

## Needle knife papillotomy with discarded sphincterotomes: Cost effective and safe

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Endoscopic sphincterotomy (ES) developed naturally from ERCP in 1973-4<sup>1</sup> and now has an established, wide-ly repeated success rate of 90-95%.<sup>2</sup>

In 5%-10% of cases, the common bile duct (CBD) re-mains inaccessible, necessitating pre-cut suprapapillary papillotomy\* or needle-knife fistulotomy (NKF),<sup>3</sup> first introduced by Siegel in 1980.<sup>4</sup>

The use of the needle-knife to facilitate biliary can-nulation remains controversial, because it is associated with higher attendant risks and higher morbidity.

The most common complication is hemorrhage.<sup>5</sup> How-ever, the most important one is ERCP-induced acute pan-creatitis, especially when performed on non-dilated bile ducts.<sup>6</sup>

Needle-knife techniques are effective for primary or secondary (after failure of transpapillary approach) at-tempts in cannulation of CBD. Khatibian et al reported a success rate of 83%, whereas O'Connor et al reported a success rate of 89%, with the use of the same technique (in the second attempt).<sup>7</sup>

The complications of the needle-knife techniques are similar to those associated with conventional papillot-omy, namely, bleeding, acute pancreatitis, cholangitis and perforation. In most studies, the complication rate with the needle-knife technique ranges between 5,2% to 29%,<sup>8,9</sup> higher than that of routine papillotomy (2.0%-

6,8%).<sup>10</sup> In particular, as far as post-ERCP pancreati-tis is concerned, De Weerth et al and O'Connor et al re-ported low rates (4% and 2.4% respectively) after the use of a similar technique to NKF.<sup>11</sup> Most investigators using both pre-cut needle knife techniques have report-ed a lower rate of post-ERCP pancreatitis (0.5% and 1% respectively).<sup>6</sup> The early application of the needle-knife technique in difficult biliary cannulation, is time-sav-ing, safe and effective and must be performed by expe-rienced endoscopists.<sup>8,12</sup>

The present study shows that selective biliary can-nulation after pre-cut suprapapillary papillotomy, with the use of needle knife, was made by a simple modifica-tion, shaped out of a previously discarded sphincterotome. The procedure, performed by an experienced endosco-pist, was successful in 100% of 78 patients who needed a pre-cut papillotomy, the complication rates being report-ed at around 6,7% and similar to cannulation with stan-dard techniques.

These rates cannot be evaluated since as the investi-gators claim, for financial reasons, it was not possible to compare this group of patients to other patients to whom a standard needle knife was used. These results of success rates and complications however, are similar to those of other investigators.<sup>8</sup>

To the best of our knowledge, there are few articles about techniques for the cannulation of CBD, that as-sessed the efficacy and safety of NKF (first attempted), in patients who need interventional ERCP, for the treat-ment of biliary diseases, and even fewer to compare the cost between needle-knife techniques and conventional techniques. Nevertheless, very few previous studies have shown that even the 'single use sphincterotome' can be reused safely without compromising the safety and ef-ficacy of the procedure. Moreover, reusing the sphinc-terotome was able to significantly cut costs,<sup>13</sup> and it is

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widely known that the cost of accessories used in ERCP is the major obstacle in providing treatment in developing countries.

In conclusion, the simple needle knife technique modification that the writers used is helpful and appoints itself as an effective and safe procedure to avoid additional risk factors, such as prolonged attempts on the papilla or multiple pancreatic cannulations and reduces the cost of ERCP, in a developing country like India.

In the last 6 years, we adopted, as a single center, the NKF technique, which was performed in 138 (12, 35 %) -out of 1117 patients with possible choledocholithiasis- who underwent ERCP with a difficult biliary cannulation, in first or second attempt. This improved the overall success rate of CBD catheterization with the NKF and ES from 92% to 98%, without significant complications of post-ERCP pancreatitis (0,7 %)(unpublished data).

In the NKF technique, the incision was made from above downward. The needle-knife was positioned at about the junction of the upper third and the lower two thirds of the ampullary mound. The incision began downward at 5-o'clock and stopped short of the papillary orifice. From technical point of view, gentle use of the wire before cannulation, providing the necessary upward angulation, may be helpful.

Our criteria for using the needle-knife are multiple failed attempts of cannulation, guide wire entering the pancreatic tube three times in the second attempt or the presence of a dilated CBD, a protuberant ampulla of Vater from the beginning. Acute obstructive suppurative cholangitis and pancreatitis due to biliary disorders is in our opinion a special indication for the need of NKF use. Only papillas with a definite visible intraluminal protrusion, signifying a reasonable length of intraduodenal bile duct, should be attempted.

It is thus clear that needle knife technique probably carries additional, though not prohibitive, risk. Therefore, it may be used by the most experienced endoscopist available to increase the success rate of common bile duct access after initial conventional method failure.

## REFERENCES

1. Classen M, Demling L. Endoskopische sphinkterotomie der

- papilla Vateri und steinextraktion aus dem ductus choledochus. *Dtsch Med Wochenschr* 1974; 99: 496-497.
2. Cotton PB. Endoscopic management of bile duct stones - apples and oranges. *Gut* 1984; 25: 587-597.
  3. Kaffes AJ, Sriram PV, Rao GV, Santosh D, Reddy DN. Early institution of pre-cutting for difficult biliary cannulation: a prospective study comparing conventional vs. a modified technique. *Gastrointest Endosc*. 2005; 62: 669-674.
  4. Siegel JH. Precut papillotomy – a method to improve success of ERCP and papillotomy. *Endoscopy* 1980; 12: 130-133.
  5. Dowsett JF, Polydorou AA, Vaira D, D' Anna LM, Ashraf M, Croker J, Salmon PR, Russell RCG, Hatfield ARW. Needle knife papillotomy: how safe and how effective? *Gut* 1990; 31: 905-908.
  6. Katsinelos P, Mimidis K, Paroutoglou G, Christodoulou K, Pilpilidis I, Katsiba D, et al. Needle-knife papillotomy: a safe and effective technique in experienced hands. *Hepato-gastroenterology* 2004; 51: 349-352.
  7. Khatibian M, Sotoudehmanesh R, Ali-Asgari A, Movahedi Z, Kolahdoozan S. Needle-knife fistulotomy versus standard method for cannulation of common bile duct: a randomized controlled trial. *Arch Iranian Med* 2008; 11: 16-20.
  8. Ping-Hong Zhou, Li-Qing Yao, Mei-Dong Xu, Yun-Shi Zhong, Wei-Dong Gao, Guo-Jie He, Yi-Qun Zhang, Wei-Feng Chen and Xin-Yu Qin. Application of needle-knife in difficult biliary cannulation for endoscopic retrograde cholangiopancreatography. *Hepatobiliary Pancreat Dis Int*, 2006; 5: 4, 590-594.
  9. Hashiba K, D' Assuncao MA, Armellini S, Hassegawa RT, Cappellanes CA, Moribe D. Endoscopic suprapapillary blunt dissection of the distal common bile duct in cases of difficult cannulation: a pilot series. *Endoscopy* 2004; 36: 317-321.
  10. Christoforidis E, Goulimaris I, Kanellos I, Tsalis K, Demetriades C, Betsis D. Post- ERCP pancreatitis and hyperamylasemia: patient-related and operative risk factors. *Endoscopy* 2002; 34: 286-292.
  11. de Weerth A, Seitz U, Zhong Y, Groth S, Omar S, Papageorgiou C, et al. Primary precutting versus conventional over-the-wire sphincterotomy for bile duct access: a prospective randomized study. *Endoscopy*. 2006; 38: 1235-1240.
  12. Deng-Hao Deng, Hong-Mei Zuo, Jia-Feng Wang, Zhi-E Gu, Hong Chen, Yuan Luo, Ming Chen, Wen-Nuo Huang, Lu-Wang, Wei Lu. New precut sphincterotomy for endoscopic retrograde cholangiopancreatography in difficult biliary duct cannulation. *World J Gastroenterol* 2007; 13: 4385-4390.
  13. Wilcox CM, Geels W, Baron TH. How many times can you reuse a "single-use" sphincterotome? A prospective evaluation. *Gastrointest Endosc* 1998; 48: 58-60.

\* In the pre-cut technique, when the papilla was adjusted to the center of the endoscopic view, the needle-knife was pushed into the papillary orifice, and the incision started from the upper lip of the papillary orifice at the 11-o'clock position and proceeded upward over the papillary mound.