Safety in Laparoscopy

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**Dr. Larry Demco:** "Again, from the World Congress of Endoscopy in Israel, I’d like to interview Dr. Duncan Turner from Santa Barbara. He’s been one of the leading surgeons in the United States, and the topic I’d like to talk about with him today is safety in laparoscopy. What has always been an issue that the general public has had concerns about is if laparoscopy is safe. Can you give us a little update on exactly where laparoscopy stands today and what measures there are for safety for the patients?"

**Dr. Duncan Turner:** "Thanks, Larry, it’s nice to be able to talk to you and this is a subject that’s close to my heart, I think that it’s a really underestimated problem. Complications of laparoscopy are often not reported, and I think we have a false impression of the safety of laparoscopy but if we use good surgical techniques and some new technology that’s available to us, we can really serve our patients better and make the whole procedure safer for them. Laparoscopy is certainly advantageous as a way of operating, and we have to be sure that by giving the patients particular advantages, we’re not causing them more complications. I think the vast majority of complications with laparoscopy are on entry, and most of the malpractice cases are concerning bowel and major vascular injuries, and about 80% of these happen on entry techniques. Another particular area of concern is the use of electrosurgery, which most laparoscopists utilize to coagulate, cut, and dissect. The third thing is one that is really a little more subtle because we don’t see the complications of it but that is the gentle treating of tissue. When we do microsurgery techniques in open surgery, we handle such tissue very, very gently and make sure that the blood supply is not compromised, and one way of doing that with laparoscopy is to remove one of the insults. And one of the insults of laparoscopic surgery is the distension of the abdominal wall with carbon dioxide. That is moderately harsh on the tissue but if we can warm that gas as it comes in and humidify it, it’s being clearly shown that this is advantageous. So going back to the laparoscopic entry techniques, I think that there are a few really basic principles. There’s always the question of whether they should be open or closed techniques. I think we’ve shown that there is no great advantage from an open technique. There aren’t fewer complications that way so let’s try to refine the closed technique using the Veress needle. The placement of the needle is important, I think having the initial pressure up to 20 mm or 25 mm of mercury and creating a much greater safety margin between the abdominal wall and the major vessels in the bowel is very advantageous. I’ve had a lot of favorable experience with the radiated expanding axis system made by a company called Innerdyne which has made some very significant claims of improved safety which interestingly have been accepted by the FDA as being the safest way to use. I just can’t conceive of using other types of equipment than that which is available to us and with shown safety. With regard to electrosurgery, there’s a new device that’s referred to as active electrode monitoring which adds dimension of safety to electrocautery by giving more insulation and overcoming some of the problems of capacitance of generation of electrical current. We have these things available to us and we can almost exclude electrosurgical complications except those due to surgeon error, and we’re not able to take the human error out of things but we can try to diminish the technical errors as much as possible. Going back to the carbon dioxide, one of the problems that we run into with patients is that they get cold during surgery, and the dryness of the gas has been shown to be damaging to the peritoneum. There are new methods now of very simply and very economically warming and humidifying the CO2 as it goes into the abdominal cavity. And as you know in your experience with an awake patient, when we’re doing pain mapping under local anesthesia or minimal anesthesia, these patients can tolerate a much greater distension of the abdomen if the carbon dioxide is warmed and moistened. It’s really been pretty
remarkable in your experience and I think that this is a very good example of the decreased damage and trauma to the tissue. So that’s three new technologies that I think are tremendously helpful to our patients now.

**Dr. Larry Demco**: "One of the things that we learned this morning, Duncan, and Dr. Nezhat spoke on was ovarian cancer and its spread. How do you view this new heated and humidified gas in this respect? There have been some reports that the damage of the gas may exemplify or cause further spread of cancer tissue within the peritoneal cavity. Can you give us your views on that?"

**Dr. Duncan Turner**: "I think one of the concerns about the spread of cancer cells is the diminished immune response of the body immediately after surgery. I think if there is less damage to the tissue, the body is going to be able to withstand further insults. So if we have warmed humidified air and less peritoneal damage, I think theoretically, we should have fewer incidence of port metastases and spread of the tumor. This is purely theoretical and it will be hard to prove I suppose, but we’ve got to sometimes make some assumptions based on good scientific theory even though we don’t have the data to support it. You know we’re not able to experiment on humans and so we have to make some of those decisions just based on theory and on science."

**Dr. Larry Demco**: "Regarding the complications that we’re now experiencing in laparoscopic surgery - the initial entry and then there’s the second group of complications which are the intraoperative trauma or complication, would you like to talk about the intraoperative rather than the entry technique, just comment on that?"

**Dr. Duncan Turner**: "I think that’s really largely surgeon dependent if we exclude the entry techniques and we exclude the unknown electrosurgical problems and the unknown or under-appreciated problems with carbon dioxide gas. So we’re really talking about things that are damaging to organs by surgical technique, and there are so many. Operative laparoscopy is such a new field that we’re still trying to find the best way to do things. One of the really good examples of a change of technique of focusing on patient safety is doing a subtotal or a supracervical hysterectomy instead of a total laparoscopic hysterectomy when it’s practically possible because you don’t have to get as close to the ureters, there’s much less likely to be damage to the bladder, and much less disruption of pelvic floor support if you do a supracervical hysterectomy as opposed to a total laparoscopic hysterectomy. So I think there’s an example there of a change of technique that has really been focused or determined not just by patient desire to keep the cervix but by our desire to try to cut down on the risks of complications."

**Dr. Larry Demco**: "I think this is what these meetings come to and appreciate that we have to start looking at what we’re doing from many aspects to not only the way we’re doing it, but how to eliminate complications, and to get the world leaders together like yourself to express the ideas that you’ve had here today. I’d really like to thank you very much."

**Dr. Duncan Turner**: "My pleasure, thanks."