

Should patients undergoing ERCP be placed in the prone or supine position?

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SUMMARY

Endoscopic retrograde cholangiopancreatography (ERCP) is generally performed in the prone or semi-prone position. Compared with the supine position, the left lateral and prone positions are believed to carry a lower risk of aspiration, allow easier intubation of the esophagus and provide a more comfortable position for the endoscopist. However, the supine position might be advantageous for the evaluation of pancreatic and biliary anatomy and for enhanced control of the airway. In this Practice Point commentary, I discuss the findings and limitations of a prospective, randomized study conducted by Tringali *et al.* that compared the performance of ERCP in the prone and supine positions by both experienced endoscopists and trainees. The results suggest no difference in the difficulty of the procedure on the basis of patient position. Objective measurements including mean time to visualize the papilla and opacification of the desired duct were no different. Likewise, overall technical success and complication rates were equivalent. These results suggest that either the supine or prone positions are adequate for the technical performance of ERCP. This commentary highlights the issues to consider when interpreting and generalizing these results in clinical practice.

KEYWORDS ERCP, prone position, supine position, outcomes

COMMENTARY

Most endoscopists have been taught to perform endoscopic retrograde cholangiopancreatography (ERCP) with the patient in the prone position. In this position, intubation of the esophagus is generally straightforward, and although occasionally difficult, the pylorus can be negotiated and the ampulla readily identified. However, in patients with a severe J-shaped stomach, examination in the left lateral decubitus position, as used in traditional endoscopy, is often helpful. In patients with altered anatomy, the supine position can facilitate entrance into the duodenum and abdominal compression can be used if necessary. There are occasional patients, such as those in the intensive care unit, those on a ventilator, or even the morbidly obese, for whom the supine position is mandatory. Ventilation is presumed to be easier in the supine position for patients who might require mechanical ventilation or have a tenuous pulmonary status. In addition, it has been suggested that the pancreatic duct can be better imaged in the supine position. Given past experience, however, I have always encouraged the performance of ERCP in the prone position, but this decision was based on personal preference and a belief that the supine position made the procedure technically more difficult.

The study by Tringali and colleagues¹—an experienced endoscopy group—suggests that there is no difference in technical success whether ERCP is performed in the prone or supine positions. The study examined 120 patients who were randomly assigned to undergo ERCP under conscious sedation with midazolam in either the prone ($n=60$) or supine ($n=60$) position. No difference was found between the procedures for any of the parameters that assessed procedural difficulty or outcomes when they were performed by either experienced or inexperienced endoscopists (trainees). The endoscopists were obviously skilled given the mean complexity and types of procedures, although the most common indication was common bile duct stones.

Although apparently equivalent, it is illustrative to examine the positions of the physicians, as shown by one of the figures in the publication. It is my opinion that a more awkward physician position is required when the patient is supine and, although the equivalence measures used for technical success in the study were not found to be different between prone and supine positions, I would wonder if the physicians had preference for either position; this would have been an informative question to ask those performing

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the procedure. Obviously, the study could not be blinded to determine the satisfaction of the endoscopist.

Two studies have previously evaluated the outcome of ERCP performed with the patient in the prone versus the supine position. Terruzzi *et al.*² prospectively, randomly assigned 34 patients to one of these positions during ERCP. However, the authors excluded intubated patients, i.e. those in whom the supine position might be most appropriate. Failure of biliary cannulation occurred in 29% of the supine group, but was successful when the patient was then moved to the prone position. Seven patients in the supine group had at least one adverse cardiorespiratory event compared with one in the prone group (41% vs 6%). In the hands of these endoscopists, therefore, the supine position seemed to be technically more difficult and potentially more risky. These findings are a real contrast to those of Tringali and colleagues.

In another retrospective study that evaluated only one endoscopist, 649 patients were identified for inclusion, and of these 506 underwent ERCP in the prone position.³ Although complete success rates and complication rates were similar between the groups, procedural difficulty was significantly higher in the supine group. A nonstatistically significant difference in non-respiratory and noncardiovascular complications was also observed between the groups (11.2% in the supine group vs 9.1% in the prone group). Furthermore, respiratory events were twice as likely to occur in the supine versus prone position, although this finding was not statistically significant. These two additional studies suggest that the supine position might indeed be more difficult in terms of achieving technical success and maintaining safety; however, larger studies are needed to determine procedural safety and these should be performed prospectively. The differences in study outcome between the three studies discussed perhaps relate to patient population and, less likely, endoscopist.

Given the above data and experience, there are pros and cons of both positions. The supine

position might be favored in patients with altered anatomy and perhaps those with a more tenuous pulmonary status. Undoubtedly, endotracheal intubation is easier in a supine position, but once performed, these patients can easily be moved to the prone position. The prone position provides the best visualization of anatomy for lining the papilla up with the duodenoscope in the short position. The procedure room will also be in the appropriate configuration as will the scope position, which again will make the procedure easier for the endoscopist.

On the basis of these reports, I will still be reluctant to perform ERCP with a patient in the supine position, but I will cautiously use it in those for whom it is deemed most appropriate. For patients who require propofol or intubation, the supine position is easiest for placement of the patient and might be beneficial for airway management; however, proving the safety of this approach would be difficult. It is intriguing to think that pancreatic or biliary anatomy, particularly at the hilum, could be better imaged with the supine approach, as suggested by Tringali and colleagues. This would be particularly important for patients in whom malignant hilar strictures are suspected. Endoscopists should consider performing ERCP in the supine position to see how they like it. Then when the time comes to perform repeat procedures, familiarity will bring success.

References

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- 3 Ferreira LE and Baron TH (2008) Comparison of safety and efficacy of ERCP performed with the patient in supine and prone positions. *Gastrointest Endosc* **67**: 1037–1043

PRACTICE POINT

Performance of ERCP with the patient in the supine position compared with the prone position does not increase the technical difficulty nor influence the outcome of the procedure.

Competing interests

The author declared no competing interests.