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## Is the Balloon Dilation Duration in Endoscopic Papillary Balloon Dilation (EPBD) Related to the Occurrence of Post-EPBD Pancreatitis?

Dong Uk Kim

Division of Gastroenterology, Department of Internal Medicine, Pusan National University Hospital, Pusan National University School of Medicine, Busan, Korea

See "Twenty-Second versus Sixty-Second Dilation Duration in Endoscopic Papillary Balloon Dilation for the Treatment of Small Common Bile Duct Stones: A Prospective Randomized Controlled Multicenter Trial" by Byoung Wook Bang, Tae Hoon Lee, Tae Jun Song, et al., on page 59-65

Endoscopic papillary balloon dilation (EPBD) was proposed as an alternative to endoscopic sphincterotomy (EST) for opening the bile duct orifice to allow stone extraction with functional preservation of the biliary sphincter. Since its introduction in 1982,<sup>1</sup> EPBD has been widely performed because it is associated with lower bleeding and perforation risks compared to EST.<sup>2-6</sup> However, EPBD is more likely to cause pancreatitis than EST, resulting in an increased mortality rate.<sup>7,8</sup> Therefore, EPBD is reserved for selective patients with a bleeding diathesis or altered anatomy, especially in Western countries.

The reported incidence of post-EPBD pancreatitis varies greatly, ranging from 0% to 15.4%.<sup>9-13</sup> This disparity may be explained by differences in the stone size, bile duct size, balloon diameter, and balloon dilation duration (BDD). Although the mechanism is unknown, post-EPBD pancreatitis has been associated with papillary edema or spasm resulting from balloon dilation and papillary trauma during stone extraction through an insufficiently dilated sphincter. Therefore, papillary injury resulting in increased post-EPBD pancreatitis may frequently occur in cases with relatively large stones in small bile ducts and balloon diameters larger than the stone size or

bile duct diameter.

BDD was found to correlate with post-EPBD pancreatitis in previous studies, although the results were conflicting. In a prospective randomized trial,<sup>14</sup> the risk of pancreatitis was higher with a 1-minute BDD (15.1%, 13/86) than with a 5-minute BDD (4.8%, 4/84;  $p=0.038$ ). In a systemic review of randomized trials that compared EPBD and EST,<sup>15</sup> short EPBD ( $\leq 1$  minute) had a higher risk for pancreatitis (odds ratio [OR], 3.87; 95% confidence interval [CI], 1.08 to 13.84) compared to EST, but long EPBD ( $>1$  minute) did not pose a higher risk than EST (OR, 1.14; 95% CI, 0.56 to 2.35). A longer BDD may achieve greater loosening of the sphincter of Oddi and cause less papillary damage during stone extraction, resulting in a lower pancreatitis rate. In contrast, however, an initial 2-minute BDD was modified to 15 seconds during the later period of a retrospective study.<sup>16</sup> A lesser tendency toward post-EPBD pancreatitis was observed in the modified group (4%, 13/324) relative to the initial group (7.4%, 24/324;  $p=0.063$ ). A shorter BDD may be less traumatic to the papilla, thus reducing post-EPBD pancreatitis.

Bang et al.<sup>17</sup> evaluated the risk of pancreatitis after EPBD with a 20- or 60-second BDD in patients with relatively small bile duct stones ( $\leq 12$  mm) while using balloon diameters (6 to 10 mm) selected according to the stone size and bile duct diameter. The authors also used a prophylactic pancreatic stent in patients at a high risk of post-ERCP pancreatitis. As a result, all factors that might affect the occurrence of post-EPBD pancreatitis were well controlled except for the BDD. However, they observed no difference in the occurrence of post-ERPD pancreatitis between the 20- and 60-second BDD groups (6.4%,

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Correspondence: Dong Uk Kim

Division of Gastroenterology, Department of Internal Medicine, Pusan National University Hospital, Pusan National University School of Medicine, 179 Gudeok-ro, Seo-gu, Busan 602-739, Korea

Tel: +82-51-240-7869, Fax: +82-51-244-8180, E-mail: amlm374@yahoo.co.kr

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7/109 vs. 7.5%, 9/119). Bang and colleague<sup>17</sup> proposed that EPBD could be adequately performed with a 20-second BDD in carefully selected patients because the BDD had little effect on the incidence of post-EPBD pancreatitis, a difficult finding to accept when compared with previous EPBD studies.

Although this study may not appear to make sense, new approaches and data have made us rethink the best approach for bile duct stone removal. Therefore, we continue to seek the safest and most effective bile duct stone removal method.

### Conflicts of Interest \_\_\_\_\_

The author has no financial conflicts of interest.

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