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The Potential of External Bile Duct Drainage in Obstructive Jaundice

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Abstract

This article is dedicated to the problem of external drainage of the bile ducts. Numerous attempts have been made to improve drainage tubes; however, it has not been possible to eliminate the method's shortcomings, and their correction falls within the purview of endoscopists. The treatment outcomes of 514 patients with cholelithiasis were analyzed to study the frequency and type of external bile duct drainage. The disadvantages of external bile duct drainage after choledocholithotomy fueled surgeons' desire for preoperative bile duct clearance. This led to a two-stage approach for treating cholelithiasis, incorporating endoscopic papillotomy, lithotripsy, and other procedures into clinical practice. Although initially met with resistance from surgeons, these techniques were gradually adopted into the practice of city and district hospitals decades later.

Keywords: Bile ducts, obstructive jaundice, external drainage.

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1. Introduction

Choledocholithiasis, accompanied by obstructive jaundice and cholangitis, has been and remains a serious problem in surgery, defining the complexity and often the inadequacy of operations. Despite the effectiveness of intraoperative diagnostic methods (cholangiography, choledochoscopy), they are seldom used in practice, especially in city and district hospitals [1, 4, 5].

Surgeons are limited by time during an operation, and the method of choice for its swift completion is external drainage of the bile ducts. Despite the success of transpapillary endosurgery, up to 20% of patients undergo traditional choledocholithotomy. Throughout its long history, various methods for external drainage of the bile ducts have been proposed, and numerous attempts have been made to improve drainage tubes. However, it has not been possible to eliminate the method's shortcomings, and their correction is the responsibility of endoscopists [1-3, 5].

The objective of the study is a preliminary analysis of the negative aspects of external bile duct drainage and the role of transpapillary endosurgery in resolving the problem of obstructive jaundice.

2. Methods

The treatment outcomes of 514 patients with cholelithiasis were analyzed to study the frequency and type of external bile duct drainage. Laparoscopic cholecystectomy was performed, concluding with external bile duct drainage in 8 patients (2.5%) (6 via the cystic duct stump and 2 with T-tubes). Traditional cholecystectomy was performed with external bile duct drainage in 27 patients (13.9%) (12 via the cystic duct stump and 15 with a T-tube). A total of 57 patients with postcholecystectomy syndrome and choledocholithiasis underwent surgery; of these, 17 (29.8%) had a traditional cholecystectomy with 3 T-tube drainages, and 40 (70.2%) underwent transpapillary procedures. In endoscopic surgery, the frequency of external bile duct drainage procedures is lower (2.5% vs. 13.9%) than in traditional surgery, and drainage via the cystic duct stump is used more often. This is attributable, firstly, to the merits of transpapillary endosurgery as the first stage of treatment for patients with combined lesions, and secondly, to the limitations of laparoscopic surgery due to the unpreparedness of surgeons.

3. Results And Discussion

The problems associated with external drainage of the bile ducts are as follows: 1. Insufficient objectivity and justification for performing external drainage procedures; 2. Errors in the naming, selection, and preparation of drains; 3. Methodological and technical errors in the performance of external drainage of the bile ducts; 4. Violation of the principles of postoperative management of patients with external bile duct drainage; 5. Complications of external bile duct drainage and their treatment. We observed 37 patients with external drainage of the bile ducts, 35 of whom experienced a total of 52 different failures, errors, and complications. This, along with a literature review, allowed us to identify these problems and their potential solutions. Insufficient objectivity and validity of indications for performing external drainage of the bile ducts include: - diagnostic shortcomings; - surgeon's subjectivity, lack of experience, and low informational value of the examination; - low informational value of the intraoperative examination methods used; - insufficient experience of the surgeon and assistants; - inadequate debridement of the bile ducts.

An analysis of literature data reveals differing opinions. In one study we encountered, external drainage of the bile ducts was performed "with its moderate dilation (up to 8-10 mm), a suspicion of stenosing papillitis, stones in the common bile duct, or signs of acute or chronic pancreatitis." The shortcomings of external drainage of the bile ducts after choledocholithotomy fueled surgeons' desire for a method of preoperative bile duct clearance. This led to the development of a two-stage strategy for treating cholelithiasis, introducing endoscopic papillotomy, lithotripsy, and other procedures into clinical practice. Although surgeons initially met these innovations with negativity, they have been gradually adopted into the practice of municipal and district hospitals over the decades.

However, in 15-25% of patients, transpapillary endosurgery is unsuccessful, and traditional cholangiolithotomy remains the treatment method of choice, which is performed laparoscopically in only a few clinics. Nevertheless, endoscopic retrograde cholangiography, and especially endoscopic papillotomy, bring surgeons closer to performing adequate operations. Errors in the naming, selection, and preparation of drains include: - insufficient knowledge of the subject; - poor quality and inadequate parameters of the tubes; - improper preparation of the drainage tubes. Of the 23 T-tubes designated as "H. Kehr," only 9 (39%) were actually of this type (with a cut semi-circumference), while the rest were "J. Deaver" drains (with an uncut semi-circumference). "When evaluating the Kehr T-tube, considering the complexity and trauma associated with its removal, some authors recommend shortening the horizontal part of the Kehr drain or cutting it into a trough shape along half the tube's length."

Thus, Kehr drainage is described as an improvisation by surgeons. The same can be said about drainage according to A. V. Vishnevsky (2 (5.4%) of observations after choledocholithiotomy: we, patriots, should call it after the name of A. Lane (1892), if we do not use the principle of "siphon-manometer" (and it is not used!) in the postoperative period. D.L. Pikovsky's drainage (through the cystic duct culture) is called W. Halsted's drainage (1897). Surgeons don't have all sorts of tubes: they either don't know them or don't search for them. Errors in performing external drainage of bile ducts include: - errors in choosing the location (high) of drainage installation; - Incorrect placement of the drainage tube in the hepatocholedochus (2-5.4%); - Use of non-absorbable threads for fixing the drainage (1-2.7%), leading to difficulties in removal, patient discomfort, and granuloma formation (1 observation); - defects in fixing the drainage tube (tight, weak); - neglect of abdominal cavity drainage. Errors in managing the postoperative period: - prolonged profuse bile leakage through the drain (7-19%); - Passive management of the postoperative period; - Incorrect location of the gallbladder; - Early and late removal of drainage; - Removal of drainage

without control cholangiography; - Long stay of patients in the hospital. Complications of external drainage of the bile ducts (early, late) in 37 patients: - Excesses of drainage tubes (2-5.4%); - Incorrect position of the branches and impaired bile duct patency (2-5.4%); - Deformation of the hepatocholedochus (1-2.7%); - Drainage dislocation (1-2.7%); - Bile flowing past the drainage into the abdominal cavity (3-11.1%); - Excessive prolonged bile leakage through the drainage (7-18.9%); - Damage to the hepatocholedochus during drainage (2-5.4%); - Gallbladder peritonitis, abscesses (2-5.4%); - Cholangitis (5-13.5%); - Biliary fistula (1-2.7%); - Strctures of the hepatocholedochus (3-11.1%). Thus, among the failures of external drainage with a T-shaped drain in 20 out of 23 patients, 17 of them had choledocholithiasis, 4 had problems with bile flowing into the abdominal cavity, 2 had bile duct damage, and others; and with external drainage of the bile ducts through the cystic duct culture - in 5 out of 12 - choledocholithotomy, bile drainage - in 2 and others. Traditional laparotomy for their correction was performed in 5 patients (1 patient, 82 years old, died from biliary peritonitis), laparoscopy in 1 patient, and endoscopy in 31 patients.

4. Conclusion

Thus, endoscopy is a "helping stick" in solving the problems of external drainage of bile ducts. The problems of external drainage operations of the bile ducts are due to insufficient information and technical training of surgeons, ignorance of modern intraoperative examination methods, poor equipment, limited use of laparoscopic and transpapillary surgery in combined lesions.

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