

# Experience in Treating Patients with Acute Sigmoid Colon Obstruction (Experimental and Clinical Study)

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## Abstract

The experimental – clinic investigations of the improvement methods are carried into colon intestine anastomosis for putting sutures.

Experiments are did with 30 no sort, male and female dogs, weight 15-20 kg. For anesthesia is used Tiopental natrium 5-6 mg/kg. In the first stage provided simulation of acute intestinal impassibility, in the second stage occurred surgical treatment, which using resection colon as well as colon intestinal anastomosis with different suture materials. Than these operated dogs observed during 3 months. Conclusion got in the 7, 14, 20 days on each month and become morphological researches.

In clinic observed 165 patients with intestinal impassibility. All patients divided 2 groups, who carried several types of surgical methods in colon and sigmoidal intestines. Patients observed during the 6 years.

At the end can conclude that our methods do not get postoperation complications (failure of anastomosis, stenosis and other), easy using, and unrequired costly instruments, can carry in every surgical departments.

**Keywords:** Acute Intestinal Obstruction, Anastomosis, Intestinal Resection, Large Intestine, Intestinal Inversion.

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## INTRODUCTION

The problem of treatment of acute sigmoid colon obstruction is constantly in the field of view of surgical specialists. The incidence of disease with acute sigmoid colon obstruction is about 3.5-4.0% of the total number of surgical patients. And lethality in this pathology remains quite high 18-20% and has no tendency to decrease. [3,4,5,8,9,12,15,18,20].

Particular attention is drawn to the issue of choosing the volume and method of surgical treatment for this pathology. Most researchers advocate for the implementation of palliative interventions such as sigmoidmobile, matchmobile by Hagen-thorn, the operation Hartmann. It should be noted that palliative surgery leads to a high percentage of disease recurrence (75-91%), and postoperative mortality remains high, reaching up to 30-34%. Refusal to perform radical operations is explained by the fact that the contingent of patients is mainly senile and elderly with concomitant diseases and unpreparedness of the patient and the intestines. [1,8,10,11,14,17,19].

Despite the high level of development of operative techniques, continuous improvement of the intestinal suture, suture material, and the study of the morphogenesis of intestinal anastomoses, the frequency of failure remains high. [2,4,7,9,10,13,14,16,20,]. These circumstances were the

reason for this study.

## THE PURPOSE OF OUR STUDY

To improve the results of surgical treatment of patients with acute sigmoid colon obstruction.

## MATERIALS AND METHODS

We conducted an experimental clinical study. An experimental study was conducted on 30 mongrel dogs of both sexes, weighing 15-20 kg. The main method of anaesthetic aid is intravenous anesthesia using sodium Thiopental 5-6 mg/kg. After careful treatment of the operating field with alcohol and iodine, a median laparotomy was performed. The first stage of the operation was to create an acute sigmoid colon obstruction (ligation of the sigmoid colon). At the second stage, after 12 - 14 hours, resection of the modified part of the sigmoid colon was performed, followed by the imposition of two types of colonic anastomosis according to the proposed method. The technique of applying a colonic anastomosis is as follows: after resection, the affected area of the intestine, a cuff was created from the mucosa of the adducting part of the intestine. After that, the walls of the anastomosis were formed with two different single-row seams (no. IAP 04333 and no. IAP 04334 State patent office of the Republic of Uzbekistan). The

operation ended with the rehabilitation of the abdominal cavity. The postoperative wound was sutured tightly.

We also analyzed the results of treatment of 165 patients who underwent surgery for acute sigmoid colon obstruction. Of these, men made up 71 (55.5%) and women 57 (44.5%).

All patients were operated on at the Department of surgical diseases, faculty of advanced medical training of Ferghana Medical Institute of Public Health.

To diagnose acute sigmoid colon obstruction, patients underwent clinical, laboratory, and instrumental methods of investigation, including x-ray, ultrasound, and fibrocolonoscopy. Also, the patients of the ball were tested for Tsege-Manteuffel.

We divided all the patients into two groups. The first group, the control group, consisted of 128 patients who underwent retort with sigmoidopia-34 (26.6%), retort with Hagen-torn mesosigmoidoplication - 46 (35.9%), retort combined with Hagen-torn mesosigmoidoplication and sigmoidopia - 24 (18.8%), resection with the imposition of an unnatural anus - 24 (18.8%) (table 1).

The second group included 37 (22.4%) patients with acute sigmoid colon obstruction who underwent sigmoid colon resection with the imposition of end - to-end cuff anastomoses.

Table 1: Distribution of patients by type of surgery (control group-n 128)

№	The nature of the operational Intervention	Quantity		P
		Abs	%	
1	Retortion+ signapex	34	26,6	P<0,05
2	Retortion+matchmobile by Hagen-thorn	46	35,9	P<0,01
3	Retortion+ matchmobile by Hagen - thorn+ signapex	24	18,8	P<0,05
4	Retorsion+ imposition of an unnatural anus	24	18,8	P<0,05
In total		128	100,0	

During the operation in all patients, great importance was attached to de-compression of the gastrointestinal tract, which was performed with a nasogastro-duodenoeyunal probe, and intubation of the colon with a tube. The possibility of resection of the sigmoid colon with the imposition of anastomosis according to the proposed method was determined during the operation.

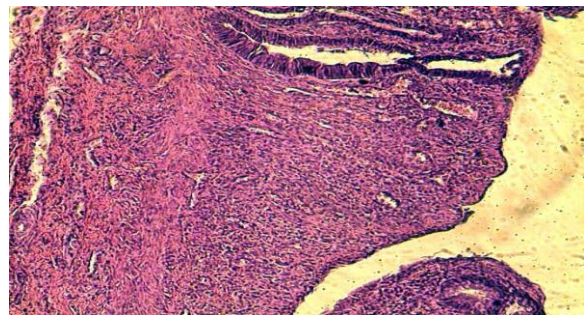
The vast majority of patients with acute intestinal obstruction are admitted to a medical facility in a moderate or severe condition (according to our observations, 93%). Surgical treatment in this condition is associated with a high degree of risk. The severity of the obstruction course dictates the need for full preoperative preparation in a short period of time. Preoperative preparation with correction of metabolic disorders was performed in all patients operated on in an emergency manner.

## RESULTS AND DISCUSSION

Analysis of the results of the experimental study showed that on the 2nd day after the operation, motor activity was shown in the operated dogs. On the 2nd-3rd day, the function of the intestine was normalized, and its emptying was noted. On the 5th day, the dogs were transferred to a normal diet. In all operated dogs, postoperative wound healing occurred by primary tension. After the operation period, there were no complications (all dogs were given antibiotic therapy), and we did not observe any lethality after the operation.

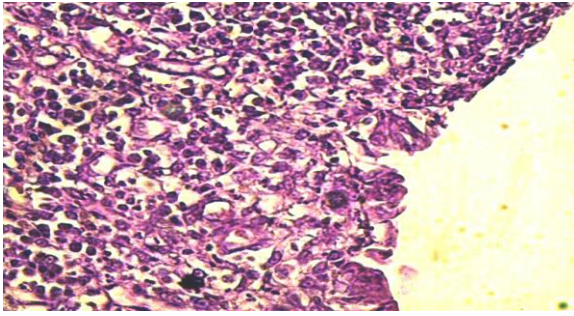
Observation of the operated dogs continued for three months after the operation. Withdrawal from the experiment was performed for 7, 14, 20 days, 1, 2, 3 months.

When opening the operated dogs, we did not observe any pathological changes on the part of the abdominal organs. When examining the intestines, we found a section of anastomosis that differed little macroscopically from other sections of the large intestine. On day 7, 14, 20, when opening the macropreparation, the cuff we created remained soft, viable, pale pink in color, and there was no narrowing of the intestinal lumen. After 30 days, a Mature connective tissue scar was formed at the site of the anastomosis suture, the definition of the cuff boundaries was not possible, due to complete fusion with the intestinal mucosa, the assumed border of the cuff is pale pink. The area of the anastomosis was dissected for (lead Department - 10cm, outlet-10 cm) from several sites of anastomosis were taken biopsy material was subjected to histological examination.



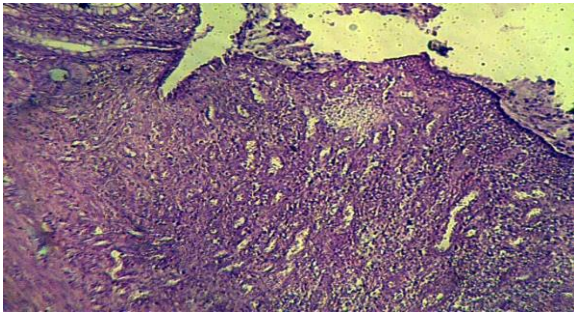
Pic. 1. Joint area when applying continuous suture using vicryl. G-E 10x10

In the early stages after applying the seam, both nodular with the help of nylon and silk, and continuous with the use of vicryl, the growth of granulation connective tissue with a large number of microvessels is observed in the joint area. The crypts adjacent to the junction are expanded. The stroma is edematous and infiltrated by a large number of cells, mainly lymphocytes.



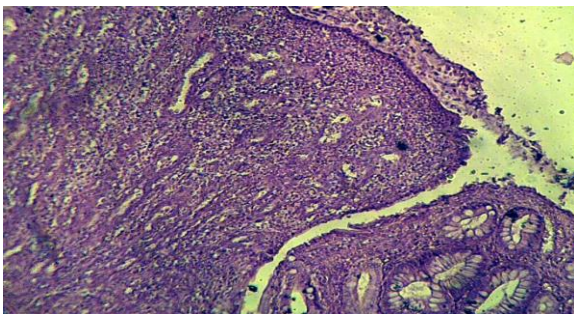
Pic. 2. Granulation tissue with microvessels and round-cell elements. Joint area when applying a continuous seam with vicryl. G-E 10x40

When using vicryl and a continuous seam, detritus and fibrin are not detected on the surface. There are pronounced processes of neovasculogenesis (Pic. 1,2). When using a nodular suture with nylon threads, small clusters of fibrin with migrating lymphocytes are observed on the surface of the granulation tissue (Pic. 3).



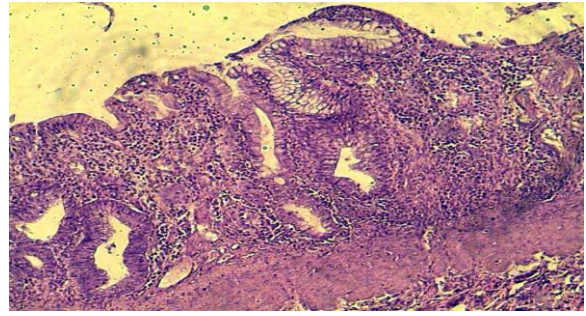
Pic. 3. Joint area when applying nodal joints with nylon G-E 10x10

These processes are particularly pronounced when applying a nodal seam and using silk. (Pic. 4).



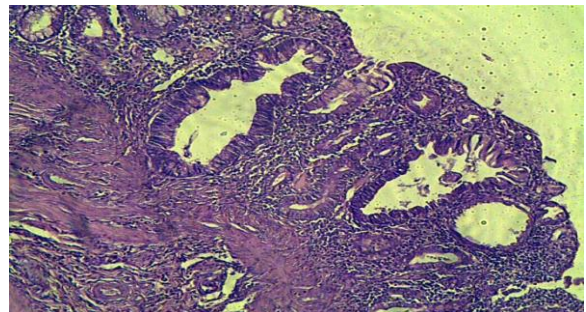
Pic. 4. the joint Area when applying nodal seams with silk. G-E 10x10

In later periods of observation, there are marked processes of epithelial cell tongues crawling on the surface of granulation tissue at the junction of the proximal and distal segments of the intestine.



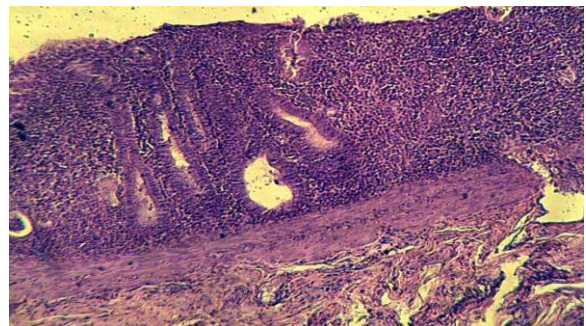
Pic. 5. Epithelization of granulation tissue of the joint area when applying a continuous seam with vicryl. G-e 10x10

These processes are more pronounced when using nodular seams with vicryl. At the same time, there is not only the creeping of epithelial tongues on the granulation surface free of fibrin and detritus, but the immersion of epithelial strands in the granulation tissue, with the formation of crypts (Pic. 5, 6).

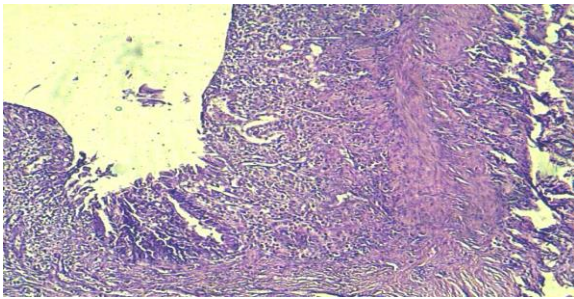


Pic. 6. epithelization of granulation tissue with the formation of crypts of the joint area when applying a continuous seam with vicryl. G-E 10x10

When anastomosis is applied with nodal sutures, epithelial tongues are formed in expanded areas of the crypts adjacent to the granulation tissue at the junction of neighboring sections of the intestine (Pic. 6).

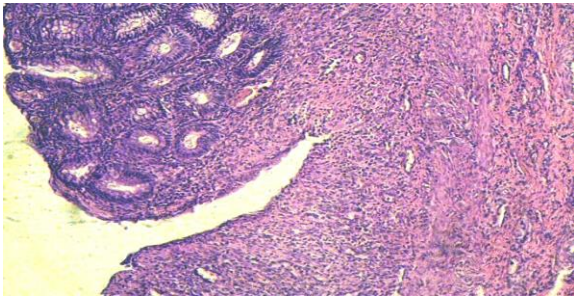


Pic. 7. Weakly expressed epithelization processes with manifestations of an inflammatory reaction of the joint area when applying a nodal seam with silk. G-E 10x10



Pic. 8. Weakly expressed epithelization with manifestations of an inflammatory reaction of the joint area when applying a nodal suture with silk. G-E 10x10

The creeping of epithelial tongues on the surface of granulations in the area of joints is not accompanied by a pronounced submerged growth of epithelial tongues with the formation of crypts, especially when using silk (Pic. 6-8).



Pic. 9. Chaotic arrangement of smooth muscles in the joint area when applying a nodal seam with capron. G-E 10x10

At the same time, the muscle layer of the mucous membrane is restored. At the same time, it does not determine the vector orientation of the layers of smooth muscles (Pic. 6-8). They are located chaotically at this stage, especially when using silk for applying nodal seams (Pic. 9).

The granulation tissue retains a fairly large number of microvessels, but the number of cellular elements decreases, which is especially clearly shown when using vicryl and continuous suture (Pic. 5, 6).

As epithelial strands creep onto the granulation surface, the lumen of nearby crypts decreases somewhat, but their tortuosity and significant infiltration of intercryptal connective tissue by polymorphic elements remain (Pic. 9).

In the clinical part of the study, a comparative analysis of the results of treatment of two groups of patients revealed that in the control group, out of 128 patients who were treated in the 1st surgical Department of the Andijan branch of the Republican scientific center for emergency medical care, postoperative wound suppuration was observed in 4 (3.1%), abdominal eventration – 1 (0.9%), postoperative pneumonia – 2 (1.6%), cardiopulmonary failure-1 (0.9%). Lethality 1 (0.9%), in a patient who has developed cardiopulmonary failure.

We did not observe any postoperative complications in 37 patients who underwent resection with the imposition of

colonic anastomosis using our methods (table 2). All patients received appropriate treatment and were discharged home in a satisfactory condition.

Table 2: Comparative analysis of the results of treatment of patients in the control and main groups

Indicator	Control group		Main group	
	N	%	N	%
Number of operated patients	128	100,0	37	100,0
Postoperative complications				
Postoperative wound suppuration	5	3,9	0	0,0
Postoperative complications				
Eventration of internal organs	1	0,8	0	0,0
Postoperative pneumonia	1	0,8	0	0,0
Cardiopulmonary failure	1	0,8	0	0,0
Sepsis	1	0,8	0	0,0
Total complications	9	7,0	0	0,0
Postoperative lethality	1	0,9	0	0,0
Total patients	165 (100%)			

Out of 165 patients under our supervision, long-term treatment results were studied in 90 (54.5%) patients. The follow-up period ranged from 1 year to 6 years. Moreover, out of 90 (54.5%) patients who were examined, 41 (45.6%) patients were examined on an outpatient basis, and 49 (54.4%) were examined by questionnaire.

When examining patients, in the long-term postoperative period, attention was paid to the General condition of patients, the presence of certain complaints, anamnestic data, adherence to diet and exercise restrictions, palpatory examination of the abdomen, the regularity of the act of defecation. They also paid attention to the state of the anastomosis and the state of the intestines and other abdominal organs. Patients underwent blood tests, abdominal ultrasound, and intestinal irrigation.

In the long-term period, in the control group, out of 128 (81.0%) patients who were under our supervision in the long-term postoperative period, 10 patients had excellent treatment results. In 28 patients, the results are good. And 15 patients had satisfactory treatment results (table 3).

Table 3: Comparative analysis of long-term results of patients in the control and main groups

The results of treatment	Control group		Main group		P
	n	%	n	%	
Great	10	18,9	32	86,5	P<0,05
Good	28	52,8	5	13,5	P<0,01
Satisfactory	15	28,3	0	0,0	P<0,05
Unsatisfactory	0	0,0	0	0,0	
Total	53	100,0	37	100,0	

Analysis of the occurrence of relapses of the disease showed that the occurrence of relapses occurred in 31 (24.2%) of the total number of patients who underwent palliative surgery for sigmoid colon inversion. Of these, 10 (32.3%) patients were admitted within 6 months, 6 (19.4%) for 7-12 months, 4 (12.9%) for 13-24 months, and 11 (35.5%) for 25 or more patients.

Of the 31 patients, the largest contingent consists of patients who were treated 1 time for recurrent sigmoid colon inversion-27 (87.1), 4 (12.9%) patients were operated on twice.

In the main group, out of 37 patients who underwent bowel resection with the imposition of colonic anastomosis according to our methods, 32 patients had excellent treatment results, and 5 patients had good results.

## CONCLUSIONS

Summing up the results of the study, it should be noted that morphological studies have shown certain advantages of a continuous seam using vicryl, compared with nodular seams and the use of nylon and, especially, silk. With a continuous seam, the joint surface is quickly cleared of detritus and fibrin, and epithelization processes with the formation of crypts are faster on the formed granulation tissue. Palliative surgery has its drawbacks, such as a high rate of relapse. Resection of the affected intestine with the imposition of primary anastomosis according to the methods proposed by us does not lead to such complications as failure of the anastomosis sutures and narrowing of the anastomosis site. We also note that in the long – term period, there is no recurrence of the disease, due to the radical nature of the surgery, it does not require a complex, second stage of the operation-the restoration of the natural passage of intestinal contents.

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