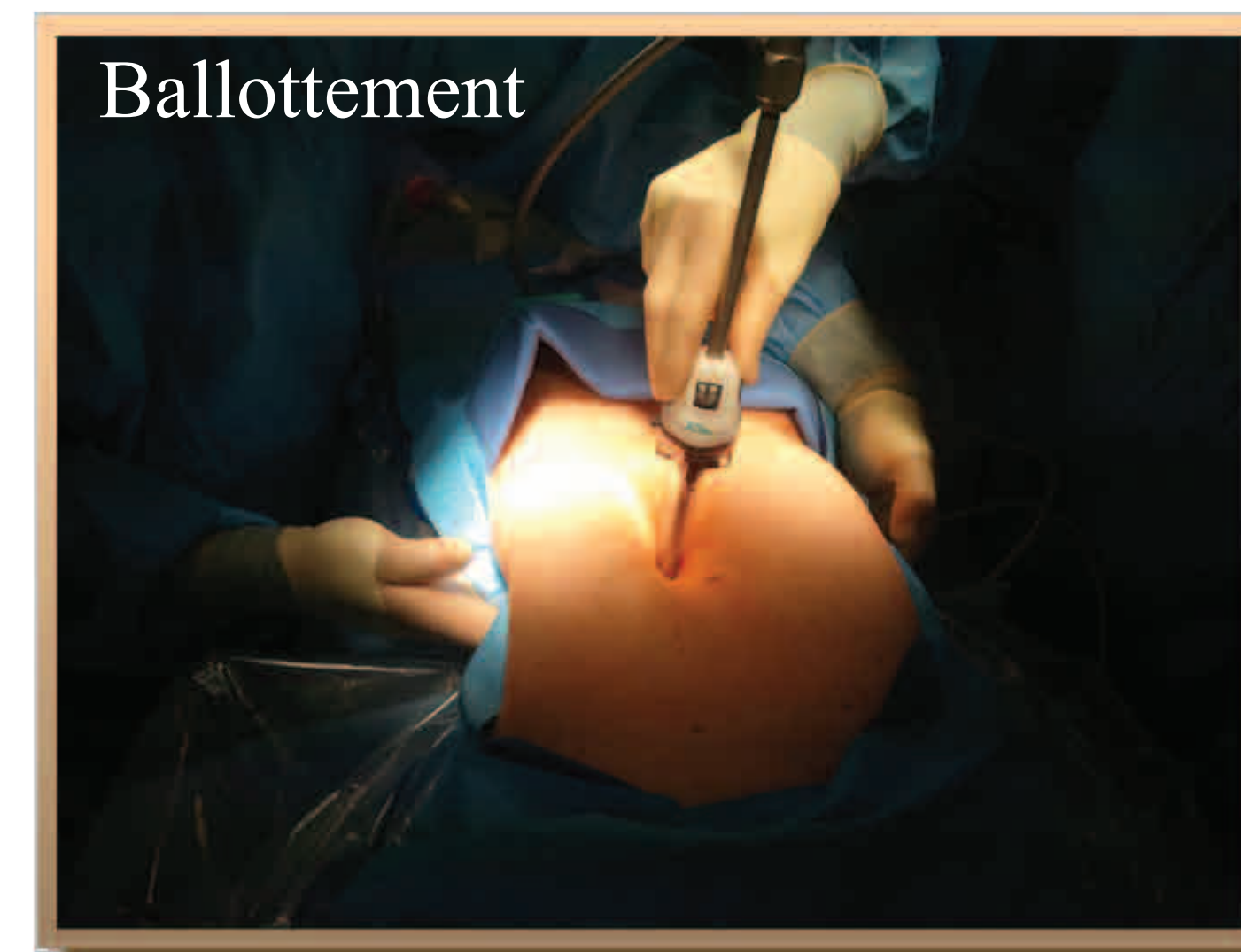
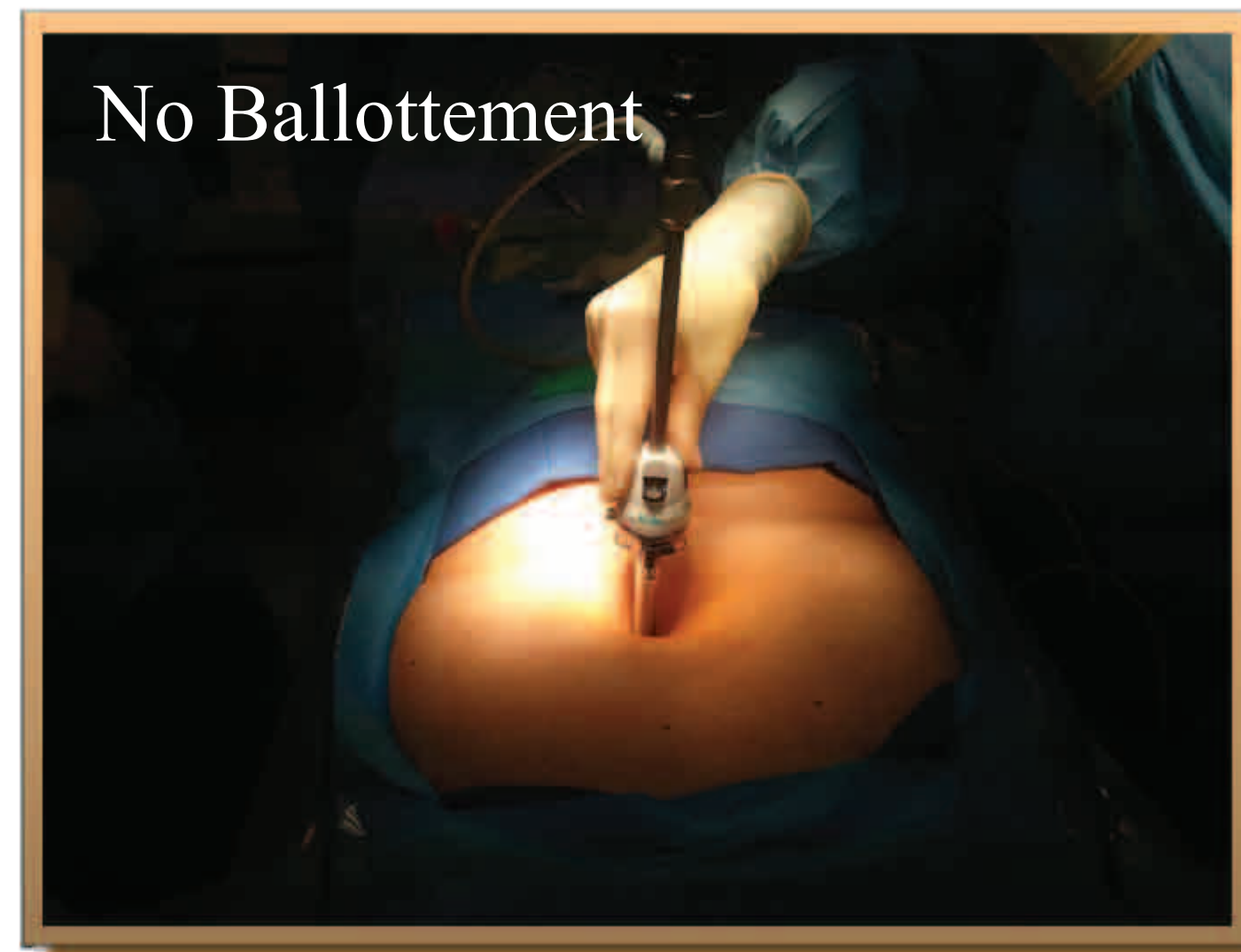


LATERAL BALLOTTEMENT DURING OPTICAL ACCESS TROCAR INSERTION: A NEW STANDARD

Joseph Kuhn MD, Veronica Cedillo RN-BC, Cara Buskiller BS, Scott Kleppe BS, Kristin Kuhn BS

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.

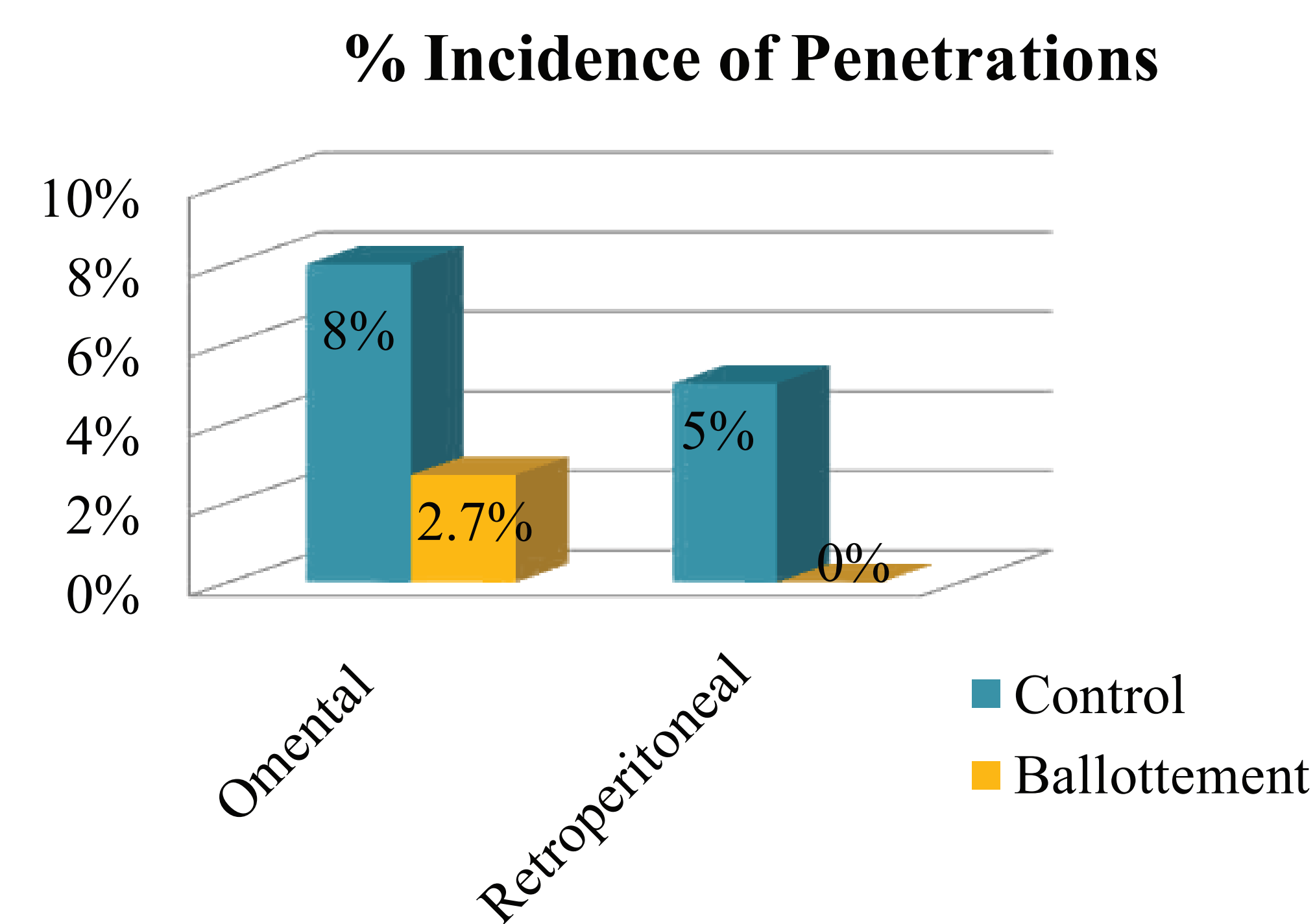


METHODS

- Retrospective chart review from a single surgeon
- Operative data obtained for patients who underwent various abdominal laparoscopic procedures
- Patients underwent lateral ballottement that involves bilateral pressure between the costal margin and the iliac crest to displace the anterior abdominal wall away from the retroperitoneum.

RESULTS

- 280 consecutive patients
 - 100 underwent optical trocar insertion without ballottement (control group)
 - 180 underwent trocar insertion by the bladeless optical device with ballottement



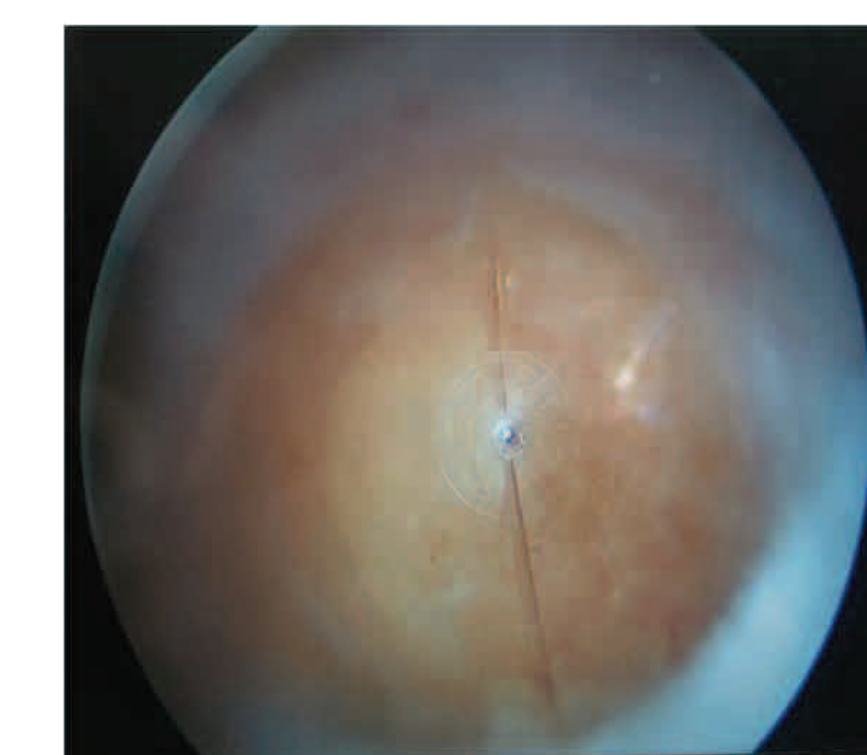
- 100 control patients
 - 8 omental penetrations (8%)
 - 5 retroperitoneal penetrations (5%)
 - 1 vascular injury requiring aortic clamping and three minutes of CPR
- 180 ballottement patients
 - 5 omental penetrations (2.7%)
 - 0 retroperitoneal penetrations (0%)
- Significant decrease in ballottement group
 - omental penetrations 8% vs. 2.7% ($p < .05$)
 - retroperitoneal penetrations 5% vs. 0% ($p < .05$)

RESULTS

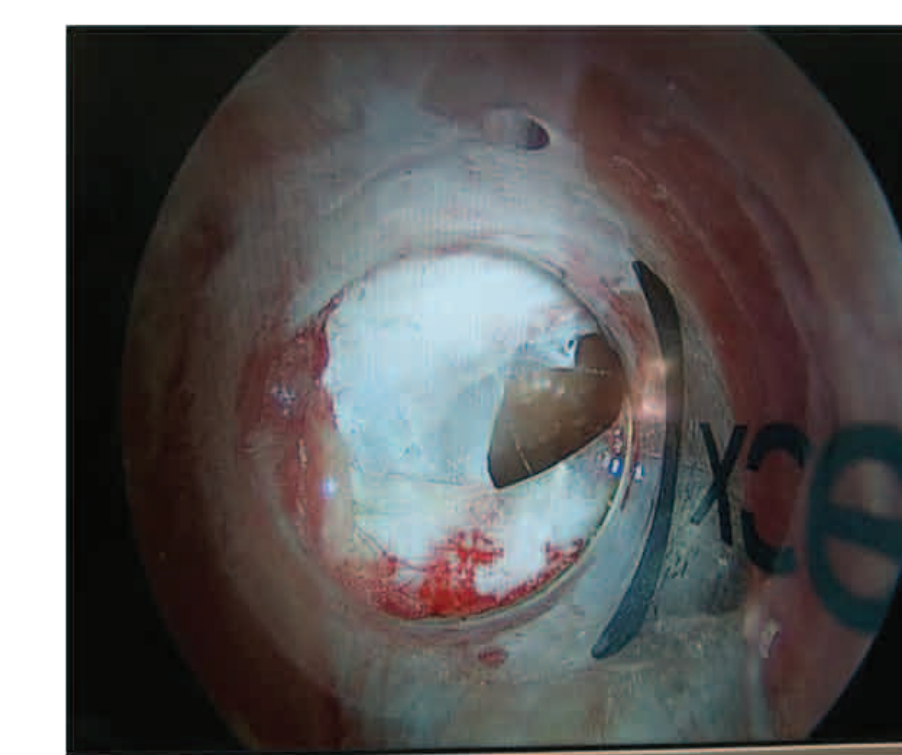
PENETRATION OF THE ABDOMEN WITH A TROCAR



The trocar penetrated through the muscle, but not yet through the underlying fascia.



The trocar penetrated through the fascia and the peritoneum. The abdominal fat is in the center of the circle.



The abdomen has been insufflated and the abdominal fat seen in the previous image can now be seen in the background of this one.

CONCLUSION

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.