

# Enhancing Bladder Cancer Surgery Recovery: Strategies for Better Patient Outcomes

Guest Presenter:  
Dr. Saum Ghodoussipour

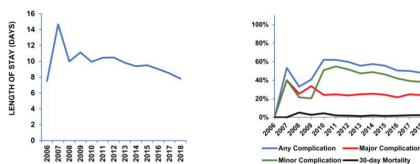


Where do we stand today?

**Dr. Ghodoussipour:**

So that's a history of how we got to where we are today. But where are we really? Where do we stand today?

Annual trends: 11,351 patients from 2006-2018



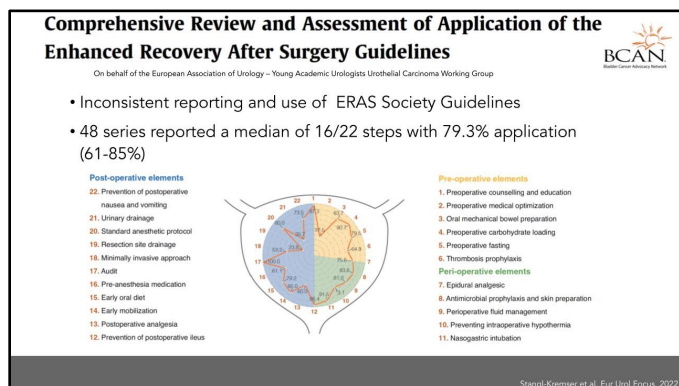
- Length of stay (10.5 -> 8.6 days) and overall complications (56.5 -> 50.6%) decreased over time.
- No change in major complications (23.6%), readmissions (21%), mortality (2%)
  - UTIs (8.3%) and sepsis (8.7%) remain prevalent

Chua et al. Urol Oncol. 2023

**Dr. Ghodoussipour:**

Have we moved the needle in complications? Well, this is a recent study from the NSQIP, which is the National Surgical Quality Improvement Program, that includes patients who had surgery in the United States. This database included 11,000 patients, over 11,000 patients who had surgery from 2006 to 2018. This includes smaller hospitals, not necessarily academic centers. So the length of stay went down from 10 to eight days, not necessarily four days everywhere. But complication rates, we were able to see a

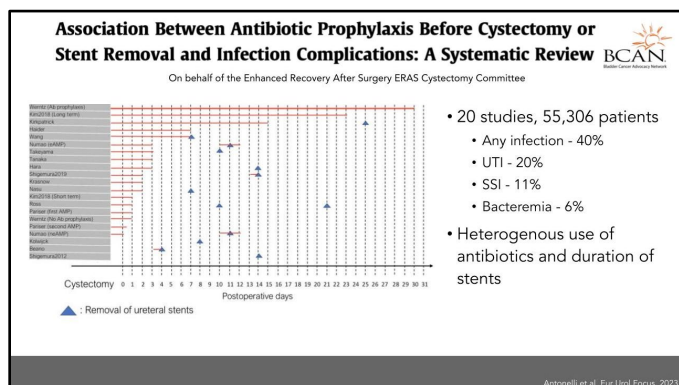
significant decrease from over 50% to just at about 50%. The major complication rates however were unchanged. Readmissions are unchanged, specifically urinary tract infections and sepsis, which is severe infection remaining prevalent after the operation, at about 9%.



### Dr. Ghodoussipour:

So why are we able to improve some things but not everything? I think it requires us to take a look at the literature, the studies that have been reported, and get a better understanding of how we are implementing ERAS protocols. And if we're not implementing them all the way, then why not? So this was a study put out a couple of years ago that looked at all of the studies on ERAS, and how did they report and use all of those 22 measures that we talked about a couple of slides ago? And what they found

was, after they searched the whole literature, they found 48 published series that reported on an average of 16 of the 22 steps, meaning six of the steps were never even mentioned in most of the studies. The adherence to the steps that were mentioned was about 80%, which does make sense. You can't do every single one of these interventions in every patient, and these pathways do have to be personalized, but we would still like it to be closer to 100%. And I think that we need to understand what might be holding us back from that.

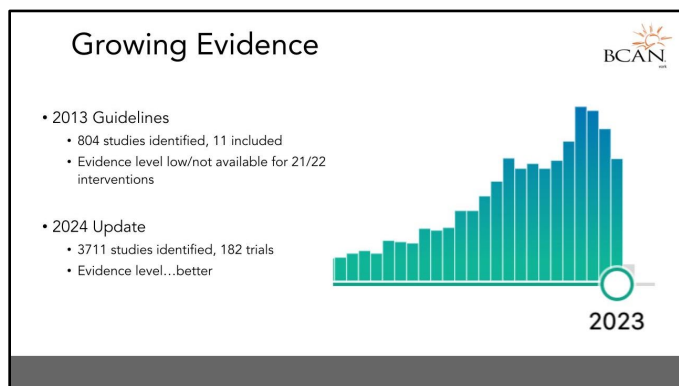


### Dr. Ghodoussipour:

Another nice study that looked at variations or heterogeneity of implementation of ERAS pathways, was this study that looked at the association between antibiotic prophylaxis, which is preventative antibiotics, before a cystectomy, and at the time of stent removal, which is the stents that connect the kidneys to the urinary diversion, and infectious complications. This was another systematic review that looked at all published studies, and included 20 studies of 55,000 patients. They found that the rate of any infection

after a cystectomy was 40%, urinary tract infection, 20, and bacteremia, which is a significant infection in the bloodstream, was 6%. What was important in this study, was that there was very heterogeneous or diverse use of antibiotics, and duration of antibiotics, and time of stent removal. On this figure here you can see that this red line is the time, the duration that patients were on antibiotics, preventative antibiotics. So at the top line here, you can see that antibiotics were given continuously for 30 days, and some studies here just gave it for 24 hours right after surgery, and they didn't continue this long dose of antibiotics. These blue triangles here, are showing the time that the stents were removed from the urinary diversion. So you can see that it's all over the place.

So though we are all doing our best to take care of patients, everyone has a different method, a different protocol, and really best practice comes when we're all aligned and we have a good understanding of what really is best care for patients.



**Dr. Ghodoussipour:**

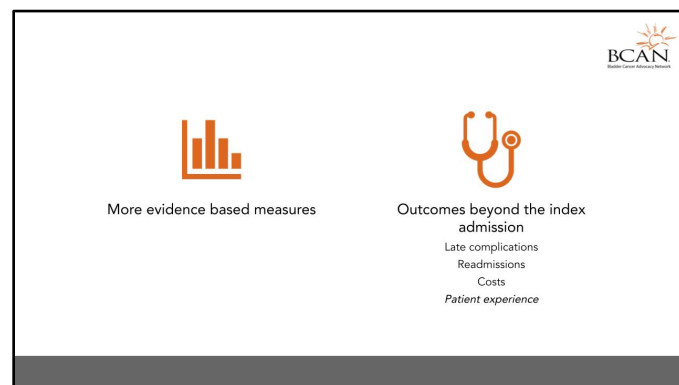
Since those guidelines were published in 2013, we have had a lot of evidence come into the field that has influenced our ability to make recommendations for patients for what we think is best. In 2013, the guidelines identified 804 studies in ERAS and included 11 of them in their guideline report. And when they synthesized or put all the data together, they saw that the evidence level was low for 21 of those recommendations. So a lot of the recommendation was just expert opinion. Again, as I said, I'm very fortunate to

be part of a group of really impressive physicians from all different backgrounds, nurses, nutritionists, who are updating these guidelines. And in our most recent update we identified over 3,000 studies including 182 clinical trials, which clinical trials we generally think are a higher level of evidence than just retrospective reports where people are just talking about their experience. So the evidence level today is better, but I will admit to you that it's not perfect even though perfection is what we are always going for.

How can we improve outcomes moving forward?

**Dr. Ghodoussipour:**

So how do we use the existing data to improve outcomes moving forward, and how do we get better data to improve outcomes moving forward?



**Dr. Ghodoussipour:**

Well, I think that one of the most important things is that we develop more evidence-based measures, meaning we have more study to understand if things are truly better, we need to be away from all of the dogmatic practice. In the past, like I said, everyone would get an NG tube, no one would eat until they passed gas, and no one would get out of bed after surgery. Bedrest was the dogma at the time. We need more evidence-based measures to eliminate dogma from our perioperative care. Also, we need to look

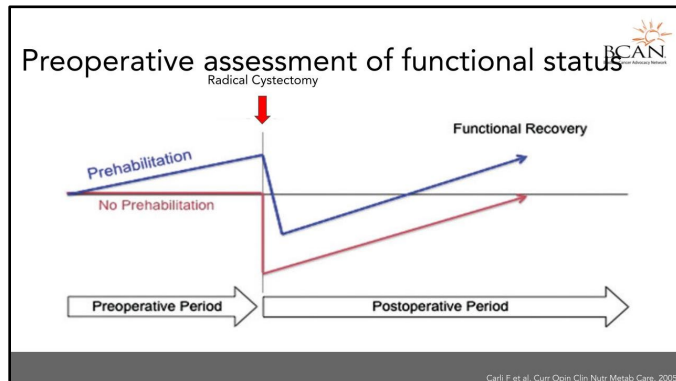
at outcomes beyond the index admission. In our survey, you all stated that the rate of any complication is the most important outcome after surgery. And I agree with you that it's an extremely important outcome, but we need to look at other things including late complications, readmissions, costs, and I think more and more important every day is getting a better understanding of the patient experience as reported by the patient, not by us physicians. To really be honest about things, we need to understand how our interventions affect you.

Expanding Evidence: Clinical trials in ERAS

Category	Trial	Intervention	Title
Education	NCT04055311	Patient and caregiver education	Recovery Support for Bladder Cancer Patients and Caregivers
Prehabilitation	NCT03470445	Prehabilitation	Trimodal Prehabilitation for Cystectomy Patients to Enhance Post-operative Care (TRICACT)
	NCT01840137	Prehabilitation	Test of Prehabilitation in Vulnerable Patients Undergoing Cystectomy for Bladder Cancer
	NCT01836978	Prehabilitation	Prehabilitation to Enhance Postoperative Functional Capacity Following Radical Cystectomy
	NCT01329107	Multiprofessional rehabilitation	Multimodal Rehabilitation Program to Bladder Cancer Patients (MRPBC)
Nutrition	NCT08040762	Personalized home-based prehabilitation	A Home-Based Prehabilitation Exercise Intervention for Improving Physical Function in Patients Receiving Chemotherapy Before Radical Cystectomy: Get Moving Trial
	NCT03757949	Immunonutrition	Nutrition Therapy is Improving Immune System in Patients With Bladder Cancer That Can Be Removed by Surgery
	NCT03204266	Oral Pro-Stat supplementation	Oral Supplementation to Enhance Recovery Pilot Study
	NCT05287878	Immunonutrition	The Role of Preoperative Immunonutrition on Morbidity and Immune Response After Cystectomy (INCA Trial)
	NCT06057532	Starch or standard sports drink 2 hours before surgery	Carbohydrate Ingestion Prior to Surgery (CIPS)
GI Function	NCT03216525	Aximopan versus placebo	Aximopan Versus Placebo in Patients Undergoing Radical Cystectomy on an Enhanced Recovery Protocol
Antibiotics	NCT05392834	Standard vs prolonged antibiotic	Multicentral Preventive Antibiotics With Cystectomy Within Enhanced Recovery After Surgery (IMACS)
	NCT03977831	Robotic cystectomy versus open	A Controlled Blinded Randomized Feasibility Study of Open Radical Cystectomy (ORC) Versus Robot-Assisted Radical Cystectomy With Intraoperative Urinary Diversion (RAROC) Under an Enhanced Recovery After Surgery (ERAS) Setup

**Dr. Ghodoussipour:**

So this is just a short list, not a comprehensive list, of recently completed or ongoing clinical trials in ERAS specifically for radical cystectomy. This list shows that it is possible to do clinical trials in surgery, and to really try to get the best evidence possible for our patients. If you look here, you can see that a lot of these trials are centered around something called pre-habilitation, education and a lot of trials here on nutrition. So what is pre-habilitation,




**Dr. Ghodoussipour:**

and how does nutrition play a role? Well, pre-habilitation is essentially, the most simple way to think about it is, exercise before surgery to try to improve your fitness for surgery. In order to understand who is going to benefit from that, we need to have an ability to preoperatively assess functional status or fitness before surgery. If we're able to do that, we can intervene. You can see here this red line is where we were before the widespread use of pre-habilitation, or recommendation of exercise

before surgery. In the early preoperative period, patients are at a certain level of fitness. When you have surgery, there is inherently a hit. This is a stressor and you have to recover. So there is a period of recovery in the postoperative period, and as I showed in one of my first slides, patients do get back to a baseline level of function and quality of life, but it can take two months, and that's just the honest truth. Six to eight weeks is what you should expect in your recovery. But there's a lot of research, and there's people doing things now to try to improve your recovery. If you do prehabilitation before surgery, or exercise, or do special nutrition supplements, things like immuno-nutrition, you can improve that level of fitness so that there's a gap, so that when the time comes for surgery, you're at a higher level of fitness.

When that inherent drop comes, you can have a faster recovery, and get back to a higher level of functional recovery after surgery. So that's really pre-habilitation, preoperative nutrition in a nutshell.

**The importance of mental health in the patient experience**



- Patients with bladder cancer have disproportionately high rates of depression and anxiety
  - Pretreatment and posttreatment depression rates up to 23% and up to 71%, respectively,
  - Post-treatment anxiety in up to 78% of patients
- Preoperative patient reported mental health is associated with 30-day high grade complications after radical cystectomy.
- Individuals with cancer, including those with bladder cancer, are at 2x increased risk of death from suicide compared to the general population

Vartholomei et al. Bladder Cancer. 2018  
Sharma et al. J Urol 2016  
Potter et al. JAMA Oncol. 2018


**Dr. Ghodoussipour:**

Another important outcome that I think up until recently we have not been giving enough attention to, is the importance of mental health in the patient experience. So patients with bladder cancer have disproportionately high rates of depression and anxiety. Depression rates can be up to 23% before treatment, and 71% after treatment, and anxiety can go up to 78% after treatment. We do note from retrospective series looking back at how patients did, that preoperative mental health

is associated with your risk of developing a high grade complication after a cystectomy. And again, I think it's very healthy and good that we're talking about this more and more in society as a whole. But individuals with cancer, including those with bladder cancer, are at a two times increased risk of death from suicide compared to the general population. So these mental health risk factors for depression, anxiety, and suicidal ideation need to be screened before surgery. And if identified, patients should see a specialist, whether that be a mental health specialist, a psychiatrist or whatnot, but it's not something that should be ignored.

And as competent surgeons, as Professor Leadbetter urged back in 1950, I want it to be clear that this is something that we think about, and we make sure is addressed in our patients who are undergoing surgery for bladder cancer.

**Recovery after TURBT**



- Over 100,000 performed in the US each year
- Patient challenges are often overlooked
  - ED visits, pain, hematuria, catheter issues
- ERAS for TURBT has potential to improve the patient experience
  - ERAS for endoscopic kidney stone surgery reduced post op opioid use from 93%-0%
  - Earlier catheter removal and better pain control with ERAS after transurethral surgery for benign prostatic hyperplasia.

1. <https://neupsa.ahrq.gov/>  
2. Rutherford et al. Qual Life Res. 2021  
3. Ghali et al. Scans J Urol. 2016  
4. Witherspoon et al. Can Urol Assoc. 2021  
5. Grindley et al. J Endourol 2020  
6. Zhou et al. Asian J Androl. 2022


**Dr. Ghodoussipour:**

Now, everything I've talked about so far has been recovery after a radical cystectomy, because that is the more complex and major operation that we perform. However, recovery after TURBT has been overlooked and neglected, and it shouldn't be, because this is the most common procedure done, and most common surgical procedure in bladder cancer. Over 100,000 transurethral resections are performed in the United States each year, and patients do experience things like ED visits. They have pain, they have

hematuria or blood in the urine, and they can have issues with their catheters that require them to come to the ED or come back to clinic. The rates of all these things are not nearly as well studied or reported as the rate of complications after a cystectomy. So just as that paper in 2009 sobered us to the challenges in recovery after a cystectomy, I think that we're being honest in looking at these outcomes after TURBT, and thinking about how we can improve the patient experience. And ERAS is certainly a way that we can improve the patient experience.

ERAS, standardized pathways have been used for other endoscopic surgeries. For example, in kidney stone surgery using an enhanced recovery after surgery protocol decreased the use of postoperative opioid use, narcotics like Percocet, Vicodin, Oxycontin decreased from 93% to 0% in one study. In another study of endoscopic surgery for benign prostate disease, ERAS protocols were able to lead to earlier catheter removals and better pain control.

**ERAS for Ambulatory TURBT: Enhancing Bladder Cancer Care (EMBRACE) Trial**  
NCT05905276




<b>Preoperative</b>	<b>Intraoperative</b>	<b>Postoperative</b>
1. Counseling and education	5. Standard anesthetic protocol	8. POD 1 phone call
2. Catheter care instruction and self removal teaching	Avoid sedatives	9. Catheter care teaching and self removal instruction
3. Avoid fasting	Warming	10. Ointment to meatus twice a day until removal
4. Treatment of constipation	Deep extubation	
	6. Non narcotic pain management	
	7. Intraurethral lidocaine	

**Dr. Ghodoussipour:**

I wanted to give a well-deserved shout-out to one of my friends and colleagues, Max Kates, for initiating the effort in ERAS after TURBT in an ongoing clinical trial called Embrace. And you can see in these three groups here, it's not too dissimilar from the guidelines for a cystectomy. There are a lot of preoperative, intraoperative and postoperative measures that can be done to enhance recovery after transurethral resection. Whether that's just better counseling and education of how to care for a catheter at home, avoiding fasting

before a TURBT could be just as important as before cystectomy, standardizing anesthesia protocols during TURBT, using non-narcotic pain medicines, and then other things to make the catheter care if needed a little bit more comfortable after a transurethral resection. So this is ongoing work, and I think that we're going to see a lot more study in this in the future.



**Implementation Logistics**

Society Guideline represents "Best Practice"  
Provides checklist essential for execution of complex coordinated care plan  
Does not replace expertise or responsibility  
Facilitates conversation among all stakeholders



**Dr. Ghodoussipour:**

So with all of these efforts going on for ERAS, and all of the new data coming out, how do we ensure that we're implementing these to the best of our ability to improve outcomes for our patients? Well, the society guidelines I think are important in my biased opinion, as I said, being able to be involved in the development of these guidelines, but these guidelines do represent best practice. It doesn't mean that every single measure has to be performed, but they provide a checklist that's essential for execution of a care plan

that can very often-times be very complex, and coordination among multiple different treatment teams is needed. It's not just the urologist, urological oncologist taking care of these patients, it's the nurses, it's the anesthesiologist, the physical therapist, the nutritionist. So having a checklist helps everyone stay on the same page. These checklists do not replace expertise or responsibility, but the existence of checklists and existing care pathways really facilitate the conversation amongst all the stakeholders to improve care for patients.

And one very important stakeholder is the patients themselves, and that's why the patient reported outcomes I think are going to be essential to look at moving forward.



**Enhanced Recovery After Surgery (ERAS)**

**PREPARE BEFORE SURGERY**

- Get fit for surgery: be physically active, eat healthy, quit smoking, and quit or drink less alcohol
- Visit our clinic for needed tests before surgery
- Talk with family and friends about how they can help you at home
- Drink the recommended pre-surgery drink before your operation
- Drink clear liquids up to 3 hours before surgery

**CARE DURING SURGERY**

- We will use the smallest incision possible
- You will receive numbing medication to block pain at your incision sites
- We will keep you warm and give you IV fluids as needed

**GET WELL FASTER**

- You will have fewer tubes after surgery than traditionally used
- You will be given mild drugs for pain at frequent intervals
- You will walk and eat soon after surgery
- You will be taught breathing exercises to keep your lungs healthy
- You will be given a step-by-step care guide for when you go home

ERAS is about giving you a better experience in every way

Highest Patient Comfort    Fastest Healing    Fewest Side Effects

**RUTGERS HEALTH**

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Bariatric Cancer Action Network

**Dr. Ghodoussipour:**

This is just an example of how we have created checklists to try to improve outcomes at my institution. We make it readily available to patients. These may be a little bit outdated at this point, but this is an example of a flier that we give to patients.

**ERAS Pre-Surgery Checklist**

**Time Before Surgery**

**Today and until the day of surgery**

- Do not smoking
- Do not drink alcohol
- Do not eat or drink 36 hours pre-surgery day
- Get a healthy and balanced diet plan for decision before Food Prep
- Make arrangements with friends and family for helping when return home

**5 days before surgery**

Drink Ensure three times a day

- Ensure 1
- Ensure 2
- Ensure 3
- Ensure 4
- Ensure 5

**3 days before surgery**

Take the following medications as prescribed:

- Tylenol 1000 mg three times daily
- Celebrex 400 mg twice daily
- Gabapentin 100 mg three times daily
- Ensure 1
- Ensure 2
- Ensure 3

**Night before surgery**

Drink two bottles of pre-surgery drink between 3pm and 12 am midnight

- Ensure 1
- Ensure 2

**★ Morning of surgery ★**

Do not eat or drink any solid food after midnight

Drink 1000 mg

- Ensure 1000 mg
- Celebrex 400 mg
- Gabapentin 100 mg

Drink two bottles of pre-surgery drink 3 hours before scheduled start time. Do not eat or drink after that.

- Ensure 3

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**Dr. Ghodoussipour:**

This is a checklist that patients get before surgery

**ERAS Post-Surgery Checklist**

**Time Since Surgery**

**Right after surgery**

- Get out of bed to a chair
- Walk in the hallway at least once
- Use my incentive spirometer - 10 times per hour while awake
- Talk with my nurse about keeping my pain under control
- Take pain medications as scheduled and as needed
- Walk in the hallway for at least 30 minutes total today
- Get all my meals eating in the chair
- Use my incentive spirometer - 10 times per hour while awake

**Day 1 after surgery**

- Talk with my nurse about keeping my pain under control
- Take my pain medications as scheduled and as needed
- Ask if my IV fluids will be stopped. If not, done already
- Walk in the hallway for at least 30 minutes total today
- Spinal at least 4 hours out of bed
- Get all my meals eating in the chair
- Use my incentive spirometer - 10 times per hour while awake
- Talk with my nurse about keeping my pain under control
- Take my pain medications as scheduled and as needed
- Ask if my IV fluids will be stopped. If not, done already
- Spinal at least 4 hours out of bed
- Get all my meals eating in the chair
- Use my incentive spirometer - 10 times per hour while awake

**Day 2 after surgery**

- Talk with my nurse about keeping my pain under control
- Take my pain medications as scheduled and as needed
- Ask if my IV fluids will be stopped. If not, done already
- Spinal at least 4 hours out of bed
- Get all my meals eating in the chair
- Use my incentive spirometer - 10 times per hour while awake
- Talk with my nurse about keeping my pain under control
- Take my pain medications as scheduled and as needed
- Ask if my IV fluids will be stopped. If not, done already
- Spinal at least 4 hours out of bed
- Get all my meals eating in the chair
- Use my incentive spirometer - 10 times per hour while awake

**Day 3 after surgery until discharge**

- Feel safe and ready to transition out of the hospital
- Understand how to take all my current and new medications
- Have a follow up appointment
- Have received a copy of my discharge instructions and understand them

**Preparing for discharge**

- Feel safe and ready to transition out of the hospital
- Understand how to take all my current and new medications
- Have a follow up appointment
- Have received a copy of my discharge instructions and understand them

**After discharge**

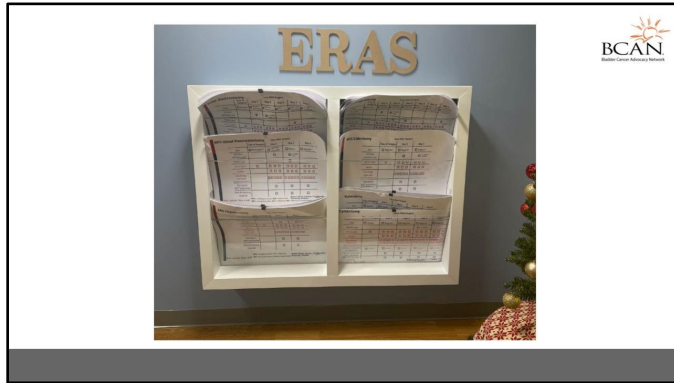
- I will be getting a phone call from the surgical team within 1 week of discharge

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**Dr. Ghodoussipour:**

...and after surgery, to keep track of what's happening with us in their care journey,




**Dr. Ghodoussipour:**

and this I'm very happy to see up on the wall in our unit at the hospital. These are laminated posters that we put on the wall of every patient who's had a cystectomy. But you can see that cystectomy is just one of the operations that has an ERAS checklist. We've got colectomy here, gastrectomy, pancreatectomy, hepatectomy. So it's not unique to patients undergoing bladder cancer to want to enhance recovery after surgery, but radical cystectomy, transurethral resection of bladder tumor, these are very

unique procedures and we should have unique and dedicated care pathways.

### Take Home Points



- Bladder Cancer is an aggressive malignancy requiring aggressive therapy
  - TURBT is an essential diagnostic and therapeutic tool
  - Radical cystectomy provides curative benefit
  - Excellent functional outcomes and quality of life with meticulous dissection and appropriate selection of continent diversions
  - Challenges in recovery exist for radical cystectomy and TURBT
- Perioperative Care
  - ERAS pathways have revolutionized patient recovery
  - Well accepted but implementation is inconsistent
  - Continued multidisciplinary collaboration will result in further improvement

**Dr. Ghodoussipour:**

I think my most important take home points are that bladder cancer is an aggressive malignancy requiring aggressive therapy. I think we've done Professor Leadbetter proud in moving that cure rate to almost 100%, we're doing a great job there, but transurethral resection of bladder tumor and radical cystectomy are still essential treatment modalities in patients with bladder cancer. Not every patient needs a cystectomy. Every patient does need TURBT. We're able to preserve quality of life with


meticulous surgeries, appropriate selection of urinary diversions, but challenges in recovery do exist. Perioperative care pathways, ERAS has revolutionized the patient recovery and the patient experience after surgery, they're well accepted, but implementation is inconsistent. But I think that continued multidisciplinary collaboration will result in improvement both in the implementation of these pathways, but in the recovery of patients with bladder cancer. So I'll stop there. I really look forward to hearing what questions you guys might have, and to having a little back and forth.

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