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Lateral Ballottement During Optical Access Trocar Insertion: A New Standard

JA Kuhn MD, C Buskmiller, S Kleppe, K Kuhn
Medical City Dallas and Baylor University Medical Center, Dallas, TX

Background: Optical access trocars incorporate a clear tip to allow active visualization during fascial entry. They have been found to reduce insertion time, entry wound size, and force of insertion. However, it has been reported that optical trocars do not lower the occurrence of major complications, such as air embolism or retroperitoneal vascular injury. To reduce major complications, this study proposes a simple lateral ballottement. Unlike anterior traction (abdominal lifting), lateral ballottement increases the distance between incision site and retroperitoneal structures, especially major blood vessels.

Methods: Lateral ballottement involves bilateral pressure between the costal margin and the iliac crest to displace the anterior abdominal wall away from the retroperitoneum. The operative data for 280 consecutive patients undergoing various abdominal laparoscopic procedures by the same surgeon were examined retrospectively. 180 patients underwent trocar insertion by the bladeless optical access device with ballottement, and were compared to 100 patients undergoing optical access trocar insertion without ballottement.

Results: Of the 100 control group patients, there were 8 omental penetrations and 5 retroperitoneal penetrations including 1 vascular injury with air embolism requiring aortic clamping and 3 minutes of CPR. Of the 180 ballottement patients, there was a significant decrease in omental penetrations ($n=5$, $p<.05$) and retroperitoneal penetrations ($n=0$, $p<.05$).

Conclusions: Based on the remarkable absence of retroperitoneal injury in patients who underwent trocar insertion with lateral ballottement, we conclude that this maneuver should be routinely incorporated in all patients to decrease complications related to optical access trocar insertion.