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LIVER RESECTION IN TRANSPLANTATION CENTER

Liver Transplantation and Liver Resection with Vascular Reconstruction for Advanced Alveococcosis

Porshennikov I.A.[1, 2], Bykov A.Yu.[1], Pavlik V.N.[1], Kartashov A.S.[1], Shchekina E.E.[1], Korobeynikova M.A.[1], Yushina E.G.[1]

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Aim. To study the results of liver transplantations and resections with vascular reconstruction for advanced alveococcosis.
Material and Methods. The retrospective study included 21 patients with alveococcosis and lesion of more than 5 segments and (or) a parasitic invasion into portal vein bifurcation and (or) inferior vena cava, and (or) hepaticocaval confluence.
Results. Liver resection was performed in 9 (42.9%) patients (group 1) if preserving or reconstruction of afferent and (or) efferent venous bed of remaining liver part was technically feasible. Hypothermic perfusion *in vivo in situ* was used in 1 case, portal vein reconstruction – in 5 cases, inferior vena cava reconstruction – in 8 patients, arterial reconstruction – in 1 patient. Transplantation was performed in 12 (57.1%) patients (group 2). There were 6 patients with liver cirrhosis and 1 patient with Budd-Chiari syndrome. The whole liver from postmortem donors was transplanted to 7 recipients, right liver half from living related donors – to 5 patients. Inferior vena cava resection was performed in 10 cases. Hospital mortality was absent. Median recurrence-free follow-up was 17 months. Overall 1- and 3-year survival was 100% and 89%, respectively ($p = 0.617$).
Conclusion. Radical treatment of advanced liver alveococcosis is feasible in the most of patients if unresectable distant metastases are absent and initial surgical tactics is correct. Interventions should be performed in specialized centers where resections and transplantations are routinely performed.

Key words: *liver, alveococcosis, resection, hypothermic perfusion, liver transplantation, vascular reconstruction.*

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LIVER RESECTION IN TRANSPLANTATION CENTER

Transplantation Technologies for Surgical Treatment of the Locally Advanced Hepatic Alveococcosis with Invasion into Great Vessels

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Aim. To study the opportunities, immediate and long-term results of surgical treatment of locally advanced hepatic alveococcosis with invasion into great vessels.

Material and Methods. The study included 63 patients. There were 19 liver transplantations, 12 normothermal liver autotransplantations (ante situm), 1 hypothermic liver autotransplantation (*ex situ ex vivo*) and 31 extended liver resections with resection and repair of great vessels.

Results. Overall morbidity after liver transplantation was 31.6%, after normothermic liver autotransplantations – 38.5%, after extended liver resections with resection and repair of great vessels – 25.8%. Mortality after liver transplantation was 5.3% (1 patient). There was no in-hospital mortality after liver autotransplantations and after extended liver resections with resection and repair of great vessels. Maximal follow-up after liver transplantation was 54 months, after liver autotransplantations – 38 months, after extended liver resections with resection and repair of great vessels – 40 months. Long-term mortality was absent. Median survival was 21 months.

Conclusion. Transplantation techniques in liver surgery can be recognized as an important and new surgical strategy in the treatment of unresectable hepatic alveolar echinococcosis. Excellent immediate and long-term results of radical surgery for locally advanced hepatic alveolar echinococcosis using transplantation technologies emphasize justification to concentrate these patients in highly specialized centers.

Key words: *liver, alveococcosis, great vessels, transplantation, autotransplantation, extended liver resection.*

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LIVER RESECTION IN TRANSPLANTATION CENTER

Cadaveric Venous Allografts in Hepatobiliopancreatic Surgery

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Aim. To evaluate early and long-term outcomes of cadaveric venous allografts use in liver and pancreatic surgery.
Material and Methods. The study included 14 patients who underwent hepaticopancreatoduodenal surgery with cadaveric venous allografts. Control group consisted of 36 cases of vascular major liver resections and 26 pancreatoduodenectomies with portal vein resection without application of venous allografts.
Results. Mean age was 52.3 (48;59) years, man:women ratio – 9:5. In 11 (79%) of 14 cases venous allograft was used after circular resection of inferior vena cava, in other 3 patients venous patch was sutured to restore vascular integrity after tangential resection. Hospital mortality rate was 7.1%, one-year survival – 85.7%, follow-up period – 13.5 (6;22) months. There were no early and remote vascular complications.
Conclusion. The use of cold-stored venous allografts is effective in liver and pancreatic surgery to expand surgical opportunities and to decrease the risk of postoperative vascular complications.

Key words: *liver, pancreas, resection, cadaveric venous allograft, complications, long-term outcomes.*

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LIVER RESECTION IN TRANSPLANTATION CENTER

Anaesthesia Protocol to Extended Liver Resections: a Paradigm Shift under the Influence of the Experience of Liver Transplantation (Literature Review)

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It is presented a review of current and the most relevant materials including evidence-based researches, guidelines, devoted to anesthesia during extended liver resections. Present algorithms of anesthesia were analyzed based on these data. It was noted significant differences in anesthetic approaches which are mainly explained by the problem of massive intraoperative blood loss. Expanding practice of liver transplantation is making significant adjustments to the carrying out of anesthesia during surgical intervention. Optimal algorithm of anestesia is determined based on the experience of extended liver resections and transplantations.

Key words: *anesthesia, liver, extended liver resection, monitoring, infusion therapy, transplantation.*

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LIVER RESECTION IN TRANSPLANTATION CENTER

Combined Resection of the Liver and the Inferior Vena Cava in Hepatocellular Carcinoma

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It is presented clinical observation of the patient living over 8 years after extended right-sided hemihepatectomy with resection and replacement of the inferior vena cava for locally advanced hepatocellular carcinoma. The authors emphasize the need for only aggressive surgical approach to achieve satisfactory long-term outcomes in these patients. The possibilities of transplantation techniques in particular complete vascular isolation of the liver and temporary veno-venous bypass are discussed.

Key words: *liver, inferior vena cava, hepatocellular carcinoma, extended resection, long-term outcomes.*

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LIVER

New Method of Liver Parenchyma Dissection

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Aim. To study the effectiveness of the developed method consisting of crushing of liver parenchyma by clamp connected to high-frequency generator with simultaneous irrigation of dissection line with sodium chloride solution.
Material and Methods. We investigated the results of 40 liver resections which were divided into 3 groups. The study group included 15 resections performed by original method. The first control group consisted of 18 resections by bipolar coagulation, the second group consisted of 7 resections by harmonic scalpel.
Results. Blood loss was 627.011 ± 161.894 ml, 811 ml ± 225.088 and 1652.29 ± 624.507 ml in all groups respectively. The average duration of surgery was 301.67 ± 26.084 minutes in study group, 360.15 ± 29.316 minutes in the group of coagulation and 386.14 ± 40.409 minutes in the harmonic scalpel group. There were no significant differences in results ($p = 0.104$).
Conclusion. The original method reduces the level of blood loss without portal occlusion and duration of surgery in some degree. Reduced blood loss allows to perform widely segmental hepatectomy even in case of advanced intersection of parenchyma (for example mesohepatectomy), to expand the sample of operable patients and to improve outcomes.

Key words: *liver, resection, intersection of parenchyma, dissection, liver cancer, liver metastases, segmental hepatectomy, mesohepatectomy.*

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PANCREAS

Functional State of the Stomach and Small Bowel after Surgery for Pancreatic Ductal Adenocarcinoma

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Aim. To identify the most physiological type of anastomosis in palliative and radical surgery in patients with pancreaic head cancer using assessment of functional state of the stomach and small bowel.

Materials and Methods. It was performed prospective research of functional state of the stomach and small bowel in patients with pancreatic head cancer who underwent palliative and radical surgery. There were 37 patients after radical surgery and 111 examinations. All of them had ductal adenocarcinoma of the pancreatic head. In the first sub-group 19 patients underwent Whipple procedure and in the second sub-group 18 patients had pylorus preserving pancreatic resection (PPPD). Palliative interventions were made in 23 cases. 11 patients (sub-group 1) underwent Wolfler procedure and 12 patients (sub-group 2) – Gakker procedure.

Results. The most positive dynamics was registered in the PPPD group (half-life period of delayed gastric emptying reduced from 118.8 min to 46.2 min in 15 days after surgery). Also good dynamics was registered in the Gakker group (half-life period of delayed gastric emptying reduced from 102.5 minutes in 7 days after surgery to 51.7 minutes in one month after surgery). In patients after Wolfler procedure this parameter reduced from 114.2 min to 64.8 min in 15 days after surgery.

Conclusion. Radionuclide diagnostic method makes possible not only to examine state of the stomach, small bowel and bile ducts but also to choose the most physiological surgical intervention.

Key words: *pancreas, adenocarcinoma, resection, radical treatment, palliative treatment, gastrostasis, evacuatory function, scintigraphy.*

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PANCREAS

Parapancreatitis without CT-signs of Pancreatic Necrosis in Patients with Acute Pancreatitis

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Aim. To study the nature of peripancreatic lesions and its course in patients with AP without CT-signs of pancreatic necrosis.
Material and Methods. We had analyzed the treatment of 38 patients with AP in whom contrast-enhanced CT did not reveal disorders of contrast accumulation by pancreatic tissue. Peripancreatic changes were assessed by presence of inhomogeneous acute necrotic collections and homogeneous acute peripancreatic fluid collections. Balthazar (2002) and K. Ishikawa et al. (2006) classification was used to estimate prevalence of parapancreatitis.
Results. Acute necrotic collections were revealed in 15 patients. Balthazar index was 3.7 ± 0.1, K. Ishikawa index – 2.46 ± 0.45 on the left side and 0.86 ± 0.4 on the right side ($p < 0.01$). 7 (47%) patients were treated conservatively. 8 (53%) patients were exposed to interventions including percutaneous punctures alone in 3 cases and 5 patients underwent surgery after puncture. The indication for surgery (in 21–34 days) was the increase of collections' volume and signs of infection. 1 patient died. Patients after conservative treatment had less severe parapancreatitis (2.0 ± 0.8) compared with patients who underwent puncture and surgery (3.7 ± 1.5, $p < 0.5$) according to gradation of Japanese authors. There were no such differences in Balthazar index (3.4 ± 0.5 and 3.9 ± 0.4, $p > 0.05$). Patients were discharged after 34 ± 5 days. Acute peripancreatic fluid collections were in 23 patients. Balthazar index was 2.5 ± 0.2, the gradation by Japanese classification – 1.3 ± 0.2 on the left side and 0.8 ± 0.2 on the right side. Conservative treatment was applied in 22 (96%) patients, 1 patient was exposed to percutaneous puncture. All patients were discharged after 16 ± 1 day.
Conclusion. Our data evidence the importance to identify acute necrotic collections in the absence of pancreatic necrosis as a marker of peripancreatic necrosis. 33% of these patients required surgery due to infection. Classification of parapancreatitis by Kazuo Ishikawa reflects parapancreatitis development and its localization more precisely than Balthazar index.

Key words: *acute pancreatitis, acute peripancreatic fluid collection, acute necrotic collection, CT.*

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PANCREAS

Optimization of Minimally Invasive Treatment of Patients with Extensive Pancreatogenic Necroses

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Aim. To assess the efficiency of staged and simultaneous drainage of wide-spread pancreatogenic phlegmons.

Material and Methods. The results of treatment 146 patients with wide-spread phlegmons were studied (2–4 quadrants). All patients were operated via small access. The first group included 46 patients in whom affected departments of retroperitoneal space were operated and drained during primary surgery. The second group consisted of 100 patients after staged treatment. Herewith the most affected quadrant was drained, other suppurative areas were operated in 1–2 days after stabilization of patient and septic shock elimination. Diagnostics included clinical laboratory tests and instrumental methods (USR, CT, PGDS) for all categories of patients. SOFA scale was used for integral assessment of condition severity and sepsis-associated organ failure. The amount of drainage was determined in accordance with intended extent of retroperitoneal lesion.

Results. Average SOFA score was 8.8 ± 0.152. In most patients of the first group negative dynamics of condition with SOFA scores up to 9.2 ± 0.139 was noted for the first days after surgery. In the second group this indicator was unchanged (8.4 ± 0.114). During following days condition severity was 8.8 ± 0.142 in the first group and 3.2 ± 0.069 in the second group with the same duration of treatment. Organ failure was eliminated on the 9th day in the first group and on the 7th day in the second group. Mortality rate was higher in the first group (26.1%) compared with the second group (21.0%). The causes of death were infectious-toxic shock and irreversible pathological condition in both groups respectively. The average duration of treatment was 29.3 days in both groups.

Conclusion. Surgical treatment of patients with pancreatogenic phlegmons includes common space formation, external drainage through the incisions, programmed sanations. Mini-invasive accesses should be preferred. Staged surgical treatment for wide-spread retroperitoneal pancreatogenic phlegmons provides adequate drainage with less risk of infectious-toxic shock development and better results.

Key words: *pancreas, retroperitoneal fat, acute pancreatitis, pancreatic necrosis, pancreatogenic phlegmon, staged surgical treatment, mini-invasive access.*

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PANCREAS

Respiratory Distress Syndrome in Acute Pancreatitis (Experimental Study)

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Aim. To assess the role of lipid metabolism disorders and coagulation-lytic changes of lung tissue structures in the pathogenesis of respiratory distress syndrome in acute pancreatitis.
Material and Methods. The study is based on experiments on adult mongrel dogs. The model is acute pancreatitis by V.M. Buyanov et al. (1989). In target dates blood sample, bronchoalveolar lavage and biopsy of lung tissue were analyzed. We investigated free-radical processes, phospholipase and protease activity, qualitative and quantitative composition of lipids, coagulation-lytic state of tissues, functional state of surfactant and transcapillary fluid exchange.
Results. It was found that acute pancreatitis is associated with significant disorders of transcapillary exchange of fluid in lungs, function and composition of surfactant, that led to respiratory impairment. Lipid metabolism disorders and coagulation-lytic changes in lungs are main pathogenetic mechanisms of respiratory distress syndrome. Metabolic changes in lungs are associated with endogenous intoxication, excessive intensification of lipid peroxidation, increased activity of phospholipases and proteases.
Conclusion. Pulmonary lipid metabolism changes and tissue coagulation-lytic system modification occur in acute pancreatitis due to endogenous intoxication, increased phospholipase and proteolytic activity, intensification of lipid peroxidation. These disorders leads to violation of transcapillary fluid exchange, functional state of surfactant followed by respiratory distress syndrome development.

Key words: *pancreatitis, pancreatic necrosis, endotoxemia, lungs, lipids, hemostasis, distress syndrome.*

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BILE DUCTS

Metabolic Correction of Cerebral Disorders in Acute Obstructive Cholestasis (Experimental Study)

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Aim. To research cerebral functional and structural disorders in acute obstructive cholestasis and possibilities of their metabolic correction.

Material and Methods. Acute obstructive cholestasis was simulated by common bile duct compression in 26 anesthetized dogs which were divided into three series.

The first group included cholestasis dogs without treatment. In the second group common bile duct (CBD) was decompressed in 3 days postoperatively and 0.9% sodium chloride solution (20 ml / kg) was administered for 5 days. In the 3rd group Mexidol® (6.5 mg / kg) and Cortexin® (10 mg / kg) were injected additionally after CBD decompression. In blood plasma and cerebral homogenate malondialdehyde (MDA) and catalase levels were determined. Brain tissue histological investigation was performed with 200x and 400x magnification.

Results. In the 1st series on the 10th day MDA and catalase levels in cerebral homogenate were 4.1 times higher and 4.3 times lower than those in control animals. Structural changes were presented by perivascular and pericellular edema, reduction of capillary volume, vacuolization and atrophy of neurons. In the 2nd series there were 2.15-fold and 1.2-fold decrease of MDA in systemic circulation and in cerebral tissue respectively. Catalase activity was increased up to 1.36 and 1.22 times ($p > 0.05$) accordingly. Cerebral structural disorders were the same. In the 3rd series there were 2.91-fold and 3.77-fold decrease of MDA in systemic circulation and in cerebral homogenate respectively in 10 days postoperatively. Catalase activity was increased up to 1.57 and 4.76 times ($p < 0.001$) accordingly. Structural normalization was accompanied by increase of microcirculatory volume, elimination of vacuolization and atrophy of neurons, reduction of cerebral edema.

Conclusion. Mexidol® and Cortexin® reduce significantly the processes of free-radical oxidation in the brain and contributes to normalization of structural disorders.

Key words: *liver, bile ducts, obstructive cholestasis, brain, treatment, anti-oxidants.*

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REVIEW

Primary Prevention of Bleeding from Esophageal and Gastric Varices in Patients with Portal Hypertension

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The problem of primary prevention of bleeding from esophageal and gastric varices in patients with portal hypertension is discussed in the review. It was analyzed main views on the mechanisms of bleeding whose study is important to define pathogenetic primary prevention. The role of accurate diagnosis of the esophageal and gastric varices state is presented to predict the risk of bleeding. It was reviewed the variants of primary prevention of bleeding using medical, endoscopic, surgical and X-ray endovascular techniques. Also different drugs for primary prevention of bleeding were characterized depending on main disease nature and degree of compensation. Minimally invasive methods for primary prevention including endoscopic, endovascular techniques and medical therapy were compared. The authors discuss some unsolved problems of primary prevention of bleeding in patients with intrahepatic and extrahepatic portal hypertension, as well as in primary distribution of varices in stomach.

Key words: *liver, cirrhosis, portal hypertension, bleeding, primary prevention, varicose veins, endoscopic ligation,* β*-blockers.*

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CASE REPORTS

Rare Combination of Liver Alveococcosis and Echinococcosis

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Echinococcosis and alveococcosis are severe parasitic diseases. Only early surgical intervention is radical method of treatment. Rare clinical observation of liver echinococcosis combined with alveococcosis is described in the article. Literature data, comprehensive survey, surgical treatment and morphological analysis are presented.

Key words: *liver, alveococcosis, echinococcosis, cryodestruction, liver resection.*

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CASE REPORTS

Giant Serous Cyst of the Pancreas

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Clinical case of the woman with giant pancreatic tumor is presented. Literature review, anamnesis, features of survey and surgical treatment are described. Comprehensive examination and adequate surgical management provided good outcome.

Key words: *pancreas, cyst, calculous cholecystitis, surgical treatment.*

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ABSTRACTS

Abstracts of Current Foreign Publications

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