

ASIAN JOURNAL OF PHARMACEUTICAL
AND BIOLOGICAL RESEARCH

AJPBR



Indexed by:



Universal
Impact Factor



IMPACT FACTOR
SEARCH

Editorial board

Dr. Madhu Bala Scientist 'F' and Joint Director, Institute of Nuclear Medicine and Allied Sciences (INMAS), India

Dr. Sandip Narayan Chakraborty

Research Asst, Translational Molecular Pathology, Ut Md Anderson Cancer Center, Life Sciences Plaza, Houston, TX 77030

Dr. Tushar Treembak Shelke

Head of Department of Pharmacology and Research Scholar, In Jspms Charak College of Pharmacy & Research, Pune, India

Dr. Subas Chandra Dinda

Professor-cum-Director: School of Pharmaceutical Education & Research (SPER), Berhampur University, Berhampur, Orissa, India.

Dr. Jagdale Swati Changdeo

Professor and Head, Department of Pharmaceutics, MAEER's Maharashtra Institute of Pharmacy, S.No.124, MIT Campus, Kothrud, Pune-411038

Dr. Biplab Kumar Dey

Principal, Department of Pharmacy, Assam downtown University, Sankar Madhab Path, Panikhaiti 781026, Guwahati, Assam, India

Dr. Yogesh Pandurang Talekar

Research Associate, National Toxicology Centre

Dr. Indranil Chanda

Assistant Professor, Girijananda Chowdhury Institute of Pharmaceutical Science, Hathkhowapara, Azara Guwahati-17, Assam, India.

Dr. Sudip Kumar Mandal Department of Pharmaceutical Chemistry, Dr. B. C. Roy College of Pharmacy & AHS, Bidhannagar, Durgapur-713206, India.

Sodikova Dilrabokhon Andijan state medical institute

Dr., associate professor **Kuryazova Sharofat** Tashkent Pediatric medical institute

Dr., Abdurakhmanova Nigora Nazimovna Tashkent Pediatric Medical Institute

Abdullaeva Umida Bukhara state medical institute

Dr. Neeraj Upmanyu

Prof., Peoples Institute of Pharmacy & Research Center, Bhopal, MP, India.

Dr. Mirrakhimova Maktuba Khabibullaevna Tashkent medical academy Uzbekistan

Dr. Nishanova Aziza Abdurashidovna, Tashkent State Dental Institute

Dr. Sadikova Minurakhon Adkhamovna Andijan State Medical Institute

Kurbanova Sanobar Yuldashevna Tashkent State Dental Institute

Zokirova Nargiza Bahodirovna Tashkent Pediatric medical institute

Khabilov Behzod Nigmon ugli Tashkent State Dental Institute

Dr. Domenico De Berardis Department of Mental Health, Azienda Sanitaria Locale Teramo, 64100 Teramo, Italy

Dr. Azizova Rano Baxodirovna associate professor of the Department of neurology of the Tashkent Medical Academy

Dr. Ishankhodjaeva Gulchekhra Tashkent Medical Academy

Institute of Nuclear Medicine and Allied Sciences (INMAS), India

Brig SK Mazumdar Marg, Timarpur, New Delhi, Delhi 110054 India

PERITONITIS AS A RISK FACTOR FOR THE DEVELOPMENT OF ACUTE ADHESIVE INTESTINAL OBSTRUCTION

S.I. Ismailov, G.B. Orazaliev, S.A. Sultanov, B.D. Tleumuratov

State Institution "Republican Specialized Scientific and Practical Medical Center for Surgery named after academician V. Vakhidov" Nukus branch of the Republican Scientific Center for Emergency Medical Care. Uzbekistan.

Abstract: Acute adhesive intestinal obstruction (AAIO) is one of the unsolved issues of modern surgery. This pathology accounts for 3.6–9.4% of the total number of patients who applied for surgical care. We have assessed the true incidence rate and calculated the standardized risk of developing an adhesive process with clinically significant manifestations of intestinal obstruction. Complications development cases analysis was carried out among a group of patients (80 people) operated on during the period from 2015 to 2019. Analysis of data on previous surgical interventions depending on the presence of peritonitis showed that 63 patients had diffuse general or localized peritonitis. 17 patients did not have peritonitis. After diffuse or general peritonitis, the incidence of AAIO was 1.52% (25/1641), after localized peritonitis 0.37% (38/10347), and in its absence 0.29% (17/5964). Thus, the incidence rate of AAIO over a five-year follow-up period directly depends on the prevalence of peritonitis. So, in its absence, the frequency was 0.29%, and in diffuse or general peritonitis it was 1.52%, which is 5 times more.

The risk of developing AAIO per 1000 interventions with diffuse or general peritonitis is significantly higher ($t=2.51$; $p<0.05$) than with localized peritonitis and without peritonitis ($t=2.95$; $p<0.05$). However, the indicators between localized peritonitis ($1.5\pm 0.39\%$) and its absence ($0.7\pm 0.34\%$) did not reveal a significant difference ($t=1.71$; $p>0.05$).

Keywords: adhesive process, acute intestinal obstruction, peritonitis.

Relevance. Acute adhesive intestinal obstruction (AAIO) is one of the unresolved issues of modern surgery. This pathology accounts for 3.6–9.4% of the total number of patients who applied for surgical care [1, 5, 8]. Over the past decades, there has been a tendency in AAIO incidence about 2 times, accounting for up to 35–45% of all operations for acute intestinal obstruction [2, 3, 7]. AAIO develops after laparotomy in 15% of patients. The problem is even worse when obstruction develops after a history of peritonitis [3, 9]. In most cases, the outcome of peritonitis is an adhesive process. Its severity is largely determined by the effectiveness of the abdominal cavity sanitation during surgery and in the early postoperative period, since after the source of peritonitis is eliminated, inflammation of the peritoneum does not immediately stop and remains a site of toxic effects on the body for a long time [4, 6].

The purpose was to study peritonitis that occurred after previous abdominal operations as a risk factor affecting the incidence of adhesive intestinal obstruction.

Materials and methods of research: The study included 17.952 patients with various benign urgent surgical pathology of the abdominal organs, who were operated on in the Nukus branch of the Republican Specialized Scientific and Practical Medical Center for Surgery named after academician V. Vakhidov and the Beruni Regional Medical Center of the Ministry of Health of the Republic of Karakalpakstan. We have assessed the true incidence rate and calculated the standardized risk of developing an adhesive process with clinically significant manifestations of intestinal obstruction. Complications development cases analysis was carried out among a group of patients (80 people) operated on during the period from 2015 to 2019.

All patients were urgently hospitalized without medical orders or by ambulance. There were 33 (41.25%) women and 47 (58.75%) men among them. The average age was 53.8 ± 2.7 years (from 18 to 81 years). After hospitalization patients underwent standard diagnostic procedures performed for acute intestinal obstruction including plain radiography of the chest and abdominal organs. The presence of evident pneumatosis indicated intestinal colic with bowel dysfunction. The presence of arches or Cloiber bowls indicated intestinal obstruction.

The anamnesis and previously transferred surgical interventions in the anamnesis were routinely taken into account.

One of the main predisposing factors for the development of AAIO is a history of peritonitis.

Analysis of data on previous surgical interventions depending on the presence of peritonitis showed that 63 patients had diffuse general or localized peritonitis. 17 patients did not have peritonitis. The incidence rate of AAIO after diffuse or general peritonitis was 1.52% (25/1 641), after localized peritonitis it was 0.37% (38/10 347), and in the absence of peritonitis, the rate was 0.29% (17/5 964) (Table 1).

Table 1

The incidence rate of all AAIO cases within 5 years, depending on the presence of peritonitis

Surgical measures	Diffuse or general peritonitis			Localized peritonitis			Without peritonitis		
	ty	AAI O		ty	AAI O		ty	AAIO	
		bs.	%		bs.	%		bs.	%
AIO	37		,57%	09		,59%	7		,60%
Intra-abdominal injury	6		,13%	1		,64%			,00%

Complications of gastroduodenal and gastric ulcer	01		,00%	06		,94%	48		,68%
Conventional gynecological surgeries	41		,17%	047	4	,68%	122		,18%
Conventional cholecystectomy	22		,82%	29		,47%	86		,35%
Laparotomic gynecological surgeries				77		,56%	62		,38%
Incarcerated hernias	6		,32%	26		,79%	694		,30%
Other laparotomy surgeries	46		,68%	2		,00%	9		,00%
Laparoscopic cholecystectomy				68		,39%	267		,22%
Laparoscopic appendectomy				73		,21%			-
Conventional appendectomy	22		,77%	009		,15%			-
Total	641	5	,52%	0347	8	,37%	964	7	,29%

Further, an assessment of the risk of AAIO development per 1000 operations was carried out. It was found that the risk of development with diffuse or general peritonitis was 15.2 per 1000. The risk with localized peritonitis or without peritonitis was 3.7 and 2.9, respectively (Table 2).

Table 2

Assessment of AAIO development risk per 1000 operations depending on the presence of peritonitis

Surgical measures	Probability of developing AAIO per 1000 operations								
	Diffuse or general peritonitis			Localized peritonitis			Without peritonitis		
	Risk			Risk			Risk		
AAIO	15,2	1,2	,10	3,7	0,0	,29	2,9	8,1	,43
Intra-abdominal injury	1,3	7,8	,76	6,4	6,3	,01			
Complications of gastroduodenal and gastric	0,0	,0	,42	,4	,4	,00	,8	,7	,00

ulcer									
Conventional gynecological surgeries	1,7	,8	,01	,8	,8	,75	,8	,3	,42
Conventional cholecystectomy	,2	,2	,00	,7	,3	,42	,5	,5	,00
Laparotomic gynecological surgeries	-			,6	,6	,00	,8	,8	,00
Incarcerated hernias	3,2	3,1	,01	,9	,9	,00	,0	,3	,24
Other laparotomy surgeries	,6	,8	,00	-					
Laparoscopic cholecystectomy	-			,9	,3	,74	,2	,0	,24
Laparoscopic appendectomy	-			,1	,1	,00			
Conventional appendectomy	,7	,8	,01	,5	,5	,00			
Total	5,2	,0	,04	,7	,6	,18	,9	,7	,13

According to data in Table 2, most surgical interventions for AAIO in patients previously operated on due to various abdominal pathologies complicated by peritonitis were performed after acute intestinal obstruction - 2.92%, next come incarcerated hernias - 1.32% and in third place in terms of the number of cases is traditional cholecystectomy - 0.82%. The same tendency can be traced in operations with complicated localized peritonitis. However, in patients without peritonitis, the largest number is in patients operated on for AAIO that occurred after AIO. In second place in terms of number are operations after gynecological interventions. (Table 3).

Table 3

The incidence rate of AAIO requiring surgical solution, depending on the presence of peritonitis at the previous operation

Surgical measures	Diffuse or general peritonitis			Localized peritonitis			Without peritonitis		
	ty	AAIO		ty	AAIO		ty	AAIO	
		bs.	%		bs.	%		bs.	%
AIO	37		,92%	09		,83%	7		,30%
Intra-abdominal injury	6		,04%	1		,00%			,00%
Complications of gastroduodenal and gastric ulcer	01		,50%	06		,00%	48		,00%
Conventional gynecological	41		,59%	047		,24%	122		,09%

surgeries										
Conventional cholecystectomy	22		,82%	29		,23%	86		,00%	
Laparotomic gynecological surgeries				77		,56%	62		,00%	
Incarcerated hernias	6		,32%	26		,79%	694		,06%	
Other laparotomy surgeries	46		,00%	2		,00%	9		,00%	
Laparoscopic cholecystectomy				68		,26%	267		,04%	
Laparoscopic appendectomy				73		,00%			-	
Conventional appendectomy	22		,19%	009		,07%			-	
Total	641	1	,67%	0347	6	,15%	964		,07%	
Accuracy of differences	$\chi^2=16,762; (df=1); p<0,001$									
							$\chi^2=2,369; (df=1); p=0,124$			
							$\chi^2=23,597; (df=1); p<0,001$			

A similar tendency can be traced in the comparative evaluation of the risk of AAI0 development after previous peritonitis and the need for surgical intervention (Table 4). The highest risk of surgery was in patients who had a history of AIO complicated by peritonitis.

Table 4

Comparative assessment of AAI0 development risk with the need for surgical treatment after surgery with and without peritonitis (based on 1000 interventions)

Surgical measures	With peritonitis					Without peritonitis					Difference (t)
	Number of surgeries	AIO	Estimated indicator/1000 operations			Number of surgeries	AIO	Estimated indicator/1000 operations			
AIO	46		4,4	,8	,48	7		3,0	2,9	,01	,7
Intra-abdominal injury	57		,4	,3	,00			,0	,0	,0	,0

Complications of gastroduodenal and gastric ulcer	07		,3	,3	,00	48		,0	,0	,0	,0
Conventional gynecological surgeries	388		,9	,1	,65	122		,9	,9	,00	,4
Conventional cholecystectomy	51		,6	,6	,42	86		,0	,0	,0	,4
Laparotomic gynecological surgeries	77		,6	,6	,00	62		,0	,0	,0	,0
Incarcerated hernias	02		,9	,0	,42	694		,6	,6	,00	,3
Other laparotomy surgeries	88		,0	,0	,0	9		,0	,0	,0	,0
Laparoscopic cholecystectomy	68		,6	,8	,42	267		,4	,4	,00	,1
Laparoscopic appendectomy	73		,0	,0	,0			,0	,0	,0	,0
Conventional appendectomy	531		,8	,3	,24			,0	,0	,0	,0
Total	1988	7	,3	,4	,20	964		,7	,3	,00	,9

Conclusion:

One of the indicators is the AAIO development after operations complicated by peritonitis. With diffuse and general peritonitis, the indicators of intestinal obstruction are significantly higher ($t=3.75$; $p<0.05$) than in localized peritonitis and without peritonitis ($t=3.99$; $p<0.05$). However, the indicators between localized peritonitis ($0.37\pm 0.06\%$) and its absence ($0.29\pm 0.07\%$) did not reveal a significant difference ($t=0.90$; $p>0.05$) (Fig. 1)

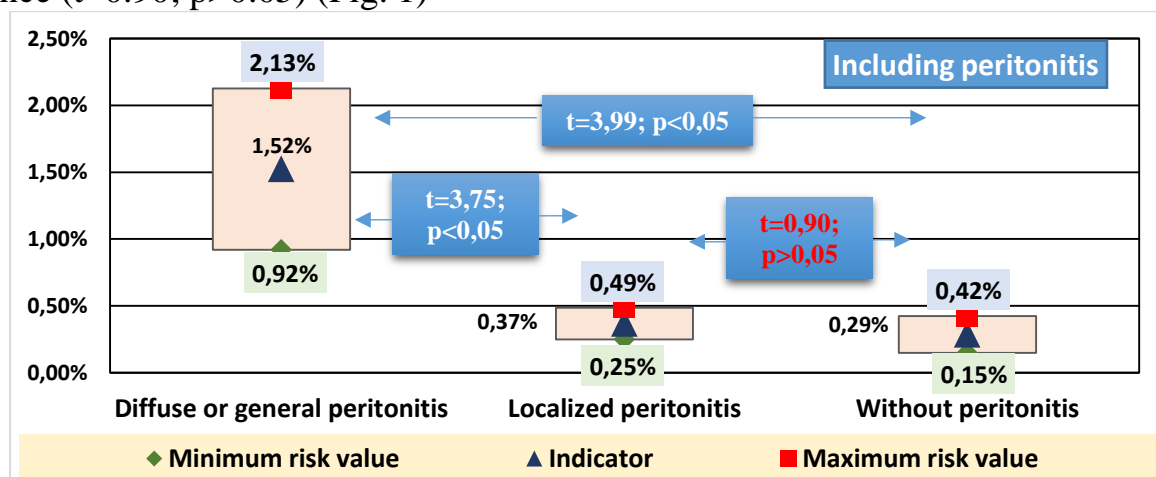


Fig. 1. Reliability of the true indicators of the incidence rate of AAIO development, taking into account peritonitis

Another indicator different from the above is the risk of AAIO development after operations complicated by peritonitis per 1000 interventions. In diffuse and general peritonitis, the indicators of intestinal obstruction development are significantly higher ($t=3.75$; $p<0.05$) than in localized peritonitis and without peritonitis ($t=3.99$; $p<0.05$). However, the indicators between localized peritonitis ($0.37\pm 0.06\%$) and its absence ($0.29\pm 0.07\%$) did not reveal a significant difference ($t=0.90$; $p>0.05$) (Fig. 2).

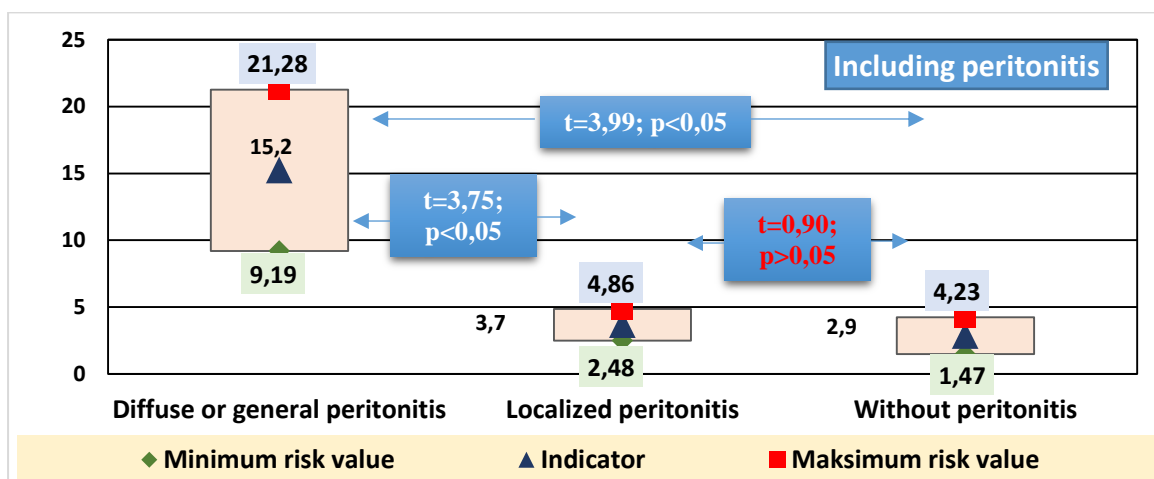


Fig. 2. The risk of AAIO development per 1000 interventions (with a confidence interval $p = 95\%$), taking into account peritonitis

In the presence of such a risk factor as diffuse or general peritonitis, this indicator increases from 2.9 ± 0.69 (in the absence of peritonitis from 1.5 to 4.2/1000 operations) and 3.7 ± 0.59 (in localized peritonitis from 2.5 to 4.9/1000) to 15.2 ± 3.02 (from 9.2 to 21.3/1000 operations; $t=3.75-3.99$; $p<0.05$ to other groups). It is 56.0% in diffuse or widespread peritonitis (in 14 out of 24 patients) ($6.7\pm 2.01/1000$), in local peritonitis - 57.9% (in 22 out of 38) ($1.5\pm 0, 39/1000$; $t=2.51$; $p<0.05$ to the previous group), in the absence of peritonitis - 76.5% (in 13 of 17) ($0.7\pm 0.34/1000$; $t=2.95$; $p<0.05$ to the group with diffuse or widespread peritonitis).

Conclusion: Thus, the incidence of AAIO over a five-year follow-up period directly depends on the prevalence of peritonitis. So, in its absence, the frequency was 0.29%, and in diffuse or general peritonitis, it was 1.52%, which is 5 times more.

The risk of developing AAIO per 1000 interventions in diffuse or general peritonitis is significantly higher ($t=2.51$; $p<0.05$) than in localized peritonitis or its absence ($t=2.95$; $p<0.05$). However, the indicators between localized peritonitis

($1.5 \pm 0.39\%$) and its absence ($0.7 \pm 0.34\%$) did not reveal a significant difference ($t=1.71$; $p>0.05$).

References

1. Armashov V.P., Matveev N.L., Makarov S.A. Prevention of adhesion formation in intraperitoneal hernioplasty. *Khirurgiya. Journal named after N.I. Pirogov*. 2020. No. 9. pp. 116-122
2. Akhmetzyanov F.Sh., Egorov V.I., Ankhimova L.E. Adhesions as a problem of abdominal operative oncology // *Siberian journal of oncology*. 2018. №2. C. 95-103
3. Akhmetov D., Oraz S., Kambarov D., Nusupova A., Alpysbai Zh., Yusupov A., Atantaev A.B., Khasenova A.Zh. Evaluation of the effectiveness of the use of barrier drugs in the prevention of postoperative adhesive disease // *Bulletin of the Kazakh National Medical University*. 2020. No. 4. P. 330-333
4. Dobrokhotova Yu.E., Grishin I.I., Grishin A.I., Komagorov V.I. The use of antiadhesion gels in intrauterine surgery. breast cancer. *Mother and child*. 2018;1(1):71-75. DOI: 10.32364/2618-8430-2018-1-1-71-75.
5. Zhura, A.V., Kulikovskaya, V.I., Gilevskaya, K.S. The use of biodegradable materials based on alginate and pectins in the prevention of adhesion formation. // *Vessch National Academy of Sciences of Belarus gray medical sciences*. 2019. V. 16, No. 1. C. 46-55
6. Farag S., Padilla P.F., Smith K.A., Sprague M.L., Zimberg S.E. Management, Prevention, and Sequelae of Adhesions in Women Undergoing Laparoscopic Gynecologic Surgery: A Systematic Review // *J Minim Invasive Gynecol*. 2018. Vol. 25, N7. P. 1194-1216. DOI: 10.1016/j.jmig.2017.12.010.
7. Fatehi Hassanabad A., Zarzycki A.N., Jeon K., Dundas J.A., Vasanthan V., Deniset J.F., Fedak P.W.M. Prevention of Post-Operative Adhesions: A Comprehensive Review of Present and Emerging Strategies // *Biomolecules*. 2021. Vol. 11(7). P. 1027. DOI: 10.3390/biom11071027
8. Kulikouskaya V., Kraskouski A., Hileuskaya K., Zhura A., Tratsyak S., Agabekov V. Fabrication and characterization of pectin-based three-dimensional porous scaffolds suitable for treatment of peritoneal adhesions // *J Biomed Mater Res A*. 2019. Vol. 107(8). P. 1814-1823. DOI: 10.1002/jbm.a.36700
9. Yin K, Divakar P, Wegst UGK. Plant-Derived Nanocellulose as Structural and Mechanical Reinforcement of Freeze-Cast Chitosan Scaffolds for Biomedical Applications. *Biomacromolecules*. 2019 Oct 14;20(10):3733-3745. doi: 10.1021/acs.biomac.9b00784.