Chapter 14

The Horrible Way the World will end if you Don't see Jets in the Bladder

"A long habit of not thinking a thing wrong gives it a superficial appearance of being right."

- Thomas Paine

If you're reading this book, odds are on you've been there. You were performing an extremely difficult laparoscopic hysterectomy. If it was robotic, maybe it was single port but, regardless, the uterus was large, the adhesions were intense, and of course anesthesia would not give you the Trendelenburg you needed. You fought for an hour, maybe several hours with the adhesions and with the uterus, or maybe you weren't even the surgeon. Maybe you were the assistant and you watched your colleague nobly fight against adhesions, takedown difficult pedicles, and sometimes make 3 or 4 attempts to quell each bleeding vessel. Maybe the bladder was retro-filled 10 or 20 times, maybe 4 or 5 accessory 5 mm ports were placed to get the right angle. Following all of this, a ureteral injury was detected and ***a urologist you had never met made a large vertical midline incision, effectively destroying all of your hard work***. If you have had your corn flakes shit in this way, odds are you are just a little bit anxious about the possibility of a ureteral injury following hysterectomy.

Many others have described different techniques for detecting a ureteral injury at time of hysterectomy.[66] I cannot take the time to discuss every single technique that has ever been attempted to detect a ureteral injury or to prevent one, but there are a few techniques that are worth mentioning. First of all, if you routinely have the urology service place lit ureteral stents prior to performing your hysterectomies, you probably should not be performing hysterectomies. Stents, even when placed by expert urologists, have complication rates. Stents should not be used with simple, benign procedures and, although the occasional extremely adhesed hysterectomy will require stents, it should not be the M.O. for anyone receiving a hysterectomy.

While I am a fan of cystoscopy at the end of a hysterectomy, I am not necessarily one of those who feels

you need to inject intravenous medicines into the patient in order to see the jets of urine. These substances, whether indigo carmine, methylene blue, or oral Pyridium, invariably have an amount of time before they will appear in the urine, and an equally unpredictable amount of time until they will cease to affect the urine. Therefore, their usefulness is limited. A good alternative is a direct injection of dextrose into the bladder. Sugary dextrose gives the fluid in the bladder clear visibility, especially urine from the ureteral orifices. It can be injected moments before cystoscopy directly into the bladder, clamping the distal portion of the Foley catheter and injecting the dextrose before removing the catheter. The best part is, it does not require any waiting whatsoever, therefore its utility is more predictable.[67]

So do I recommend cystoscopy after every hysterectomy? Yes. Not as much for the ureters as for the bladder. After decades of hysterectomies, I realized that the edge of the bladder can appear in a lot of places you would not predict. Therefore, I think the safest course of action is to perform a quick cystoscopy to make sure there are no defects in the bladder. If one fails to identify a defect in the bladder, the absence of a Foley catheter will make it essentially impossible for the defect to heal. This will certainly crash back into your E.R. with embarrassing results. But, as far as checking the ureters for jets of urine after every hysterectomy, I am not entirely sure that this is necessary, especially in light of the focus of this technique.

The focus of this entire technique is to avoid the areas where the ureter could be. Therefore, if I really feel that this technique is effective, it really does not make sense for me to advocate the routine monitoring of jets of urine following the procedure. What I do advocate, however, is the careful reasoning of your current clinical scenario before performing the cystoscopy.

It is clear when you are performing the cystoscopy following this hysterectomy that you are going to need to think about the possibility of a bladder injury. As you are definitely going to be looking for a bladder injury at time of cystoscopy, you do not need to think about it beforehand. What we really need to do is take a few seconds and think hard about how well you faithfully performed this procedure.

The real question is: how long am I willing to wait to see urine jets? In the event that you have faithfully performed this procedure avoiding the bladder and at no time were the jaws of your bipolar device in close proximity to the sidewalls, I would say you really have nothing to worry about at time of cystoscopy. I would say there is no reason to wait around for jets of urine from the ureteral orifices, and that a quick cystoscopy in order to rule out the possibility of a cystotomy is all that's required.

In fact, it can be comforting for some surgeons to tell the operating room staff that they're really only worried about a cystotomy and that is the only reason they are doing the hysterectomy. This will certainly get them off the hook, as many other surgeons in the hospital probably perform long cystoscopies waiting for jets of urine from both ureteral orifices.

In the event that you are not so certain that you've been loyal to the adherence of the technique of this procedure, consideration should be given for what exactly your guidelines are for what you are going to do before you begin the cystoscopy. If you are so worried about a ureteral injury that you are willing to watch until you see a jet of urine, up to an hour if need be, and then you plan to call a urologist to come over the operating room right then if you do not, then you need to internalize that anxiety prior to performing the cystoscopy. Do not let the staff that is

anxious to leave or the impatient nurse prepping your next patient change your mind.

In most cases, experienced surgeons should rely on the premise that they are doubtful of the possibility of ureteral injury and are planning to watch the ureteral site, perhaps incidentally, for a small time. This watching is in the hopes that they will see a jet of urine for some type of "bonus" reassurance. In most patients, however, if you have faithfully performed this procedure, there is no reason to wait for the jets of urine.

Please do not miss the point that this needs to be decided ahead of time. The operating room staff is not going to let you abandon a cystoscopy 10 minutes into it if you have been waiting for degenerative urine and there is no evidence of it. The majority of the time, when you can't see the jet, it is actually just the result of dehydration, and under even more rare circumstances that the ureter may not have produced a strong jet of urine for years.

Nonetheless, you could be stuck for hours waiting for a jet of urine while the operating room staff quietly watches, judging you for your poor surgical skills that clearly caused a serious complication. So think it through ahead of time.

I cannot overstate the importance of having your certain criteria for when you will abort a cystoscopy right before you begin the procedure. If there is no doubt in your mind that the ureters were not injured at time of hysterectomy there is simply no reason for a 1 hour cystoscopy in order to see a small jet of urine from the left ureter that may not have functioned well to begin with.

In conclusion, waiting around for jets of urine from bilateral ureteral orifices is a waste of time for those faithfully performing this technique and should be reserved for the very rare scenario where a serious departure from the techniques described in this text is required. I would

also say that going into a cystoscopy with a requirement that you need to see jets of urine from both ureters etc. is a vanishingly rare scenario that should only be experienced once or twice during an experienced surgeon's lifetime.

The more common scenario should be that a surgeon would feel greatly relieved by seeing a jet of urine from one particular ureteral orifice, but accepts that it is not worth the possibility of waiting up to half an hour to 2 hours of cystoscopy in order to see that checked. It should be a very rare occurrence that an experienced surgeon insists on prolonged cystoscopy to see a jet of urine from both sides.

Is it the end of the world if ureteral injury goes unidentified and the ureteral implantation has to take place on another day? Probably not.

Especially if the only way to fix the injury at time of hysterectomy would have been an open procedure, there is really not much lost. Still, standard of care dictates that if ureteral injury is suspected, immediate repair should be arranged for. The patient should not be forced to have a second surgery. This should be kept in mind, but I would reemphasize that the most important part of this discussion is that the surgeon takes the time to have a clear picture of what they hope to accomplish by performing the cystoscopy following the hysterectomy, and under what circumstances they will terminate the cystoscopy and feel comfortable enough to wake the patient.

I would wager that if you are faithfully performing this procedure, for a competent surgeon the majority of cystoscopies should be terminated with the simple reassurance that you have been able to visualize that there is no evidence of cystotomy.

References:

67) Wu, H. H., Yang, P. Y., Yeh, G. P., Chou, P. H., Hsu, J. C., & Lin, K. C. (2006). The detection of ureteral injuries after hysterectomy. Journal of minimally invasive gynecology, 13(5), 403-408.
68) Siff, L. N., Unger, C. A., Jelovsek, J. E., Paraiso, M. F. R., Ridgeway, B. M., & Barber, M. D. (2016). Assessing ureteral patency using 10% dextrose cystoscopy fluid: evaluation of urinary tract infection rates. American journal of obstetrics and gynecology, 215(1), 74-e1.