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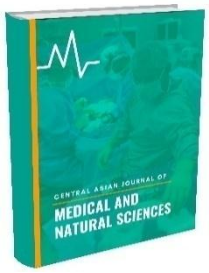

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Intervention Technologies at Treatment of Iatrogenic Strictures of Extrahepatic Bile Ducts

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Abstract: The article discusses the results of the application of biliostenting for iatrogenic injuries of the bile ducts of 78 patients. Application of endoscopic method allowed to restore the patency of the lumen of the hepaticoholedochus, and to carry out stenting of the stenotic segment, which led to recovery and discharge of the patients after 6-8 days There were no complications associated with stenting of the external bile ducts.

Key words: biliostenting, hepaticoholedochus, hepatocoenteroanastomosis, iatrogenic strictures, external-internal drainage.

The research studied the results of application of X-ray-endovascular methods of treatment of 53 patients with iatrogenic strictures of extrahepatic bile ducts. The X-ray-endovascular method was used both as the main method of decompression of the biliary tract with proximal cicatricial strictures and obstruction, and as an auxiliary method for the formation of external-internal drainage in various variants of hepatocoenteroanastomosis for hepaticocholedoch strictures (HC). Among 32 patients who underwent balloon dilatation without prosthetics, only two had relatively stable improvement, the rest were repeated dilatations without any effect. Six months later they underwent reconstructive operations. Among 21 patients who underwent X-ray endovascular bile duct prosthetics, in 5 cases repeated manipulations were performed due to a partial narrowing of the lumen of the bioliostent within 1.5-2 years, in other cases a stable positive effect was observed at three years observation. Analysis of the effectiveness of X-ray endovascular methods of treatment of iatrogenic strictures of extrahepatic bile ducts showed that this technique has the advantage both as a stage treatment for purulent cholangitis and mechanical jaundice, and can, in certain cases, be regarded as an alternative method to radical operations.

The problem of diagnosis and treatment of iatrogenic injuries of the bile ducts and external biliary fistulas is still one of the unsolved and topical issues of abdominal surgery [1,2.] failure. Patients are subject to long-term suffering, they have to repeatedly endure repeated surgeries. If with traditional cholecystectomy iatrogenic injuries of the bile ducts were noted in 0.8 - 1% of cases, then with the

introduction of laparoscopic techniques at the stage of their development, the frequency of these complications increased from 0.3 to 3% [3.4]. Iatrogenic injuries of the extrahepatic bile ducts are highly complex, require repeated high-tech interventions, not to mention the fact that the fate of these patients is dramatic.

Leading scientists discuss many issues related to reconstructive and restorative operations in this pathology, ascertaining an obvious discrepancy in tactical approaches to the choice of the type of intervention. Possibilities of the directions of minimally invasive surgery of the biliary tract - endobiliary stenting and X-ray endovascular surgery remain poorly studied. [5.6]. Therefore, the problem of further improving the methods of diagnosis and surgical treatment of iatrogenic lesions of hepaticocholedochus and external biliary fistulas remains far from exhausted, and discussions on these issues are constantly renewed. Endoscopic retrograde cholangiopancreatography plays the main role in the diagnosis of intraoperative lesions, cicatricial strictures and external biliary fistulas. A total of 196 Endoscopic retrograde cholangiopancreatography were performed. Of these, Endoscopic retrograde cholangiopancreatography followed by endoscopic papillosphincterotomy was performed in 91 patients. Control Endoscopic retrograde cholangiopancreatography was performed after endoscopic papillosphincterotomy in 44 patients. Bougienage of the stenotic segment with biopsy forceps in closed and open versions was undertaken in combination with local diathermocoagulation of the difficult-to-induce cicatricial segment. After that, stenting of the stenotic site was performed. Standard endobiliary stents were used. We performed 47 endoscopic transduodenal stenting of stenotic areas of the extrahepatic biliary tract after primary surgical interventions. In all cases, strictures of hepaticoholedochus were found, which formed an external biliary fistula. In 6 cases, the stricture was located in the confluence zone and was of a critical nature, consisting in the progression of obstructive jaundice. In 13 cases, the obstacle was located in the zone of confluence of the cystic duct with the common bile duct. In 17 cases, the obstruction to the outflow of bile was located in the distal part of the common bile duct. Using the endoscopic method, it was possible to restore the patency of the lumen of the hepaticoholedochus, and to carry out stenting of the stenotic segment, which led to recovery and discharge of patients after 6-8 days. There were no complications associated with stenting of the external bile ducts. At different times (from 6 to 10 months), the stents were removed during duodenoscopy

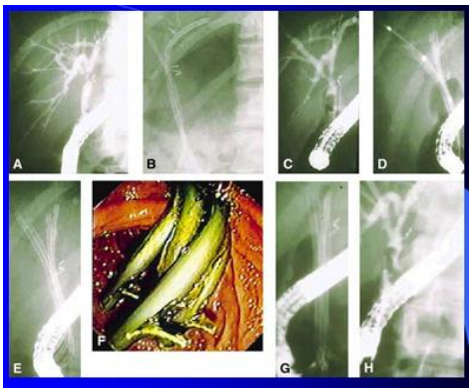


Fig. 1. Endoscopic biliostration at different levels of localization of hepaticoholedochus strictures.

Thus, endobiliary stenting is one of the minimally invasive methods for correcting iatrogenic lesions of the IAS and external biliary fistulas. It often relieves patients from difficult and sometimes repeated surgical interventions..

X-ray endovascular surgery is a relatively new area of modern medicine [7,10,11]. With its introduction into practice, there has been a rapid development of minimally invasive surgery. The

achievements of X-ray endovascular surgery in such areas of surgery as coronary surgery, angiosurgery, cardiac surgery are undeniable. [7,10,11,12,13,14,15].

The method of endovascular X-ray surgery is also successfully used to eliminate severe obstructive jaundice of various etiologies. Percutaneous transhepatic cholangiography and cholangiostomy are used for severe obstructive jaundice of tumor and calculous genesis, in cases where endoscopic biliostration fails.

We have undertaken a number of X-ray endovascular interventions for iatrogenic strictures of the extrahepatic biliary tract. In total, this group consisted of 53 patients. X-ray endovascular interventions were used both as an independent and as an auxiliary method to prepare for radical operations. In this subsection, the results of treatment in this group are separately considered.

In addition to obstructive jaundice, purulent cholangitis and liver failure were observed in 47.8% of cases. In all cases, a partial GC stricture was detected. The somatically serious condition of the patients was also due to a number of concomitant diseases.

Taking into account the positive and negative indications and contraindications for the use of X-ray endovascular methods, we have undertaken the use of this method, firstly, as the main method of decompression of the biliary tract with proximal cicatricial strictures and obstruction, when the endoscopic method was unacceptable. And secondly, the X-ray endovascular method was auxiliary in the formation of external-internal drainage in various variants of hepatic enteroanastomosis for hepaticoholedochus strictures.

Percutaneous transhepatic cholangiography revealed that the length of the stricture averaged 0.7 ± 0.23 cm, while there was a direct dependence of the severity of the manifestation of purulent cholangitis on the length of the bile duct stricture. We avoided the use of prosthetics in the presence of angiocholitis, since there was a danger of progression of the purulent-inflammatory process when introducing foreign material.

X-ray endovascular intervention began with percutaneous transhepatic cholangiography. For this, radio-opaque catheters with a diameter of 7-9 Fr were used. After Percutaneous transhepatic cholangiostomy, drainage was maintained for 10-12 days, and control was performed by re-contrasting the bile tree. Then, with the help of a guidewire, the stenosis site was bougie and a catheter with a diameter of 10-13 Fr. Thus, external-internal drainage was formed. Two months later, after preliminary balloon dilatation, a biliostent with a diameter of up to 15 Fr. was left, allowing the natural passage of bile.

Of 21 patients with biliostration, three had recurrent manifestations of obstructive jaundice associated with stent encrustation during the year. These patients underwent repeated interventions with bougienage and redraining of the bile ducts. The rest of the patients did not show any special complaints for one and a half to two years. In 12 cases, after balloon dilatation, external-internal drainage was left for 8-12 months, until the manifestations of obstructive jaundice and cholangitis were completely relieved. These patients subsequently underwent reconstructive operations. There was no lethality in these groups. Figure 1. shows the stages of percutaneous X-ray endovascular dilatation and stenting in patient B., 36 years old with ESRD.

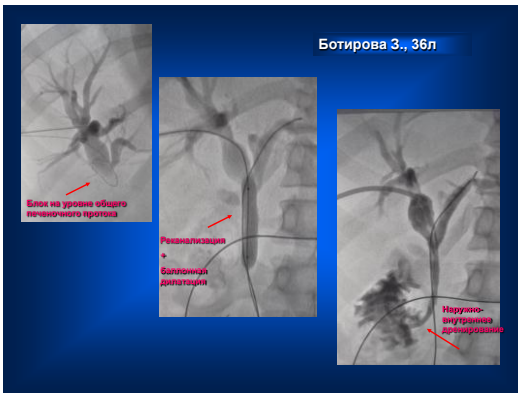


Fig. 1. X-ray endovascular dilatation and prosthetics in ESRD.

As can be seen from the figure, after dilatation and prosthetics, the contrast agent flows freely into the intestinal lumen, while the external drainage is left. Thus, external-internal drainage of the bile ducts is provided.

Figure 2. shows a percutaneous transhepatic cholangiogram of patient D. with ESRD. Intrahepatic bile ducts are dilated, type-1 stricture according to E.I.Halperin

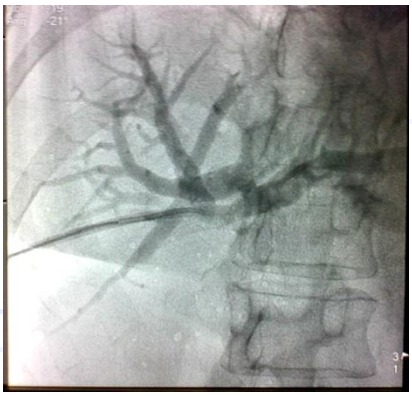
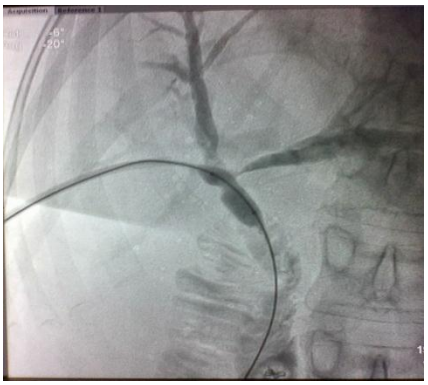


Fig. 2. Percutaneous transhepatic cholangiostomy of the patient D.

Fig. 3. Bougienage of hepaticoholedochus

Figures 3,4 and 5 show radiographs of percutaneous transhepatic dilatation with bougienage of hepaticocholedochus followed by external-internal drainage of the bile ducts in this patient

Fig. 4  Fig.5 

Of the 32 patients who underwent balloon dilatation without prosthetics, only two showed a relatively stable improvement, the rest underwent repeated dilatations without any effect. He underwent reconstructive operations six months later.

Of the 21 patients who underwent X-ray endovascular prosthetics of the bile ducts, in 9 cases repeated manipulations were performed due to partial narrowing of the biliostent lumen for 1.5-2 years, in other cases, a stable positive effect was noted after a three-year follow-up.

Analysis of the effectiveness of X-ray endovascular methods of treatment of iatrogenic strictures of the extrahepatic bile ducts showed that this technique has the advantage both as a staged treatment providing the treatment of purulent cholangitis and obstructive jaundice, and can, in certain cases, be regarded as an alternative method to radical operations. X-ray endovascular interventions contribute to the relief of clinical manifestations of cicatricial stricture of hepaticoholedochus and provide the choice of the optimal reconstructive surgery.

1. The analysis made it possible to single out the following provisions: Endobiliary stenting is one of the minimally invasive methods for correcting iatrogenic injuries of extrahepatic bile ducts and external biliary fistulas. It often relieves patients from difficult and sometimes repeated surgical interventions.
2. X-ray-endovascular interventions in case of lRSI are an effective minimally invasive method of decompression of the biliary system and elimination of obstructive jaundice in cicatricial strictures of the bile ducts.
3. X-ray endovascular balloon dilation is most effective for "fresh" strictures of the common bile duct, however, in the presence of late cicatricial strictures, long-term frame drainage is required for a period of at least two years.
4. X-ray endovascular dilatation and long-term frame drainage is the method of choice in the treatment of RUR, since it ensures the restoration of an adequate outflow of bile and the absence of relapses in the long-term period.

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