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EMPLOYMENT OF BILIARY ENDOSCOPIC SPHINCTEROTOMY IN THE TREATMENT OF CHOLEDOCOLITIASIS: A LITERATURE REVIEW

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Abstract: Introduction: Biliary endoscopic sphincterotomy (EST) is a procedure that widens the sphincter of oddi, located in the ampulla of Vater, whose intention is to prevent pancreatic complications in patients unsuitable for cholecystectomy. Objective: To investigate the scientific evidence regarding surgical treatment involving EST in patients with choledocholithiasis, seeking to assess the association of this procedure with the complication of acute pancreatitis in relation to other techniques. Method: Literature review study, between October and November 2022, through the PubMed and Scielo databases, with a total of 13 articles selected after applying criteria. **Review:** The procedure is characterized by having a resolving and minimally invasive tendency in patients with potential risks of invasive procedures. The presence of hemodynamic instability are obstacles that contraindicate the performance of this surgery. EST has been shown to reduce the risk of recurrence of biliary pancreatitis and has good effectiveness compared to other techniques. **Final considerations:** EST has the potential to reduce the risk of recurrence of biliary pancreatitis in patients who are not candidates for cholecystectomy.
Keywords: Choledocolithiasis; sphincterotomy; Pancreatitis; Endoscopy.

INTRODUCTION

Gallstones are a condition caused by deposits of crystallized cholesterol from the bile. Its impaction in the bile duct is related to the development of acute pancreatitis (AP) due to the impediment of the correct flow of digestive enzymes produced, which can cause local and systemic damage (ZHOU X.D. et al., 2019; HASEGAWA S. et al., 2021). As a surgical alternative, endoscopic biliary sphincterotomy (EST) has been used, which is one of the techniques available to improve the outcome of patients unfit for cholecystectomy

and who have large gallstones (DE LA FILIA MOLINA I.G. et al., 2019).

EST is considered minimally invasive and consists of a cut that widens the sphincter of oddi, a structure located in the major duodenal papilla called the ampulla of Vater. The technique allows endoscopic treatment for choledocholithiasis by facilitating the removal of large calculi, whose potential for pancreatic complications is based on the fact that the open sphincter could facilitate the passage of calculi through the papilla, thus reducing the risk of obstruction. However, reports in the literature highlight the occurrence of intraoperative and postoperative complications, such as minor hemorrhages, perforations and cholangitis, generating the need for new interventions after the procedure (XU J. and YANG C., 2020; LIU P. et al, 2019).

Epidemiologically, in about 10 to 20% of cases of choledocholithiasis, there is a pathological association with complicating conditions, marked by cholangitis and acute pancreatitis (AP) (PARK H.C. et al., 2018). In this context, the objective of the present study is to investigate the scientific evidence about the surgical treatment involving EST in patients with choledocholithiasis, seeking to evaluate the association of this procedure with the PA complication in comparison with other techniques.

METHODOLOGY

This study is a bibliographic review carried out from October to November 2022. Literature searches were carried out in the PubMed and Scientific Electronic Library Online (SciELO) databases using the following Health Sciences Descriptors (DeCS) in combination: (Choledocholithiasis) AND (Sphincterotomy) AND (Pancreatitis) OR (Endoscopy) AND (Cholangiopancreatography). Inclusion criteria were studies published in the last 5 years, selection by title and abstracts to align with the purpose of the article, preference for articles from systematic reviews, clinical and epidemiological studies. As for the exclusion criteria, the complete reading of the selected articles and the exclusion of duplicated articles that were not consistent with the research objective were performed. After associating all the descriptors in the searched databases, a total of 746 scientific studies were found, with 729 articles belonging to PubMed and 17 articles to the Scielo database. With the analysis of titles and abstracts, 12 articles from PubMed and 1 from Scielo were selected, and 13 articles were finally selected to compose the collection.

RESULTS

EST is used in the clinical picture of AP that presents severity factors that indicate a severe evolution and also in those in which there is concomitant acute cholangitis. Despite presenting some risks, it is a technique that tends to be resolving in some cases (KOGURE H. et al., 2020; DE CLEMENTE JUNIOR C.C. et al., 2018). PA has as possible complications the development of infection to the pancreatic organ, pseudocyst formation, cholangitis and organ failure, which represents high morbidity and mortality in patients with obstruction of the bile ducts (SHRESTHA. D.B. et al., 2022). Biliary stone obstruction may be suspected with the acute onset of persistent, severe epigastric pain, often radiating to the back, relieved by anteflexion. It is aggravated by food intake and is present in 100% of cases; and serum lipase activity at least three times greater than the upper limit of normal positive predictive value in 90%, being quickly normalized in 72h (BOUGARD M. et al., 2019).

The sphincterotome is an instrument composed of: a cutting wire at its end that has different lengths and characteristics that help in cannulation and cutting; and an

electrosurgical unit that helps with cutting and coagulation. After cannulating the bile duct, a contrast agent is released to obtain the location of the obstruction, subsequently, the catheter is withdrawn slowly enough to position and guide the cutting wire to the sphincter, after checking its position again, the incision and removal of the calculus (KÖKSAL A.S. et al., 2018).

However, it is not always possible to perform biliary EST adequately and safely. Situations such as the patient's instability, uncorrected coagulation problems and difficulties in guiding the distal end of the sphincterotome to the common bile duct axis, prevent the procedure from being performed. In such cases, endoscopic balloon papillary dilation (ESBD) is indicated as a substitute technique. As with most endoscopic procedures, papillotomy has both immediate and long-term complications. Events such as bleeding may be related to the mode of electrical current. Still, there are reports of cases with perforation and inflammation of the pancreas and biliary tract, which can occur in up to 11.8% of cases (KÖKSAL A.S. et al., 2018; HEDJOUDJE A. et al, 2021).

Surgical therapeutic approaches for the treatment of biliary lithiasis, marked mainly by the condition of choledocholithiasis, include EST, which, among its actions, comprises an advantageous technique to the detriment of other surgical methodological approaches, such as: open choledochotomy (OCT) and laparoscopic exploration of the common bile duct (CBD) (DE CLEMENTE JUNIOR C.C. et al., 2018; ZHOU X.D. et al., 2019). Among the main complications related to the surgical treatment of choledocholithiasis, the following stand out: the pertinence of bleeding and biliary perforation, as well as associated pancreatitis, such conditions being pronounced in invasive surgical conditions and attenuated in endoscopic techniques (DE CLEMENTE JUNIOR C.C. et al., 2018).

In general, several clinical studies demonstrate a high incidence of adverse effects in the OCT procedure for the treatment of choledocholithiasis, reaching mortality levels of 1% to 2% and low viability of the gastrointestinal tract after the procedure. Due to these conditions, EST approaches and laparoscopic exploration of CBD address greater highlights in the surgical field of biliary lithiasis therapy, given its less invasiveness and procedural safety (KOGURE H. et al., 2020; ZHOU X.D. et al., 2019).

The retrospective study postulated by Zhou X.D. et al. (2019) observed patients undergoing EST or OCT surgical procedures between January 2010 and December 2012. From the 302 patients selected, 168 were treated by the EST method, while 134 underwent OCT, the same individuals were followed for a median of 6.3 years. Conclusively, those who underwent EST needed a shorter time to relieve the obstruction, with a shorter duration of anesthesia for procedural completion, as well as a shorter procedure and hospital stay than individuals who underwent OCT (ZHOU X.D. et. al., 2019).

The meta-analysis performed by Park H.C. et al. (2018), who investigated eight studies aimed at investigating the incidence of complications prevalent in individuals undergoing cholecystectomy after endoscopic common bile duct stone removal therapy, demonstrated the safety and effectiveness of the procedure, mitigating risks of possible new complications. following approaches and treatment. The selected studies had the inclusion of 12,717 patients, and based on clinical analyzes and surgical approaches, it was concluded that the incidence of complications such as AP, as well as cholangitis and jaundice in patients undergoing cholecystectomy after endoscopic therapy were reduced.

Comparison of patients undergoing

EST, ESBD, and EST with balloon dilation showed significant intra- and postoperative differences. Those undergoing EST had 3% of bleeding complications and 1.1% of patients who underwent EPBD also had blood complications. On the other hand, the complication of AP demonstrates a lower incidence in patients undergoing EST and EST with balloon dilation compared to those with ESBD alone (PARK H.C. et al., 2018). Conclusively, in perforating frames, there was no significant difference between groups (LIU P. al., 2019).

By Clemente Junior C.C. et al. (2018) performed a meta-analysis that allowed analyzing 1824 patients undergoing endoscopic therapies for choledocholithiasis, 914 individuals undergoing sphincterotomy associated with EPBD and 910 associated with isolated EST. When comparing the techniques, it showed that post-procedure PA complications, bleeding, cholangitis and perforation did not show significant percentage differences between the groups of individuals undergoing the two therapies, which highlights the effectiveness of minimally invasive procedures (DE CLEMENTE JUNIOR C.C. et al. al., 2018; KHAN M.A. et al., 2018).

FINAL CONSIDERATIONS

EST, as a minimally invasive and highly safe procedure, stands out as an effective surgical treatment for choledocholithiasis, with potential to reduce the risk of recurrence of biliary pancreatitis in patients who are not candidates for cholecystectomy. The development of new retrospective studies on the application of EST in patients with biliary pancreatitis may serve as a guide for safer planning of such a surgical approach, especially in patients at risk of hemodynamic instability.

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