



RECOVERY ROOM Keep in mind that pneumoperitoneum can contribute to post-op nausea. A little pain control will go a long way toward a comfortable recovering patient.

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Tips for Keeping

Laparoscopic Patients Comfortable

Despite its minimalist approach and more rapid healing, laparoscopic surgery still imparts varying degrees of difficult post-op

Here are the adjustments you can make before and during surgery to supplement your standard pain-control regimens.

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pain for patients. Here are tips for managing patients' pain throughout their procedures so that they'll be more comfortable post-op.

Get to the root

The source of post-operative pain is generally due to one of these factors:

- ▶ skin incision or external wound,
- ▶ trocar or instrument violation of underlying muscular planes, and
- ▶ residual CO₂ from operative abdominal insufflation.

Although the bowels don't respond to manipulation with "sharp" pain symptoms, other internal organs (such as the spermatic cord, ovaries and fallopian tubes) will demonstrate significant pain in response to surgical insult. But you can effectively limit post-operative pain in laparoscopic surgery with the techniques routinely applied to any

type of surgery.

These include the judicious use of intraoperative local anesthesia (preferably early rather than later in the operation) by the surgeon to block pain at the source. There is also the option of administering narcotics to the patient (either from the anesthesiologist during the surgery or the PACU nurse in the recovery room). Most anesthesia providers have gotten away from the use of narcotics in outpatients altogether, minimizing respiratory depression and post-op nausea, and facilitating a faster recovery room throughput. Further, the small wounds heal more quickly and are more treatable with less powerful types of painkillers.

But residual CO₂ is more difficult to deal with. Usually, the gas is absorbed into the bloodstream and exhaled through the lungs over the first 24 hours to 48 hours post-op. But when CO₂ settles under the diaphragm, it can lead to several days — and, in some cases, up to several weeks — of post-operative referred shoulder pain. As this is exclusively a side effect of laparoscopy, that's what I'll focus on here.

Tailor the techniques

Your surgeon can begin tackling post-op patient comfort with his intraoperative actions.



TACKLE POST-OP PAIN INTRAOPERATIVELY Research has shown that intraoperative analgesia with ketamine produces good analgesia at awakening with a duration of about one hour, and upgrades the analgesic effect of tramadol in the post-operative period.

- **Use surgical techniques to maximally drain the abdominal/pelvic cavity of insufflation CO₂.** In addition, you can insert an intra-abdominal gas drain to help the body rid itself of the gas. One study showed that the use of a passive gas drain for the first four hours after operative and diagnostic laparoscopy resulted in significantly reduced pain scores at 12, 14, 48 and 72 hours post-op. No patients in the study had complications due to the presence and withdrawal of the tubes, and researchers went so far as to recommend that, in the absence of the need for an active drain, we should insert a gas drain in all patients undergoing laparoscopy for the first several hours post-op.¹

- **Be as gentle as possible on the diaphragm's crura.** This is the tendinous portion of the diaphragm in the lumbar region. Injury to either of the crura has been shown to increase long-term patient pain after a laparoscopic procedure (five weeks post-op).²

- **Use surgical techniques that don't use insufflated gas during laparoscopy.** Many studies have demonstrated variations on the use of abdominal wall retraction *without the use of gas insufflation*. Some have used subcutaneous wall traction as a successful replacement for gas insufflation. These alternative techniques avoid the issue of pneumoperitoneum altogether, and have demonstrated a lack of adverse effects on hemodynamics and gas exchange. Avoiding carbon dioxide-induced pneumoperitoneum also decreases other untoward physiologic problems, such as ventilation-perfusion mismatch, barotraumas, decreased functional residual capacity, decreased pulmonary compliance and tidal volumes, and venous embolism — all of which take on greater importance in patients with COPD or pre-existing cardiac disease. When intra-abdominal pressures exceed 20mmHg, compression of the vena cava can also result, leading to decreased

cardiac output. Faulty pneumoperitoneum can also result in subcutaneous emphysema, pneumomediastinum, pneumopericardium and pneumothorax. (See "Laparoscopic GYN: 4 Reasons to Go Gasless," January, page 49.)

Assess the anesthesia

Two suggestions here for tweaking your practice to enhance patient comfort.

• **Use local anesthesia at the level of the abdominal/pelvic organs.** In my own research, I demonstrated statistically significant, sustained reduction in post-op pain levels in patients who received bupivacaine injected into the mesosalpinx beneath the area of the banded fallopian tube during outpatient laparoscopic Yoon Ring tubal occlusion. A summary of the results:

- › Mesosalpinx-injected bupivacaine (versus topical bupivacaine) offers statistically-significant, sustained post-operative pain relief.
- › Both bupivacaine groups experienced decreased immediate post-surgery pain levels versus controls, and nausea and vomiting were significantly reduced in these groups (possibly due to lower PACU narcotic requirements).
- › The patients' return to normal activities was advanced by 50 percent in the bupivacaine-treated groups.
- › Low-dose morphine injected into the mesosalpinx was also shown to confer some degree of analgesia immediately post-operatively, and these patients were also observed to return to normal activities earlier than the control group.
- › However, topically-applied morphine failed to reduce pain or influence recovery.³

• **Administer ketamine to prevent pain.**

Still other research has shown that intraoperative analgesia with ketamine produces good analgesia at awakening with a duration of about one hour, and upgrades the analgesic effect of tramadol in the post-operative period. You can reduce any adverse ketamine effects by administering intra-

operatively benzodiazepines or antiemetic drugs, or by the association of ketamine and a peripheral analgesic (ketorolac).⁴

Pointers for post-op

Once the patient is in post-op, it's exercise time. Encourage patients who do experience post-op shoulder pain from intra-op insufflated gas to assume the lateral fetal position. Experienced PACU nurses will cite this maneuver as the most effective in mitigating this unusual type of pain.

Finally, you can employ your typical post-op protocols of painkillers and PONV drugs to minimize post-op nausea. Remember, because pain and nausea are often intertwined in surgical patients (and pneumoperitoneum can itself contribute to post-op nausea), a little pain control will go a long way toward a comfortable recovering patient. Our goal as physicians and scientists should be to keep working on refined techniques and improved drugs to provide for smoother, faster recovery-area stays and less painful post-op courses for our patients. **OSM**

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