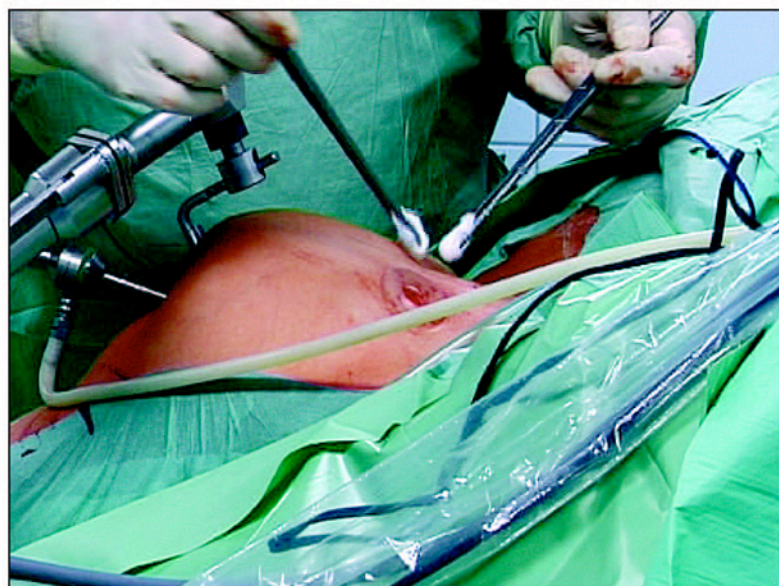


Laparoscopic GYN: 4 Reasons to Go Gasless

Improved patient safety and surgeon comfort are reasons you should consider doing your GYN endoscopic procedures without CO₂.

Daniel Kruschinski, MD
Seligenstadt am Main, Germany



When it comes to patient safety and surgeon comfort, gasless laparoscopy is my preferred method of GYN surgery. Not only does the gasless method eliminate the dangers of CO₂ gas, but it also lets you do use the conventional instruments of laparotomy for better tactile sense. How? By combining the fundamentals of minimally invasive technique with the conventions of open surgery.

Here's how it works: Instead of insufflating the abdominal cavity, the surgeon inserts a special lift system via a small cut in the lower umbilicus and raises the abdominal wall mechanically. By not having to insufflate, the surgeon can use instruments for open conventional laparotomy, get a similar view into the abdominal cavity as that afforded by laparoscopy with gas and still get to use patient-friendly minimally invasive techniques.

Interested in the technique for your facility? Here are the four key benefits to gasless laparoscopy.

1 Eliminate side effects of CO₂

Endoscopic technique means good results for the patient: smaller scars, less pain and faster recovery. But CO₂ gas, one of the necessities of this technique, is a patient safety risk.

When performing endoscopic procedures, the surgeon needs to insufflate the abdominal cavity with carbon dioxide in order to obtain a sufficient workspace and view of the surgical field. The cold gas causes considerable build-up of pressure in the abdominal cavity and reduces the body temperature; these factors cause the patient pain that, in some cases, can persist for several days, radiating to the shoulder and neck regions, and prolonging and complicating recovery. I've found that patients need fewer painkillers and that recovery time is faster with gasless laparoscopy. For example, in my experience the complete recovery period after a gasless hysterectomy is about two weeks.

Though rare, insufflation can lead to gas accumulation in the vascular systems of the lungs (gas embolism), heart (decrease in coronary blood supply) and kidneys (poorer perfusion), or to the accumulation of carbon dioxide in the subcutaneous tissue of the skin (emphysema). While such side effects of carbon dioxide are extremely rare, they can prove fatal (kidney failure, heart attack and pulmonary embolism, for example). Moreover, the gas has been linked at least loosely to further side effects including decrease in the pumping action of the heart and overloads of carbonic acid (which can cause acidosis of organs). More important is that carbon dioxide changes the milieu of the peritoneal cells and provokes hypoxemia and acidosis, which can act as a co-factor in adhesion formation. Avoid gas laparoscopy for an adhesiolysis or longer procedures.

2 Widen the patient population

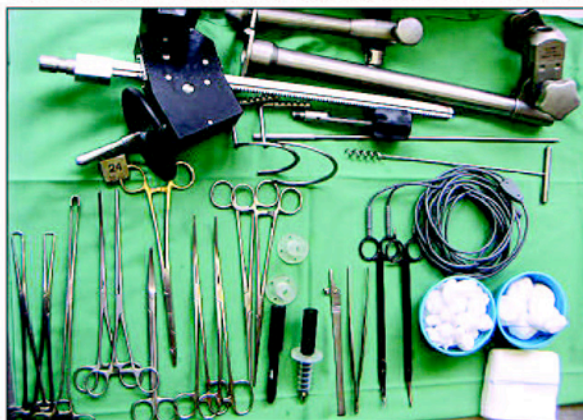
By not using CO₂, you avoid all these side effects, risks and potential complications. Surgeons are also able to perform procedures under regional anesthesia (other laparoscopic procedures necessitate general anesthesia because of the massive pressure from the pneumoperitoneum in the abdominal cavity, which causes pain and organ compression of the diaphragm and lung).

So in addition to young and healthy patients, you can offer minimally invasive surgery to older or other at-risk patients. You can also operate on pregnant women using gasless laparoscopy, as there is no pressure build-up caused by gas on the expanding uterus — which can induce miscarriage, or decrease perfusion of the placenta and of the baby. Gasless laparoscopy also avoids acidity of the blood of the fetus, which prevents organ damage.

3 Return to familiar instrumentation

Unlike when using the long endoscopic instruments, the gasless technique lets the surgeon preserve his tactile manual perceptions and feel what he's cutting, holding or compress-

ing. With the magnification conferred by the endoscope, the operation unfolds more precisely and more safely. In addition, I've found that the learn-



FAMILIAR GROUND Gasless laparoscopy lets the surgeon use the conventional instruments of laparotomy, preserving the tactile sense to which he is probably more accustomed.

ing curve associated with the gasless technique for the surgeon is markedly shorter, because he need only learn how to interact with the monitor. The surgical technique remains the same as that practiced in open abdominal surgery.

The complication rate for endoscopic procedures is higher than in open surgery, especially in the case of surgeons who aren't optimally trained. Typical complications of an endoscopic procedure can occur while inserting the Verres needle — for gas insufflation — or the trocars. The insufflation needle is pierced blindly into the abdominal cavity. After the abdominal cavity has been filled with gas, the first trocar for the optic is inserted (also without visual control). Both can, in rare cases, injure vessels or organs (the bladder, intestines or

The Gasless Technique

Here's how surgeons get into the abdomen to perform gasless laparoscopy:

- **Instead of insufflating the abdominal cavity**, the surgeon inserts a special lift system via a small cut in the lower umbilicus and raises the abdominal wall mechanically.
- **To insert the instruments**, the surgeon makes two further small incisions above the pubic bone for the flexible trocars. By not using trocars specialized for laparoscopic surgery,

stomach, for example), and this in turn can trigger emergency situations (such as bleeding) that warrant immediate action. An undetected bowel injury after coagulation often results some time later in acute ileus and massive infection.

With the gasless technique, you can apply sutures using the tried and tested needle-and-thread method instead of clip-and-suture apparatuses or electrical coagulation, which are expensive or can cause complications, such as injuries to the ureter during an endoscopic hysterectomy.

4 Cut procedure costs

Laparoscopic instruments not only are more expensive, but also they're more labor-intensive and difficult to maintain and reprocess (you can see why open techniques persist). It's been estimated that minimally invasive operations using laparoscopy with carbon dioxide are about seven times more expensive than laparotomy.

Minimally invasive operations with gasless laparoscopy are even more cost-effective than open procedures because they dispense with systems that render laparoscopy with gas expensive. You can manually clean and autoclave instruments; you don't need any special washer-disinfectors. In addition, you eliminate the risk of infection posed by the difficulties of cleaning endoscopic instruments and by different tubular and pumping systems.

Conventional instruments last longer and require fewer repairs than the delicate instruments needed to perform laparoscopy. It's also not necessary to use every novel instrument and

technique promising to improve the safety and maneuverability of gas laparoscopy. With the gasless method, no disposables (such as expensive titanium clips) are used.

By combining the benefits of minimally inva-

"Conversion to the gasless endoscopic technique results in progress through regress."

— Daniel Kruschinski, MD

sive technique (short hospital stay and recovery period) with the cost effectiveness of the gasless method, this method of surgery is overall markedly more favorable than laparoscopy with gas.

Progress through regress

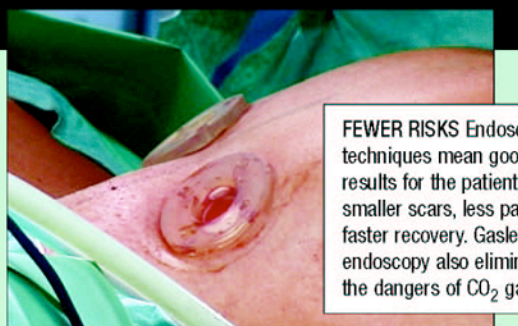
Gasless laparoscopy prevents or minimizes all the aforementioned disadvantages, risks and complications of endoscopic operations that use CO₂, while preserving all the advantages of laparoscopy — minimal scars, better cosmetic results, less wound pain, faster recovery and shorter stays. You might say that converting to this technique means progress (the combination of newest techniques of endoscopic surgery) through regress (established and proven conventional techniques of open surgery). **OSM**

Dr. Kruschinski (daniel.kruschinski@endogyn.com) is the head of the Institute for Endoscopic Gynecology (www.endogyn.com) in Seligenstadt am Main, Germany.

the surgeon performs the procedure with conventional instruments, which enhance ergonomics and precision.

In gynecology, gasless laparoscopy is generally used for surgical treatment or removal of diseased sex organs. Procedures include surgery for severe adhesions, treatment and removal of the uterus, treatment of endometriosis, removal of myomas from the uterus, removal of benign ovarian tumors, removal of the ovary, treatment of ectopic pregnancy, and diagnosis and treatment of infertility.

— Daniel Kruschinski, MD



FEWER RISKS Endoscopic techniques mean good results for the patient: smaller scars, less pain, faster recovery. Gasless endoscopy also eliminates the dangers of CO₂ gas.