

# Prevention of Blood Loss during Radical Cystectomy: A Survey of the Society of Urologic Oncology

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## OBJECTIVE

To determine what intra-operative techniques and hemostatic agents are currently used by urooncologists to prevent and control blood loss during radical cystectomy.

## INTRODUCTION

- Radical cystectomy is utilized as a curative treatment for bladder cancer.
- Approximately 60% of cystectomy patients require perioperative blood transfusion.
- Blood transfusion is expensive and is associated with adverse events.
- Minimal information is available to describe how surgeons prevent blood loss during cystectomy.

## METHODS

### Timeline:

- August 2011: Society of Urologic Oncology (SUO) members were solicited for the online survey

### Exclusion Criteria:

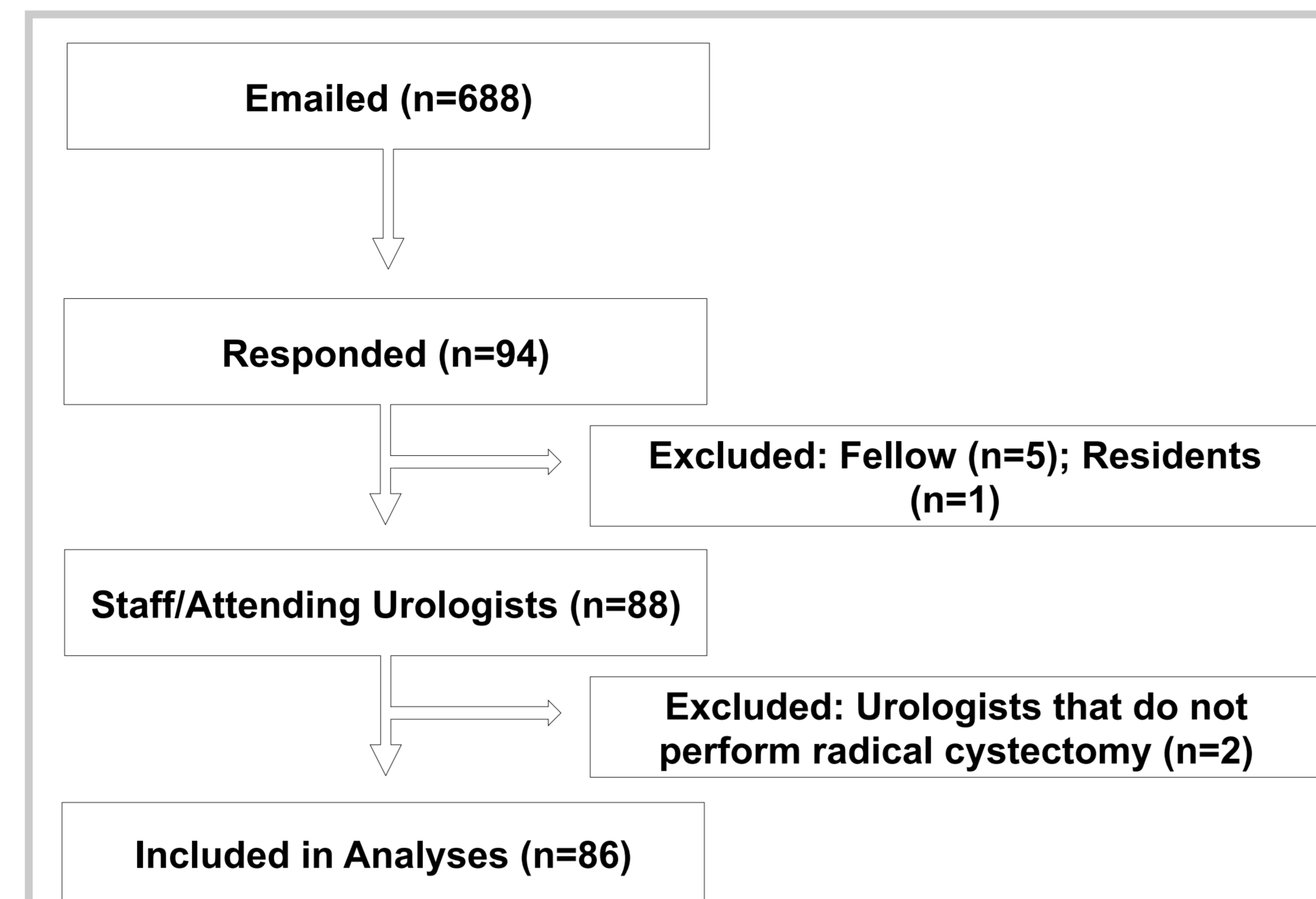
- Residents, fellows and non-urologists
- Urologists not performing radical cystectomy

### Survey Contents:

- Demographics
- Transfusion opinions on:
  - Local Hemostatic Agents
    - oxidized cellulose polymer (Surgicel®)
    - absorbable gelatin sponge (Gelfoam®)
    - gelatin and thrombin matrix (FloSeal®)
    - thrombin and calcium chloride (Tisseel®)
  - Systemic Hemostatic Agents
    - Factor VII (Novoseven®)
    - aminocaproic acid (Amicar®)
    - tranexamic acid (Cyclokapron®)
    - aprotinin (Trasylol®)
    - desmopressin (DDAVP®)
  - Procedural Techniques
    - autologous blood recovery (CellSaver®)
    - autologous blood banking
    - acute normovolemic hemodilution

## RESULTS

### Survey Enrollment



### Characteristics of Survey Respondents

Characteristic	Count (%)
TOTAL UROLOGISTS	86
<b>Practice Location</b>	
Canada	27 (32%)
USA	52 (61%)
Europe	2 (2%)
Central/South America	2 (2%)
Australia	1 (1%)
Other	1 (1%)
<b>Years Since Training Completion</b>	
Less than 1 year	3 (4%)
1-5 years	25 (29%)
6-10 years	23 (27%)
11-15 years	11 (13%)
16-20 years	12 (14%)
Greater than 20 years	11 (13%)
<b>Post Residency Fellowship</b>	
MIS	8 (11%)
Oncology	70 (97%)
Other	2 (3%)
<b>Location of Last Training (Residency/Fellowship)</b>	
Canada	11 (13%)
USA	73 (86%)
Europe	1 (1%)
<b>Number of Radical Cystectomies Each Year</b>	
1-5	7 (8%)
6-10	10 (12%)
11-15	12 (14%)
16-20	13 (15%)
21-30	21 (25%)
31-40	9 (11%)
41-50	4 (5%)
>50	9 (11%)

### Transfusion Triggers of Respondents

Transfusion Trigger	Count (%)
<b>Estimated Proportion of Patients Requiring Transfusion</b>	
0%	1 (1%)
1%-10%	17 (20%)
11%-20%	18 (21%)
21%-30%	25 (29%)
31%-50%	20 (24%)
>50%	4 (5%)
<b>Transfusion at a Specific [Hb]?</b>	
Yes	43 (51%)
No	42 (49%)
<b>Transfusion Triggers WITHOUT CVD?</b>	
70 g/L	12 (29%)
80 g/L	17 (40%)
90 g/L	3 (7%)
100 g/L	1 (2%)
Other	9 (21%)
<b>Transfusion Triggers WITH CVD</b>	
70 g/L	1 (2%)
80 g/L	14 (33%)
90 g/L	6 (14%)
100 g/L	13 (31%)
Other	8 (19%)

## POTENTIAL LIMITATIONS

- Limited audience surveyed: only SUO members and those inclined to complete an online survey
- Opinions on laparoscopic or robotic approaches were not considered
- Other devices for hemostasis (ie. stapler) were not included

### Estimated Proportion of Cases When Topical, Systemic and Procedural Hemostatic Methods Were Used

Transfusion Level	Oxidized Cellulose Polymer (Surgicel®)	Absorbable Gelatin Sponge (Gelfoam®)	Gelatin and Thrombin Matrix (FloSeal®)	Thrombin and Calcium Chloride (Tisseel®)	Other
0%	22 (27%)	60 (72%)	39 (47%)	68 (82%)	66 (80%)
1%-4%	13 (16%)	10 (12%)	16 (19%)	7 (8%)	4 (5%)
5%-10%	15 (18%)	6 (7%)	11 (13%)	3 (4%)	3 (4%)
11%-20%	12 (14%)	2 (2%)	4 (5%)	1 (1%)	1 (1%)
21%-50%	6 (7%)	1 (1%)	5 (6%)	1 (1%)	4 (5%)
>50%	15 (18%)	4 (5%)	8 (10%)	3 (4%)	5 (6%)
<b>Systemic Hemostatic Agents</b>					
Transfusion Level	Factor VII (Novoseven®)	Aminocaproic Acid (Amicar®)	Tranexamic Acid (Cyclokapron®)	Desmopressin (DDVAP®)	Other
0%	81 (98%)	83 (100%)	79 (95%)	75 (95%)	77 (99%)
1%-4%	2 (2%)	0 (0%)	2 (2%)	3 (4%)	0 (0%)
5%-10%	0 (0%)	0 (0%)	0 (0%)	1 (1%)	1 (1%)
11%-20%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
21%-50%	0 (0%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)
>50%	0 (0%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)
<b>Procedural Techniques</b>					
Transfusion Level	Autologous Blood Recovery (CellSaver®)	Autologous Blood Banking	Acute Normovolemic Hemodilution		
0%	63 (81%)	62 (79%)	56 (72%)		
1%-4%	7 (9%)	10 (13%)	9 (12%)		
5%-10%	1 (1%)	3 (4%)	4 (5%)		
11%-20%	1 (1%)	2 (3%)	2 (3%)		
21%-50%	0 (0%)	1 (1%)	3 (4%)		
>50%	6 (8%)	0 (0%)	4 (5%)		

### Associations Between Surgeon Characteristics and Use of Local Hemostatic Agents, Systemic Hemostatic Agents and Procedural Techniques

Characteristic	RR	Local		Systemic		Procedural	
		RR	95% CI	RR	95% CI	RR	95% CI
<b>Current Practice Location</b>							
USA	(ref)	1.00		1.00		1.00	
Canada		1.11	0.98-1.27	2.45	0.72-8.36	1.36	0.83-2.24
<b>Number of Years Since Training</b>							
<5 years	(ref)	1.00		1.00		1.00	
6-10 years		0.99	0.88-1.11	1.00	0.25-4.00	1.82	0.76-4.39
11-15 years		0.85	0.64-1.13	n/a	n/a	1.97	0.76-5.12
16-20 years		0.78	0.56-1.09	0.58	0.07-4.69	3.25	1.50-7.05
>20 years		0.75	0.52-1.09	0.64	0.08-5.08	3.47	1.61-7.47
<b>Location of Last Training</b>							
USA	(ref)	1.00		1.00		1.00	
Canada		1.01	0.81-1.26	2.06	0.49-8.56	0.94	0.44-2.05
<b>Number of Cystectomies Performed Yearly</b>							
<20	(ref)	1.00		1.00		1.00	
21-40		0.96	0.82-1.09	0.20	0.03-1.50	1.20	0.72-1.99
41+		0.61	0.38-0.99	0.49	0.07-3.59	0.96	0.45-2.07

### Rationale for Not Using Systemic Hemostatic Agents

Rationale	Factor VII (Novoseven®)	Aminocaproic Acid (Amicar®)	Tranexamic Acid (Cyclokapron®)	Desmopressin (DDVAP®)
Expensive	24 (15%)	4 (3%)	3 (2%)	1 (1%)
Lack of Literature Evidence	14 (8%)	25 (21%)	15 (11%)	19 (18%)
Unfamiliar with method of use	29 (18%)	8 (7%)	34 (26%)	15 (15%)
Not needed	33 (20%)	47 (39%)	36 (27%)	41 (40%)
Not familiar with benefits	30 (18%)	15 (12%)	24 (18%)	18 (17%)
Not familiar with side effects	15 (9%)	6 (5%)	12 (9%)	6 (6%)
Lack of availability	15 (9%)	3 (2%)	3 (2%)	0 (0%)
Side effects outweigh benefits	4 (2%)	12 (10%)	4 (3%)	0 (0%)
Other	1(1%)	1 (1%)	0 (0%)	3 (3%)

## SUMMARY/CONCLUSIONS

This survey of the SUO regarding the use of hemostatic agents and techniques during radical cystectomy reveals that there are many discrepancies in current practice patterns and opinions. Many surgeons utilize local hemostatic agents, but few employ systemic agents or procedural techniques. Further studies are required to establish best-practice approaches and guidelines for surgeons.