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Easy sphincterotomy in patients with Billroth II gastrectomy: A new technique

Billroth II gastrektomili hastalarda kolay endoskopik sfinkterotomi: yeni bir teknik

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Background/aims: *ERCP and endoscopic sphincterotomy in patients with Billroth II gastrectomy are technically more difficult due to the reversed anatomy. We developed a new guidewire sphincterotome that includes two 15-mm non-isolated metal parts, one of which is located 12 cm from the distal tip and the other in the proximal end. The aim of this study was to evaluate the feasibility of and outcomes with the new sphincterotome for sphincterotomy in patients with Billroth II gastrectomy.* ***Methods:*** *Between January 2004 and March 2007, 11 patients with Billroth II gastrectomy underwent endoscopic sphincterotomy with the new guidewire sphincterotome. Procedures were initiated by deep cannulation of the bile duct with a standard catheter and guidewire sphincterotome. After cholangiography, the catheter was withdrawn with 0.5 to 1 cm of its tip outside the duodenoscope. The distal non-isolated part of the sphincterotome was placed in the papillary orifice. In order to reach the proper position, the duodenoscope's elevator was moved to the downward position, the up-down dial was turned slightly in the downward direction, and then the duodenoscope was pushed slightly forward. Finally, sphincterotomy was performed in the 6 o'clock direction.* ***Results:*** *Sphincterotomy with the new sphincterotome was successfully achieved in all patients without using protective pancreatic stents. Seven patients had common bile duct stones, two pancreatitis, one odditis, and another one persistent bile duct leakage. There were no sphincterotomy-related complications or death during this study.* ***Conclusions:*** *In this pilot study, endoscopic sphincterotomy with a new guidewire sphincterotome in patients with Billroth II gastrectomy was found to be clinically successful, concise, easy to perform, efficient, and reliable. However, further large comparative studies are needed for a definite conclusion.*

Key words: Sphincterotomy, Billroth II gastrectomy, guidewire sphincterotome, a new technique

Amaç: *Billroth II gastrektomili hastalarda ERCP ve endoskopik sfinkterotomi papillanın ters anatomisi nedeniyle teknik olarak çok zordur. EST işlemini kolaylaştırmak için yeni bir sfinkterotom, distal ucundan 12cm uzaklıkta ve proksimal ucunda, 1.5cm yalıtılmamış tel içeren klavuz tel-sfinkterotom geliştirildi. Bu çalışmada, Billroth II gastrektomili hastalarda KTS ile EST'nin güvenle uygulanabilirliği ve etkinliği araştırıldı.* ***Yöntem:*** *Ocak 2004-Mart 2007 tarihleri arasında 11 Billroth II gastrektomili hastaya klavuz tel-sfinkterotom ile endoskopik sfinkterotomi yapıldı. İşlemde önce standart ERCP kateteri ve klavuz tel-sfinkterotom ile koledok kanülasyonu sağlanıp kolanjiyografi yapıldıktan sonra kateter, ucu duodenoskoptan 05-1cm dışarıda kalacak şekilde geri çekildi. Klavuz tel-sfinkterotomun distaldeki 1.5cm'lik yalıtılmamış kısmı papilla orifisine getirildi. Uygun pozisyon sağlamak için elevator gevşetildi, duodenoskopun up-down kolu down yönünde döndürüldü ve duodenoskop duodenum proksimaline doğru hafifce ilerletildi. Son olarak, saat 06 kadranından EST gerçekleştirildi.* ***Bulgular:*** *Hastaların tamamında pankreatik stentleme gerekmeden klavuz tel-sfinkterotom ile yeterli sfinkterotomi başarıyla gerçekleştirildi. Yedi hastada koledokolityazis, 2 pankreatit, 1 oddit ve 1'inde safra fistülü mevcuttu. Çalışmada, ERCP ve sfinkterotomiye bağlı herhangi bir komplikasyon ve ölüm gözlenmedi.* ***Sonuç:*** *Billroth II gastrektomili hastalarda klavuz tel-sfinkterotom ile sfinkterotomi kolay uygulanabilen, kısa süren, etkin ve güvenli bir yöntemdir. Ancak, kesin bir yargıya varmak için karşılaştırmalı ve çok olgulu çalışmalara ihtiyac vardır.*

Anahtar kelimeler: Billroth II gastrektomi, ERCP, sfinkterotomi, yeni teknik

INTRODUCTION

Endoscopic sphincterotomy (EST) is an essential procedure in therapeutic endoscopic retrograde cholangiopancreatography (ERCP). Of patients requiring ERCP, 1.6 to 2.5% are Billroth I and II gastrectomy patients (1, 2). In patients with Billroth II gastrectomy, ERCP and EST are technically challenging procedures due to the reversed anatomy. For such patients, several methods and

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specialized sphincterotomes have been developed to enable EST. These include the sigmoid-loop sphincterotome, Soehendra Billroth II sphincterotome, EST with percutaneous transhepatic cholangioscopy, endoscopic transpancreatic papillary septotomy, and a combined percutaneous-endoscopic approach with a soma sphincterotome (3–6).

Currently, a needle-knife sphincterotomy over a previously inserted endoprosthesis is the most widely used technique (7, 8). We developed a new sphincterotome, *guidewire sphincterotome (GWS).* The GWS consists of two 15-mm non-isolated metal parts, one being located 12 cm from the distal tip, and the other at the proximal end (Figures 1A-B). The aim of this study was to evaluate the feasibility of and outcomes with the new GWS for EST in patients with Billroth II gastrectomy.

MATERIALS AND METHODS

Between January 2004 and March 2007, 11 patients with a Billroth II gastrectomy were referred to our endoscopy unit for therapeutic ERCP. The patients had signs and symptoms of extrahepatic cholestasis and persistent bile fistulae. Liver function tests (i.e., bilirubin, alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, and gamma-glutamyl-transferase measurements) as well as serum amylase and coagulation tests were performed prior to ERCP.

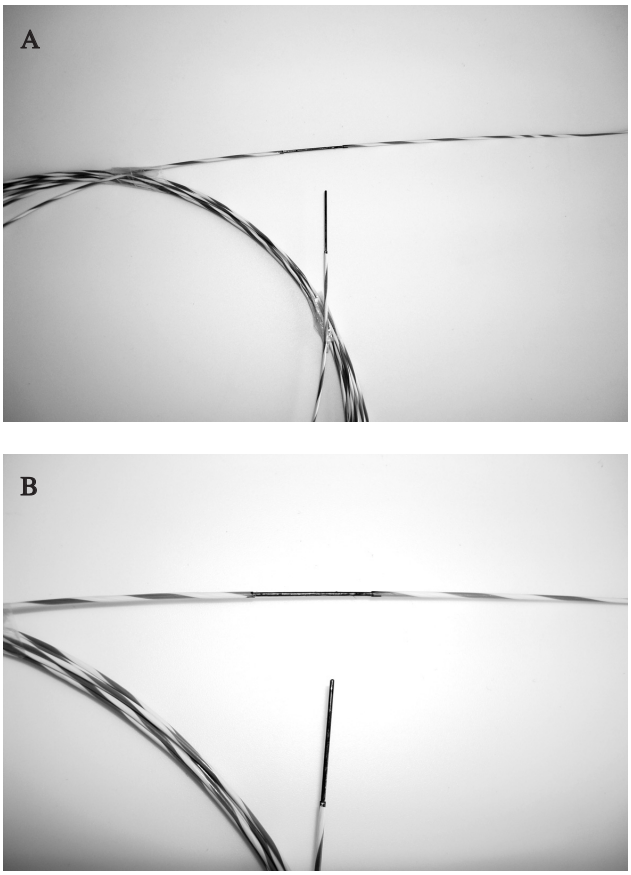

Figure 1A-B. Guidewire sphincterotome (GWS) consisting of two 15-mm non-isolated metal parts; one is located 12 cm from the distal tip, and the other at the proximal end.

A Fujinon ED250X5T series duodenoscope was used for the procedure. At the beginning of the procedure, deep cannulation of the bile duct was achieved with a standard catheter and our GWS. After cholangiography, the catheter was retrieved while 0.5-1 cm of the tip stayed outside the duodenoscope. The distal non-isolated part of the GWS was placed in the papillary orifice (Figure 2). In order to reach the proper position, the duodenoscope's elevator was moved to the downward position, the up-down dial was turned slightly in the downward direction, and then the duodenoscope was pushed slightly forward (Figure 3). With the monopolar current administered from the proximal end of the GWS, EST of an appropriate and sufficient size was performed (6 o'clock direction) (Figures 4-5). After EST, ERCP was finalized by completing therapeutic procedures over the GWS.

Complications following ERCP were identified according to the consensus criteria (9). Two hours and one day after the ERCP, a physical examination was performed. The complaints of the patients, amylase levels and hemogram were monitored.

RESULTS

Seven male and four female patients were of an average age of 58 years (range: 48-67y). In all pa-

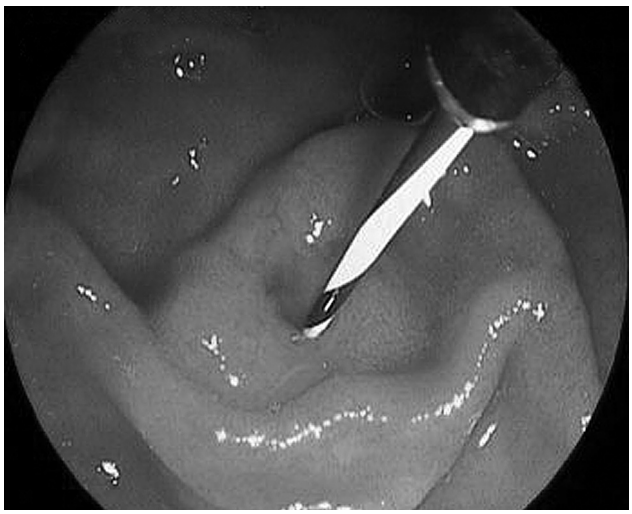

Figure 2. The distal non-isolated part of the GWS was placed in the papillary orifice.

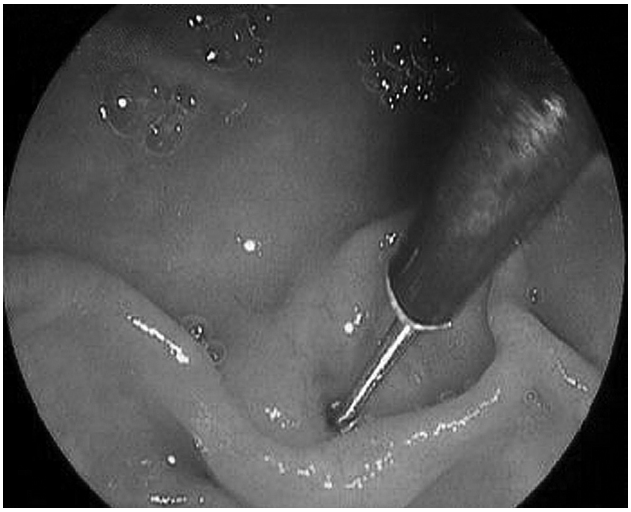

Figure 3. View of the proper position to begin endoscopic sphincterotomy.

tients (100%), complete EST was performed in 40 seconds (range: 15-120 sec) on average without placing a biliary stent. All procedures were completed in an average of 48 minutes (range: 20–80 min).

Seven of our patients had common bile duct stones, two pancreatitis, one odditis and one bile leakage from a cystic stump.

There were no EST-related complications or death in this study group. However, one patient was hospitalized for two days due to severe abdominal pain, though no pathologic findings were established in blood tests, ultrasonography or computerized tomography.

DISCUSSION

For many years, EST has been the method of choice for therapeutic ERCP. Using EST in Billroth II-operated papillae is difficult due to the previous operation and the position of the papilla. New methods have been developed to approach the papilla after Billroth II operations and to simplify EST procedures (3–5).

When the papilla is reached through the afferent loop in patients with previous Billroth II operations, their Vater's ampulla is approached from below; the position of the ampulla is brought to 180 degrees, and the bile duct is adjusted to the 5 o'clock position rather than the standard 11 o'clock position. In this position, the guidewire with the Billroth II papillotome and the rotatable papillotome with the guidewire attachment help in cannulation and EST (4, 5, 10-12). The EST procedure is performed after establishing the 5 o'clock position following cannulation with the rotatable wire-guided papillotome (3).

Sphincterectomy procedures with different techniques have been reported in Billroth II patients: needle-knife precut papillotomy over a pancreatic duct stent; sphincterectomy with a needle after biliary stenting; use of a push-type wire-guided Billroth II papillotome; and use of a wire-guided conventional triple-lumen biliary sphincterotome groomed into an 'S' shape so that the cutting wire is oriented toward the 6 o'clock position (4, 5, 10, 12). The success rate achieved with these techniques and various tools is 88.3% in diagnostic ERCP and 92.8% in therapeutic ERCP. The mor-

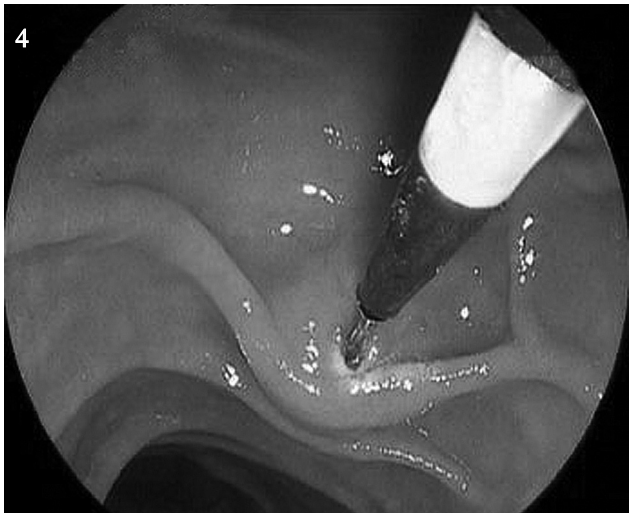

Figure 4-5. With the monopolar current administered from the proximal end of the GWS, EST of appropriate and sufficient size was performed (6 o'clock direction).

bidity of the endoscopic procedure is 5.1%, while no mortality has been reported (13). In one study, a 92% successful completion of ERCP and sphincterectomy was reported (14). In an evaluation of needle-knife sphincterotomy in patients with Billroth II operations employing side-viewing and forward-viewing endoscopes, success rates of 80% and 83%, respectively, were obtained (15).

The complications of ERCP and EST depend on various clinical conditions and patient-related factors. These are associated with the indication of the procedure, as well as the technical skills of the endoscopy specialist (16, 17). Billroth II or Roux-en-Y reconstructions are considered high-risk clinical conditions in terms of ERCP complications (16). Complication rates can be reduced in both circumstances in experienced hands (17).

In patients with Billroth II gastrectomy, the ERCP procedure is more difficult and has lower success rates as compared to patients with a normal anatomy. The complication rates are also high due to the position of the papilla (4, 7). Ten in 15 patients with Billroth II have had successful ERCP results, and it has been recommended in situations requiring therapeutic interventions. Following dilatation of and stent placement to the sphincter of Oddi, interventions with a needle-tip papillotome were found to be more effective and safer than ERCP push-sphincterotomy (7). Thus, for EST applications in patients with Billroth II, stents are frequently placed to prevent procedure-related complications.

During this research, in patients who could not be approached endoscopically, endoscopic sphincterotomy was performed via a percutaneous transhepatic cholangioscope. In these three obstructive patients, no complications developed after the procedure. In one patient, acute pancreatitis related to papillary dilatation was reported (3).

In a comparison of direct EST with the procedure performed after endoscopic balloon dilatation (EBD) of the papilla in Billroth II patients, complication rates were 19% for EBD and 39% for EST. The conclusion was that in Billroth II gastrectomy patients, both ESR and therapeutic procedures were more difficult as well as being more dangerous than in patients with normal anatomy. The rate of total stone removal was lower in patients with Billroth II (83%) as compared to those with normal anatomy (93%); the rate of early complications was higher in patients with Billroth II (39%) than in those with normal anatomy (22%); and finally, the rate of bleeding was higher in patients with Billroth II (17%) than in those with normal anatomy (2%). Total procedure time was found to have lengthened due to the necessity to perform EST with a needle-tip after the placement of an endoprosthesis. Using stents for reducing the complications of the procedure is safer than the use of designed sphincterotomes. The use of stents was found to be very effective in controlling and adjusting the depth of EST (8). Meanwhile, EBD required less experience, reduced the need for mechanical lithotripsy, and did not lengthen procedural time. The impression was that bleeding and the risk of pancreatitis was not high in EBD (8).

For a safe and successful treatment in patients with Billroth II anastomosis (92%) and Roux-en-Y reconstructions (33%), the use of an S-shaped sphincterotome has been recommended (18). In patients in whom independent cannulation cannot be performed, the use of a Billroth II papillotome was found to be safe and effective (12). In Billroth II patients, the application of EST after stenting is reported to increase the safety of the procedure (7, 8). Different procedures are also being investigated to further simplify and shorten the procedure.

In this study, in patients with Billroth II gastrectomy, endoscopic sphincterotomy with the new guidewire sphincterotome was found to be clinically successful, short, easy, efficient, and reliable. However, large comparative studies with other techniques are needed for definite results.

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