

Conference paper

Operative Treatment of Patients with Pancreatic Pseudocysts

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Abstract

The article presents the results of surgical treatment of patients with pancreatic pseudocysts spent in hospital surgical clinic Siberian State Medical University from 2004 to 2016. 7 (17.5%) patients underwent conservative therapy. In the early postoperative period and in the long term (18 months) the analysis of the effectiveness of different methods of surgical treatment. According to the results of the research, the operations of the internal drainage along with resection and resection-draining interventions in assessing the quality of life showed similar long-term results. In turn, these interventions have provided significantly better quality of life ($p > 0.05$) than external drainage operation.

1 Introduction

The increasing incidence of pancreatitis indicates the relevance of problem diagnosis and treatment of pancreatitis and its complications in practical healthcare of the vast majority of countries [14]. The frequency of pancreatic pseudocysts in patients with pancreatitis varies from 2.3 up to 27% [6, 7, 10, 25].

There are two basic surgical approaches in the treatment of patients with pancreatic pseudocysts. The first approach is open surgery with the high rate of

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success (94-99%), but also with the high risk of complications (4-30%) [16, 19, 21, 23]. The second approach is minimally invasive surgery, which includes intradermal paracentesis of pseudocyst cavity with subsequent insertion of catheter guided by ultrasound (US) or computed tomography (CT) as well as interior endoscopic drainage by forming anastomosis or the installation of transpapillary drainage [5, 7, 10, 11, 12]. These methods lead to the final recovery from 11.8% to 69.6% of patients [3, 6, 8, 14, 15, 20, 22, 24].

In determining the indications for surgical treatment the least invasive interventions are recommended, which provide an acceptable quality of life and requires a short hospital service with lesser operational trauma. In addition, the advantage of minimally invasive surgery, if repeated surgical intervention is necessary, is the preservation of anatomical relations of organs and lack of adhesive process. The number of patients requiring excisional operation, with the ineffectiveness of minimally invasive therapies remains high [1, 2, 13, 17, 18, 26, 27, 28]. Thus, the problem of the choice of surgical treatment for pancreatic pseudocysts, requires further study.

Currently in applied medicine sutureless compressional anastomosis with the use of implants and structures based on NiTi material with thermal shape memory are widely used. Titanium nickelide provides a minimum tissue response due to biochemical and biomechanical compatibility. The devices Implanted into the body and based on NiTi deformed in accordance with the pattern of the elastic behavior of the tissues, while providing the harmonious functioning of the entire system "body tissue and human". The advantage of compressional anastomosis is the absence of foreign bodies (threads) along the suture. As a result, the healing of the anastomosis occurs without inflammatory reactions in the form of primary intension [4, 5, 9].

The aim of the study: To undertake a comparative evaluation of the various methods of surgical treatment of pancreatic pseudocysts, to assess the method of forming of compressional cysto-digestive anastomosis in clinical practice.

2 Experimental

In Surgical Clinic of Siberian State Medical University, Tomsk n.a. A.G. Savinykh 40 patients with pancreatic pseudocysts were treated from 2004 to 2016. 24 (60%) patients were hospitalized on urgent grounds, 16 (40%) patient were hospitalized

as planned. The large part of the patients were men (29 or 72.5%), and the smaller part were women (11 or 27.5%). The average age of the patients was 48.4 ± 3.2 years. The disease which led to the development of pseudocysts in 24 (60%) cases was chronic pancreatitis, in 12 cases (30%) it was necrotic pancreatitis and in 4 (10%) cases – injuries of the pancreas. The average duration of the disease before surgery amounted to 18 ± 7.1 months.

7 patients (17.5%) with pancreatic pseudocysts underwent conservative treatment. 33 (82.5%) patients underwent surgical treatment. The indication for surgery was the ineffectiveness of drug therapy. The selection criteria for the method of surgery were the following: pancreatic pseudocyst forming stage and the presence of its complications, location of pseudocysts, its size and the patient's condition.

3 Results and discussion

Out of 33 (100%) surgical procedures 6 (18.2%) radical pancreatic pseudocyst surgeries were conducted. In the group of radical surgery in 6 (100%) patients with an indication for intervention was the presence of pseudocysts formed without any signs of infection. In this group cystectomy was performed in 1 (16.7%) case, distal pancreatectomy with pseudocysts and removal of the spleen was performed in 2 cases (33.3%), and with retaining the spleen in 1 (16.7%) case. The indication for resection-draining interventions was the combination of pancreatic pseudocysts with chronic pancreatolithiasis. In 2 (33.3%) cases caudal pancreatectomy with splenectomy and longitudinal pancreaticojejunostomy was performed. In 1 (16.7%) case after caudal pancreatectomy with removal of the spleen the postoperative period was complicated by the formation of abscesses of the abdominal cavity and evisceration. Reanimation bed-days averaged 2.5 ± 0.6 days, duration of the postoperative period was 18.7 ± 3.6 days.

Of the 33 (100%) patients with pancreatic pseudocysts, in 15 (45.5%) cases external drainage of pancreatic pseudocysts was performed. In the group of external drainage all the 15 (100%) patients underwent the surgeries on urgent grounds and were considered as palliative. The indications for external drainage were bleeding, festering, and the rapid growth of pseudocyst. Among the external drainage surgeries in 3 (20%) cases the ultrasound-guided intradermal drainage of pseudocyst cavity was performed, in 8 (53.3%) cases the ablation of the pseudocyst walls with drainage of lesser sac was performed, in 4 (26.7%) cases the external drainage with pseudocyst cavity tamponade was performed.

External drainage of pseudocysts by laparotomy incision was performed in 12 (80%) of patients with complicated pseudocysts (festering, perforation, bleeding), when it was not possible to perform a more radical surgical intervention. The intervention was accompanied by a high rate of complications (9 cases or 60%) and operative mortality (3 cases or 20%). The most frequent complication in the group of external drainage was pancreatic fistula (5 cases or 33,3%). The duration of staying in intensive care averaged 2.9 ± 0.8 days, the duration of the postoperative period averaged $28 \pm 4,4$ days. Duration of staying in intensive care, duration of the postoperative period and rehabilitation of patients exceeded the corresponding figures during resection, resection-draining interventions and operations of interior drainage.

Ultrasound-guided intradermal paracentetic drainage was performed in 3 (20%) cases in patients infected with pancreatic pseudocysts and severe somatic pathology. This type of surgical intervention has shown the best results in the group of external drainage operations: complications and deaths were not observed. The postoperative period was $13,3 \pm 2,2$ bed-days. Ultrasound-guided intradermal paracentetic drainage helped to stabilize the condition of patients without disturbing of anatomical relations of organs and pseudocyst cavity, which facilitated considerably the subsequent radical surgical intervention.

Of the 33 (100%) patients with pancreatic pseudocysts, in 12 (36.4%) cases external drainage of pancreatic pseudocysts was performed. In the group of interior drainage all 12 (100%) patients were operated as planned. Of these, the forming of cistogastroanastomosis performed in 3 (25%) cases, the forming of cystojejunostomosis in 2 (16.7%) cases. Transgastric endoscopic cystogastrostomy was performed in 7 (58.3%) cases. In 1 (25%) case after the surgery during the forming of cistogastroanastomosis of open access gastric hemorrhage started, which did not require any surgical intervention. During transgastric endoscopic cystogastrostomy in 2 (28.6%) cases formed the stricture of anastomosis. requiring repeat of the manipulation. In the first case in the early postoperative period, the second in the late postoperative period. In 1 (14.3%) case hemorrhage started, on which urgent laparotomy was performed with retroclusion of bleeding vessel of stomach wall and drainage of lesser sac. The hemorrhage from the anastomosis area was caused by the lack of endoscopic transmural drainage: the difficulty of hemostasis in the anastomosis area and the inability to overhaul the cavity of the

pancreatic pseudocysts. Deaths during the interior drainage operations were not observed, postoperative period averaged $10,5 \pm 1,9$ bed-days.

In the period from 2014 to 2016 year the surgeries were conducted with the formation of the compressional cysto-digestive anastomosis using implants based on NiTi in 3 patients with pancreatic pseudocysts. In 1 (33.3%) case cistogastroanastomosis was formed, in 2 (66.7%) cases cystojejunostomosis was formed. Postoperative complications were not observed, postoperative bed day amounted to 8.7 ± 0.4 . The average duration of implant failure was $10,3 \pm 0,8$ days. All patients quality of life was assessed using a common questionnaire SF-36. The indicators of quality of life were similar to patients with other types of interior drainage.

To evaluate the immediate results of surgical treatment of patients with pancreatic pseudocysts following criteria were used: postoperative complications, mortality rate, the duration of intensive care and post-operative bed-days, the presence of the pseudocyst cavity at the time of discharge. Resection and resection-draining interventions showed significantly better results on the level of postoperative complications ($p < 0.05$) than interior drainage. On the other hand, the duration of stay in intensive care unit and hospital service in the group of interior drainage was less than with radical surgery. Among the options of interior drainage the best results in terms of postoperative complications and duration of postoperative period are noted in the forming of cystojejunostomosis. In the structure of pre-operational complications in the group of external drainage in 10 (66.7%) cases the suppurative complication were observed, which caused a high level of mortality and an increase in the duration of postoperative period in comparison with operations of interior drainage and radical interventions ($r < 0.05$). The most frequent complication of external drainage was the formation of pancreatic fistula, 5 (50%) cases observed.

Evaluation of long-term results of different types of surgical intervention was performed in 11 (33.3%) patients with pancreatic pseudocysts in a period of 6 to 18 months. In the study, the following criteria were used: the presence of recurrence of the pseudocyst and diabetes. Also all 11 patients quality of life was assessed using a common questionnaire SF-36. As shown by the results of the study, operations of interior drainage along with resection, resection-draining interventions in assessing the quality of life give similar long-term results. In turn,

these interventions provide a significantly better quality of life ($p > 0.05$) than external drainage operation.

4 Summary

After external drainage operations more severe postoperative period and a high level of complications were indicated compared with the other groups of surgical interventions. Interior drainage method is not formally refers to the radical methods, but in the absence of signs of chronic fibrous-degenerative pancreatitis and/or pancreatolithiasis it was successfully used for the treatment of patients with pancreatic pseudocysts. The smaller operational trauma accompanied by a smaller time in the intensive care unit and in the hospital service after surgery. Unlike resection methods for interior drainage the maximum preservation of pancreatic tissue occurred, thus providing the absence of cases of diabetes in the far terms in this group. The method of formation of the compressional cysto-digestive anastomosis has shown good effect, both in the immediate postoperative period, and in the far terms. Complications and deaths were not observed, as well as the recurrence of the pseudocyst. Based on the results of the study, it is possible to recommend this method for use in clinical practice.

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