

# Complications of endoscopic retrograde cholangiopancreatography (ERCP): A look at the local evidence

Arecio Peñaloza Ramírez, MD,<sup>1</sup> Javier Álvarez Castañeda, MD.<sup>1</sup>

<sup>1</sup> Gastroenterology and Digestive Endoscopy Service, San José Hospital. University Foundation of Health Sciences, Surgical Society of Bogotá. Bogotá, Colombia.

Received: 08-11-10  
Accepted: 25-11-10

The article by Dr. Martín Gómez Zuleta (1) published in the current edition of the Colombian Journal of Gastroenterology is a valuable contribution to the national medical literature which brings up the controversial topic of complications from Endoscopic Retrograde Cholangiopancreatography (ERCP).

The development of ERCP in the second half of the 20<sup>th</sup> century opened up a wide variety of therapeutic possibilities for management of biliary pancreatic pathologies. ERCP has evolved from being a diagnostic procedure to an almost exclusively therapeutic procedure. This change was motivated not only by the development of diagnostic imaging technology, but also by complications related to it. These complications range from minor, which require 1 or 2 days of hospitalization and from which patients fully recover, to severe, sometimes with devastating results (2).

Even in referral centers in which large numbers of procedures are performed every year and which have expert, well-trained, highly qualified personnel to do these procedures, ERCPs result in complications in up to 10% of the patients who undergo this procedure. Mortality rates are as high as 1% (3, 4). In an effort to decrease the number of complications, especially to decrease fatalities related to ERCP, several strategies have been described. Modifications in technique have been proposed, but until now, and in our opinion, those changes have not yet been proven to be completely useful in decreasing of morbidity and mortality.

Parallel to improvement of the population's health conditions, to implementation of massive screening programs, to controlling cardiovascular risks factors and to advances in diagnostic and therapeutic methods, an increase of life expectancy has been produced. One result is that older adults more and more frequently need to undergo ERCPs in our services. The procedure can be done with a level of risk similar to that for younger patients without increasing risks of related complications (5, 6). The work of Dr. Gómez, which has the *raison d'être* of this comment, corroborates this information (1).

The use of guide wires, a technique which provides access to the biliary tract using a radio opaque guide passed through the tip of the sphincterotome under a fluoroscope, has been proposed as a method for decreasing pancreatitis subsequent to ERCP. Pancreatitis is one of the more common complications related to the procedure (7, 8). When it is serious it involves a high probability of mortality, but even in the best cases patients face prolonged stays in the ICU with high and significant costs for the health care system. Nevertheless, some studies are not clear about whether this method is superior to the conventional method at decreasing cases of pancreatitis (3, 9, 10), and while other reports even indicate that the number of pancreatitis cases actually increa-

sed with the use of this method (11). Therefore, given the reasonable doubt concerning the use of guides to decrease pancreatitis, in centers like ours ERCP is performed primarily without the use of guide wires. Our complication rates are comparable to those reported in the literature in other parts of the world (3). If we analyze our experience in regard to incidental pancreatography we find the results even more striking. Of 106 patients who underwent this procedure, only 1 (0.9%) presented pancreatitis and that case was classified as minor (3).

Precut papillotomies are also considered to pose risks of complications related to ERCPs. The center of debate here is whether the risk of complications comes from the precut itself, or if it is secondary to previous repeated attempts at cannulation. It has been suggested that the early precutting (defined as being performed after three attempts at cannulation) reduces the probability of complications (12). The early pre-cut is an effective and secure method for accessing the biliary tract, and it does not increase the percentage of complications (13-15). Several authors have even shown decreases in the number of cases of pancreatitis after ERCPs with its use (16).

Another point of controversy is whether the presence of ampullary duodenal diverticulum types I and II makes cannulation difficult and increases the number of complications from ERCPs (17). After the colon the duodenum, gastrointestinal diverticula are the most commonly located in the periampullary region. They are found in up to 25% of these patients and do not cause symptoms in most cases (18). Looking through the published literature we find that, in its presence there seems to exist a significant difference in the percentage of cannulation possible without increasing the probability of related complications once the cannulation is complete (19). The article by Dr. Gómez (1) brings to our attention two cases of perforations caused during this procedure, one associated with the presence of an ampullary diverticulum.

Another point of debate is the ideal medication for sedation of the patient during the procedure and the requirements on the anesthesiologist during the procedure. In our experience, it is possible to perform ERCP under conscious sedation with midazolam without the help of anesthesia (3). Nevertheless, it should be noted that because our hospital is a teaching hospital, we have the assistance of at least 2 individuals in addition to the physician performing the operation. This situation makes it easier to control the patient. In contrast, the work by Gómez (1) shows that the procedure can be carried out with sedation administered by anesthesiologists with equally good results. Although there is a tendency to discourage the use of propofol by gastroenterologists, there are good reasons to consider its use. It is fast acting, its effects last for only a short time, and

it increases patients' toleration of the procedure. Moreover, it is possible to combine it with other agents like benzodiazepines, and it is a cost-effective medication which can be used safely in endoscopy units (20, 21) by gastroenterologists as long as the patient is properly monitored by medical or paramedical staff dedicated exclusively to this task (22, 23).

In the recent years initial conservative management has been proposed for ampullary and periampullary perforations after ERCP (24). In the recent series by Gómez (1) the perforations occurred in 2 of the patients older than 80 years old (2.8%). Both required surgical management.

Although we could continue debating several aspects related to ERCP and its complications at length, we can finally conclude that the only method that has proved effective at decreasing complications is avoidance of unnecessary procedures. Good clinical judgment, expert hands and proper infrastructure are the only tools capable of decreasing complications related to ERCP which will allow it to keep its privileged place in the management of biliary pancreatic pathologies.

## REFERENCES

1. Gómez-Zuleta M, Melgar C, Arbeláez V. ¿Es la edad un factor que incide en las complicaciones por CPRE? *Rev Col Gastroenterol* 2010; 25 (4): 349-353.
2. Freeman ML. Adverse outcomes of endoscopic retrograde cholangiopancreatography. *Gastrointestinal Endosc* e2002; 56: S273-82.
3. Peñaloza-Ramírez A, Leal-Buitrago C, Rodríguez-Hernández A. Adverse events of ERCP at San Jose Hospital of Bogotá (Colombia). *Rev esp enferm dig* 2009; 101: 837-843.
4. Rochester JS. Minimizing complications in endoscopic retrograde cholangiopancreatography and sphincterotomy. *Gastrointest Endosc Clin N Am* 2007; 17: 105-27.
5. Ali M, Word G, Staley D, Duerksen DR. A retrospective study of the safety and efficacy of ERCP in octogenarians. *Dig Dis Sci* 2010; (artículo en prensa).
6. Guitron-Cantu A, Adalid-Martínez R, Gutiérrez-Bermúdez J, Segura-López F, García-Vásquez A. Colangiopancreatografía endoscópica en la tercera edad: Un estudio prospectivo y comparativo en el norte de México. *Rev Gastroenterol Mex* 2010; 75: 267-272.
7. Masci E, Toti G, Mariani A, et al. Complications of diagnostic and therapeutic ERCP: a prospective multicenter study. *Am J Gastroenterol* 2001; 96: 417-423.
8. Cheung J, Tsoi KK, Quan WL, Lau JY, Sung JJ. Guidewire versus conventional contrast cannulation of the common bile duct for the prevention of post-ERCP pancreatitis: a systematic review and meta-analysis. *Gastrointest Endosc* 2009; 70: 1211-1219.

9. Balley AA, Bourke MJ, Williams SJ. A prospective randomized trial of cannulation technique in ERCP: effects on technical success and post ERCP pancreatitis. *Endosc* 2008; 40: 296-301.
10. Shao LM, Chen QY, Chen MY, Cai JT. Can wire-guided cannulation reduce the risk of post-endoscopic retrograde cholangiopancreatography pancreatitis? A meta-analysis of randomized controlled trials. *J Gastroenterol Hepatol* 2009; 24: 1710-1715.
11. Vandervoort J, Soetikno RM, Tham TC. Risk factors for complications after performance of ERCP. *Gastrointest Endosc* 2002; 56: 652-656.
12. Cennamo V, Fuccio L, Zagari RM, Eusebi LH, Ceroni L, Laterza L, et al. Can early precut implementation reduce endoscopic retrograde cholangiopancreatography-related complication risk? Meta analysis of randomized controlled trials. *Endosc* 2010; 42: 381-388.
13. Mallery JS, Baron TH, Dominitz JA, Goldstein JL, Hirota WK, Jacobson BC, et al. Complications of ERCP. *Gastrointest Endosc* 2003; 57: 633-638.
14. Huibregtse K, Katon RM, Tytgat GN. Precut papillotomy via fine-needle Knife papillotome: a safe and effective technique. *Gastrointest Endosc* 1986; 32: 403-405.
15. Ang TL, Kwek AB, Lim KB, Teo EK, Fock KM. An analysis of efficacy and safety of a strategy of early precut for biliary access during difficult endoscopic retrograde cholangiopancreatography in a general hospital. *J Dig Dis* 2010; 11: 306-312.
16. Gang B, Hao L, Biel, Sun B, Wang M. Does precut technique improve selective bile duct cannulation or increase post – ERCP pancreatitis rate? A meta-analysis of randomized controlled trials. *Surg Endosc* 2010; 24: 2670-2678.
17. Boix J, Lorenzo-Zuñiga V, Ananos F, Domènech E, Morillas RM, Gassull MA. Impact of perampullary duodenal diverticula at endoscopic retrograde cholangiopancreatography: a proposed classification of perampullary duodenal diverticula. *Surg Laparosc Endosc Percutan Tech* 2006; 16: 208-211.
18. Mason S, Kashyp R, Chandel U, Mokta J, Minhos S. Duodenal diverticulum: Review of literature. *Indian Journal of Surgery* 2004; 66: 140-145.
19. Ospina-Nieto J. Impacto verdadero del divertículo perampullar en la CPRE. *Rev Col Gastroenterol* 2007; 22: 297-301.
20. Cohen LB, Dubovsky AN, Aisenberg J, Miller KM. Propofol for endoscopic sedation: A protocol for safe and effective administration by the gastroenterologist. *Gastrointestinal Endosc* 2003; 58: 725-732.
21. Akyus U, Pata C, Senkal V, Erzin Y. Is propofol sedation with midazolam induction safe during endoscopic procedures without anesthesiologist? *Hepatogastroenterology* 2010; 57: 685-687.
22. Tohda G, Higashi S, Wakahara S, Morikawa M, Sakumoto H, Kane T. Propofol sedation during endoscopic procedures: safe and effective administration by registered nurses supervised by endoscopists. *Endosc* 2006; 38: 360-367.
23. Walker JA, McIntyre RD, Schienitz PF, Jacobson KN, Haulk AA, Adesman P, et al. Nurse-administered propofol sedation without anesthesia specialist in 9152 endoscopic cases in an ambulatory surgery center. *Am J Gastroenterol* 2003; 98: 1744-1750.
24. Aldana-Dimas G, Betancourt-Arias A. Perforación duodenal post colangiopancreatografía retrógrada endoscópica. *Repert Med Cir* 2008; 17: 145-155.