

CLINICIAN'S CORNER

From Skeptic to Champion

While I had been doing complex renal surgery almost exclusively for over a decade, I still wanted to prove myself with a challenging laparoscopic partial nephrectomy as my first case. The surgical team, with whom I share a great deal of trust, started the procedure off well. However, I soon found myself struggling. We had a standard insufflator that was either malfunctioning or unable to keep up. The field was collapsing and none of the standard techniques seemed to work. The complex partial nephrectomy was certainly not going well, and the patient's safety was at risk.

One of our fine fellows suggested that we use the AirSeal® System. I was initially hesitant to the suggestion. After performing thousands of cases, I have become very specific on the laparoscopic equipment that I use; I only try out new equipment in the lab setting before I would consider using it in the operating theater. However, as things were deteriorating, I acquiesced to trying the new system. Within seconds it seemed that my fortunes had changed. The field was no longer oozy and the anatomy became visible again as the smoke cleared away. I was able to clamp the vessels, excise the tumor, and reconstruct a renal defect in a reasonable amount of time. The patient did very well. While this may not have been the most auspicious start to my use of the AirSeal System, it certainly made a huge impression on me. With this experience, I immediately understood and appreciated the value of the AirSeal System. Indeed, after hundreds of cases and a significant amount of data collected in our current research studies, I am now confident that the AirSeal System will soon become the new standard of care. I will not operate without it.

As an academic physician, I've had the great privilege of being involved in some superb research. One such research study is to compare the AirSeal System with standard insufflation. The results of this study¹ showed that AirSeal maintains a stable pneumoperitoneum which achieves a level of safety and efficiency that had never been available to surgeons before. While a standard insufflator operates outside of the 12mm Hg to 18mm Hg range 26% of the time, AirSeal operates outside of this range only 1.3% of the time. Further, it is even more impressive that AirSeal can maintain a stable operative field even during challenging situations such as a leaky trocar, an incision that is not closed entirely, or major defects in the field. Additionally, the ability to remove small specimens quickly and efficiently is another major advantage.

Post study, our team came to realize that we had previously been compelled to operate at an insufflation pressure of 15mm Hg due to the fact that standard insufflators were often operating at lower pressures at this setting. Knowing that the AirSeal System more precisely controls the insufflation pressure, we changed our technique. After initial insufflation, we now routinely perform all of our procedures at 10-12mm Hg. While we need to collect more convalescence data, it is comforting to know that the AirSeal System precisely regulates the insufflation pressure.

Overall, I can sincerely say that AirSeal is now a standard part of our armamentarium for all laparoscopic and robotic procedures. It is hard to predict where the greatest innovations will come from in the future, but it is clear to me that AirSeal is such an innovation that is here today.



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Intra-abdominal Pressure

Real-time measurement of intra-abdominal pressure (set to 15 mmHg) demonstrated significantly greater stability with AirSeal Insufflation versus Conventional Insufflation.

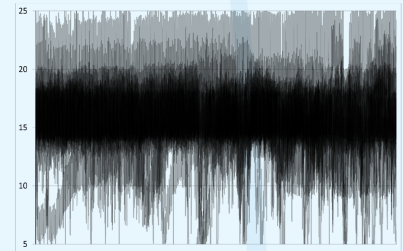


Figure 1: Conventional insufflation systems cause pressure fluctuations¹, which create stress on the cardiovascular and pulmonary systems.^{2,3}

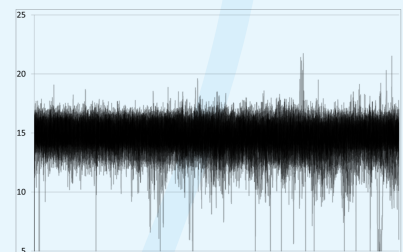


Figure 2: The AirSeal System creates a steady intra-abdominal environment that minimizes pressure changes¹ to reduce physiologic side effects of pneumoperitoneum.

¹ Bucur P, Hofmann M, Menhadji A, Abedi G, Okhunov Z, Rinehart J, Landman J. HYPERLINK "<http://www.ncbi.nlm.nih.gov/pubmed/27130263>" Comparison of Pneumoperitoneum Stability Between a Valveless Trocar System and Conventional Insufflation: A Prospective Randomized Trial. *Urology*. 2016 Apr 27. pii: S0090-4295(16)30119-4.6.

² Larsen, J.F., Svendsen, F.M., Oedersen, V. Randomised clinical trial of the effect of pneumoperitoneum on cardiac function and hemodynamics during laparoscopic cholecystectomy. *Brit J Surg* 2004; 91: 848-854.

³ Safran, D.B., Orlando III, R. Physiologic Effects of Pneumoperitoneum. *Amer J Surg* 1994 Feb; 167: 281-286.



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