonitis, as the means of preventing the formation of PII and their abscess, which contributes to the implementation of the basic principle of pediatric surgery - a saving attitude to tissues.In addition, as shown by the direct results, children, operated primarily by laparoscopy, in general, had fewer complications, that is, the primary sparing intervention, in general, led to a saving course of the disease.

Conclusions

1. Lack of "unsatisfactory" result in children of the NG indicates the advantage of using the developed method of destructively altered epiploon resection and preventing the development of infiltrates of the abdominal cavity.

2. By using a stepwise resection of a destructively modified large epiploon was possible to minimize blood loss and time of surgical intervention, remove the inflammation cell from the abdominal cavity and prevent the development of postoperative omentitis.

3. Application of the proposed methodology of stepwise sparing resection of inflammatory altered omentum in children with appendicular peritonitis as a way to prevent the formation of omentitis in the postoperative period and its abscess formation, contributed to the implementation of the general pediatric surgery principle - saving attitude to the tissues, thus ensuring "good" direct result in 94,4% cases and no "unsatisfactory" results ($p \leq 0.0001$).

References

1. Vlasov VV, Latyns′kyy EV, Kalynovs′kyy SV ta in. Zavorot velykoho sal′nyka. Klinichna anatomiya ta operatyvna khirurhiya 2008; T. 7, № 3. - 87-88. [In Ukrainian].

2. Karaseva OV, Roshal LM, Bryantsev AV i drugie Lecheniye appendicularnogo peritonita u detej. Detstkaya khirurgiya 2007; 3: 23-27. [In Russian].

3. Patent No 103393, UA MPK (2015.01) A61N 1/00, A61V 17/00, A61V 19/00. Mel′nychenko MH, Antonyuk VV Sposib rezektsiyi velykoho sal′nyka pry omentyti u ditey z apendykulyarnym perytonitom. - No u 201506721; published December 12 2015; No 23. – 4. [In Ukrainian].

4. Savel'yeva SV, Gel'fanda BR, Filimonova MI Peritonit: prakticheskoye rukovodstvo. M.: Litterra – 2006; 208 [In Russian].

5. Ribal'chenko VF, Rusak PS Gostriy omentit u ditey: klasifikatsiya ta vibir khirurgichnoï taktiki. Shpital'na khirurgiya. 2014; 1: 88. [In Ukrainian].

6. Karaseva OV i dr. Khirurgicheskaya taktika pri ostrom vtorichnom omentite u detey. Detskaya khirurgiya 2011; No. 3: 8–12. [In Russian].

7. Henry M.C. Risk factors for the development of abdominal abscess following operation for perforated appendicitis in children: a multicenter case control References study / M.C. Henry, A. Walker, B.L. Silverman [et al.] // Archives of surgery. – 2007. – Vol. 142. – P. 236–241.

8. Holcomb III GW, St. Peter SD. 2012. Current management of complicated appendicitis in children. European Journal of Pediatric Surgery. 22(3): 207-12. doi: 10.1055/s-0032-1320016. Epub 2012 Jul 5.

Література:

1. Заворот великого сальника / В.В. Власов, Е.В. Латинський, С.В. Калиновський [та ін.] // Клінічна анатомія та оперативна хірургія. - 2008. - Т. 7, № 3. - С. 87-88

2. Лечение аппендикулярного перитонита у детей / Карасева О.В., Рошаль Л.М, Брянцев А.В. [и др.] // Детская хирургия. - 2007. - № 3. - С.23-27.

3. Патент № 103393, UA МРК (2015.01) A61N 1/00, A61B 17/00, A61B 19/00. Спосіб резекції великого сальника при оментиті у дітей з апендикулярним перитонітом / Мельниченко М. Г., Антонюк В. В. - № u 201506721; опубл. 10.12.2015, Бюл. №. 23. – 4 с.

4. Перитонит: практическое руководство / под ред. В.С. Савельева, Б.Р. Гельфанда, М.И. Филимонова. - М.: Литтерра, 2006. - 208с.

5. Рибальченко В.Ф. Гострий оментит у дітей: класифікація та вибір хірургічної тактики / В.Ф. Рибальченко, П.С. Русак // Шпитальна хірургія. – 2014. – № 1

– С. 88. 401

6. Хирургическая тактика при остром вторичном оментите у детей / О.В. Карасева [и др.] // Детская хирургия. – 2011. – № 3. – С. 8–12.

7. Henry M.C. Risk factors for the development of abdominal abscess following operation for perforated appendicitis in children: a multicenter case control References study / M.C. Henry, A. Walker, B.L. Silverman [et al.] // Archives of surgery. – 2007. – Vol. 142. – P. 236–241.

8. Holcomb III GW, St. Peter SD. 2012. Current management of complicated appendicitis in children. European Journal of Pediatric Surgery. 22(3): 207-12. doi: 10.1055/s-0032-1320016. Epub 2012 Jul 5.