

SINGLE-PORT ROBOTIC SURGERY ALLOWS SAME-DAY DISCHARGE IN MAJORITY OF CASES

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Single Port Robotic Surgery

- da Vinci SP® surgical system (Intuitive Surgical, Inc., Sunnyvale, CA) was recently introduced as a purpose-built robotic platform dedicated to single-port (SP) surgery
- Possible Advantages
 - Improved cosmesis
 - Reduced pain
 - Shorter hospitalization
 - Fewer port site complications
- Disadvantages / Challenges / Limitations
 - Maneuverability
 - Tissue retraction
 - Working space
 - Instrumentation
 - Cost
 - Learning Curve
- We aim to evaluate effect of single port robotic surgery on our same day discharge (SDD) rate



Same Day Single Port Robotic Surgery

- Retrospective study
- Single surgeon experience (RA) of first 100 single port robotic cases from January 2019 – January 2020
- Compared to 1,506 multiport (MP) robotic surgeries performed since September 2016
 - September 2016 - began offering same day discharge (SDD) for all robotic surgery patients
- Evaluated length of stay (LOS) compared to LOS of same cases performed with MP robotic surgery
- All SP robotic surgery performed with one incision; no additional incisions for +1 port
- We did routinely use a Gelpoint through which an 8 mm valveless trocar (AirSeal®) was placed for prostatectomy and partial nephrectomy



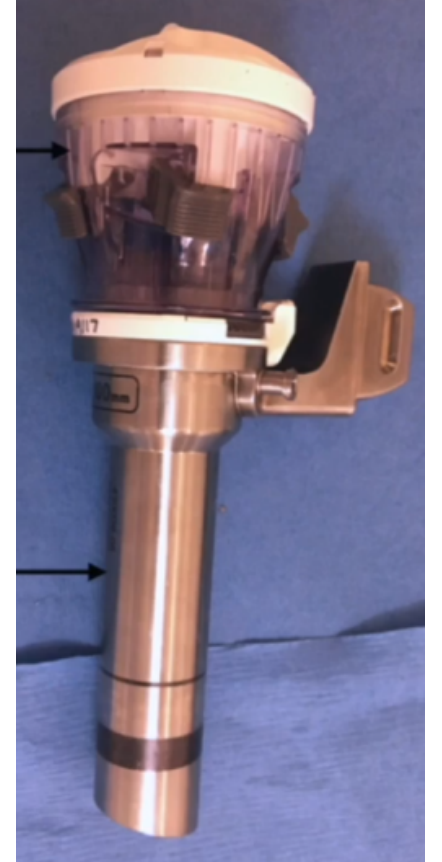
Postoperative pathway

- Identical for SP and MP robotic surgery patients
- SDD is offered to all patients but not mandated
- Pain control with scheduled ketorolac, acetaminophen prn, oral narcotics prn
- No intravenous narcotics
- Immediate ambulation (within 2 hours of arrival to floor)
- Immediate diet
- Large majority of patients went to floor and were not discharged from PACU / recovery to allow time to make decision
 - Rare exceptions – pyeloplasty, adrenalectomy
- Post-operative pain was assessed using a visual analog scale starting from admission to PACU and continuing throughout the hospital stay

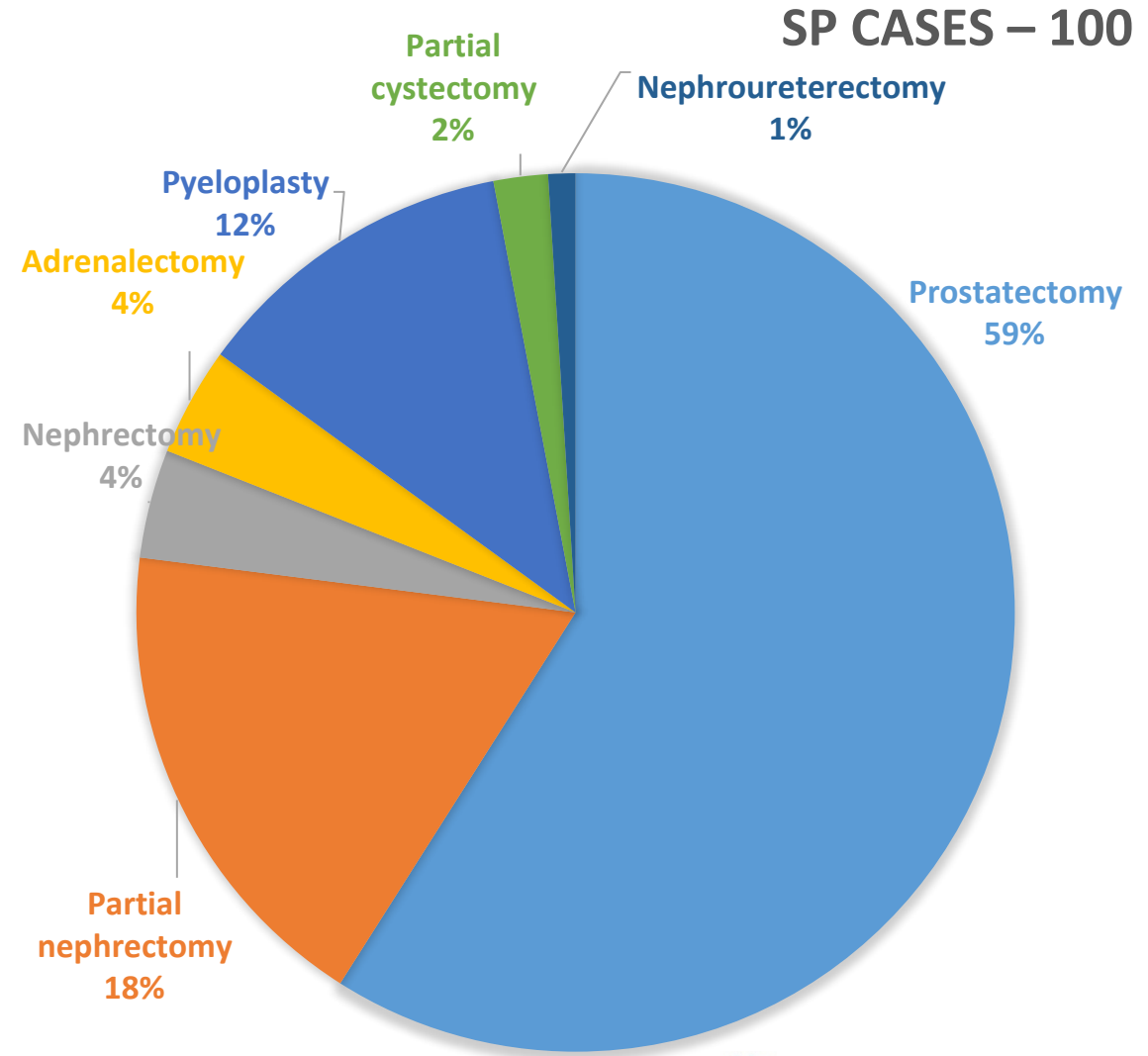
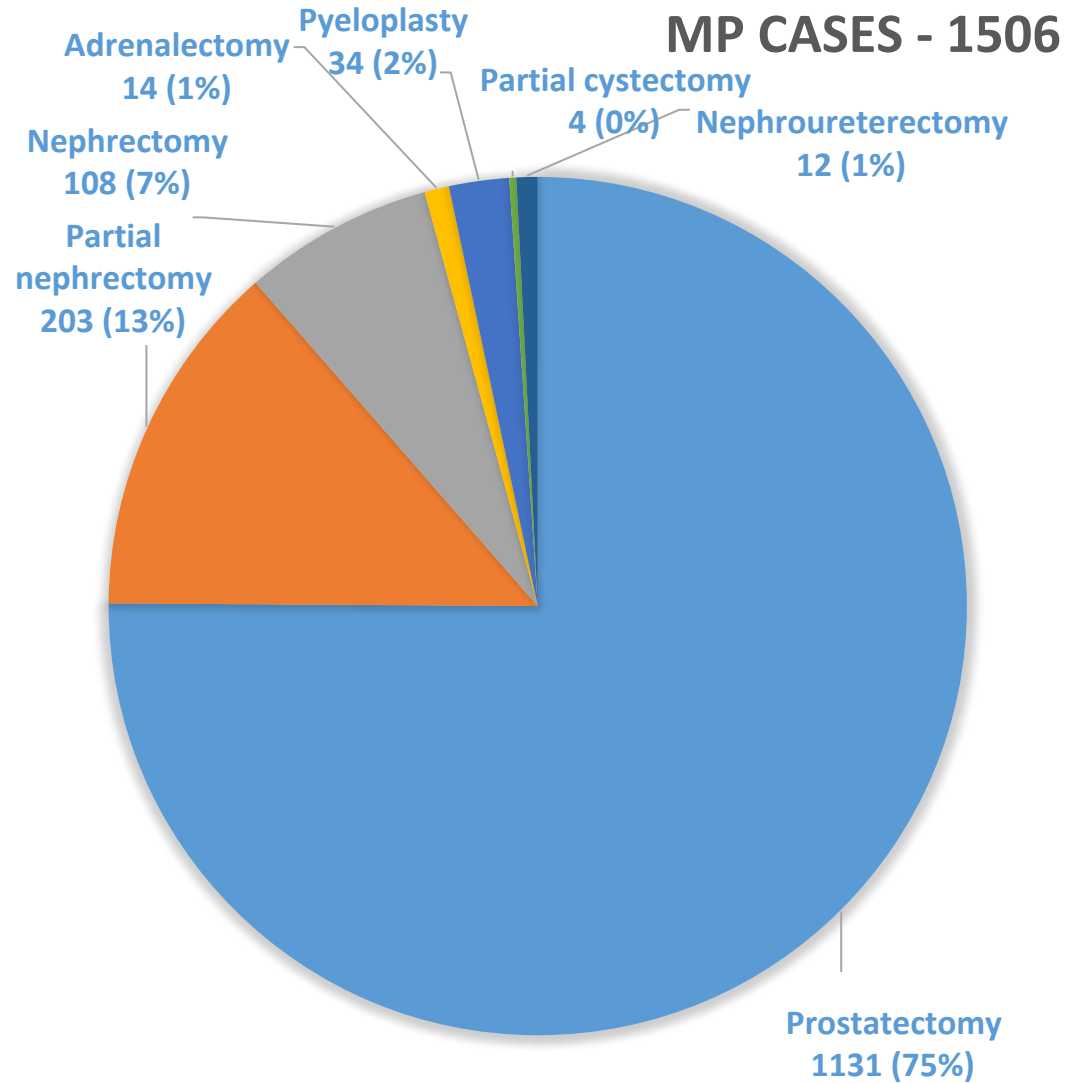


Selection Criteria for SP Cases

- First 10-15 RALP procedures
 - BMI <30kg/m²
 - Prostate volume <50cc
 - Preoperative impotence (non-nerve sparing)
- After first 10-15 cases, selection criteria were relaxed.
- All RALP patients underwent lymphadenectomy
- No BMI criterion was used in upper tract procedures although tumors larger than 10cm were avoided in nephrectomy
- Tumor location rather than size or nephrometry score were considered in selection for SP RPN.



Case Distribution – First 100 SP Cases



Preoperative variables and operative time (OT)

	Multiport	Single port	p value
Age, years (range)	61.8 (20-88)	57.8* (19-82)	0.004
BMI, kg/m ² (range)	30.3 (16.6-59.6)	27.9* (16.8-48.6)	0.0005
EBL, cc (range)	110.0 (0-850)	61.0* (10-250)	<0.0001
OT min (range)	149.5 (35-301)	154.0 (73-248)	0.167
Pain score	4.5 (0-10)	3.7* (0-8)	0.0017

BMI = body mass index; EBL = estimated blood loss; OT = operative time

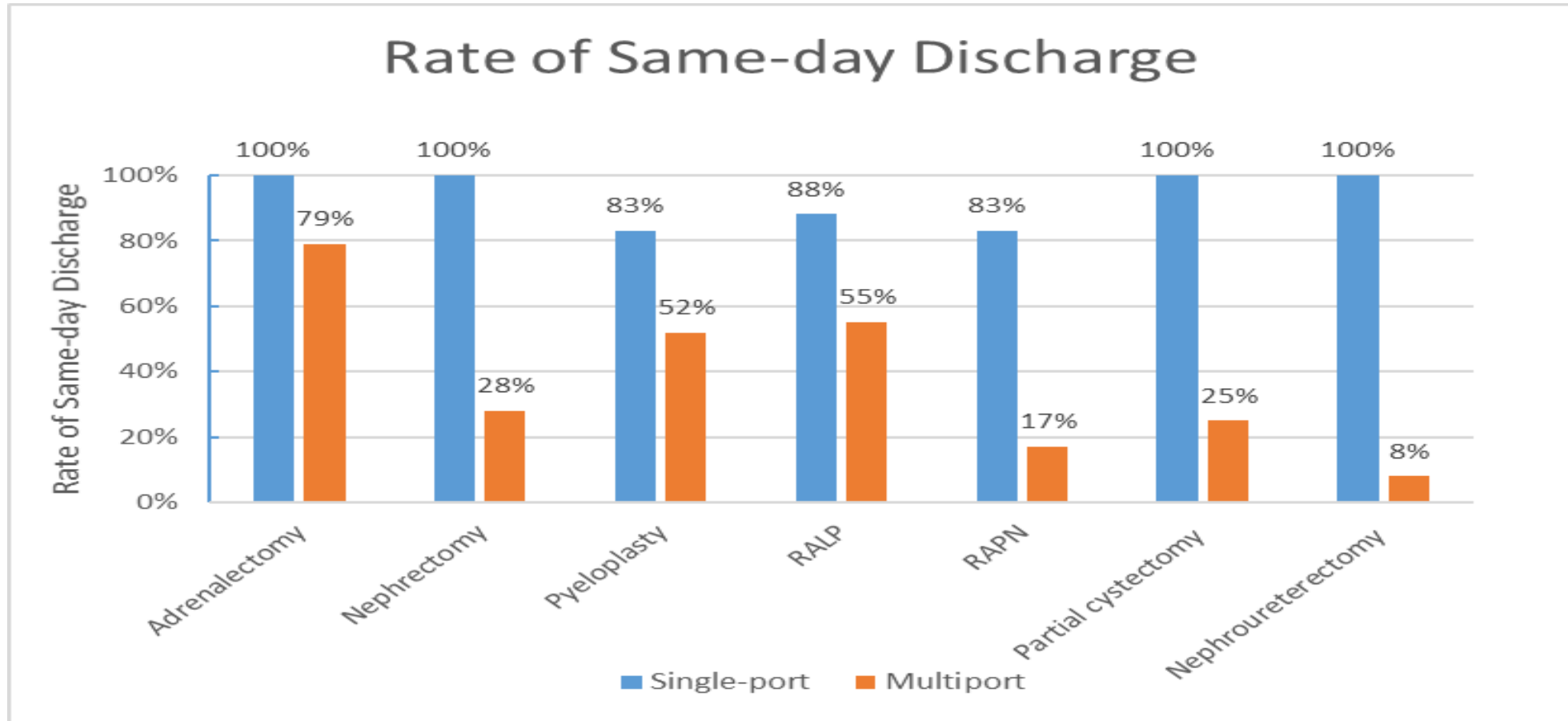
* = p < 0.05

Procedure	OT, SP (min)	OT, MP (min)	p value
Prostatectomy	170.0	155.5	<0.001
Partial nephrectomy	162.8	139.1	0.005
Pyeloplasty	99.8	96.0	0.68
Nephrectomy, Nephroureterectomy, partial cystectomy, and adrenalectomy*	106.4	112.6	0.628

- The mean of pain scores averaged over the first 6 hours postoperatively were lower in SP patients than in MP patients (4.5 versus 3.7, p<0.05).

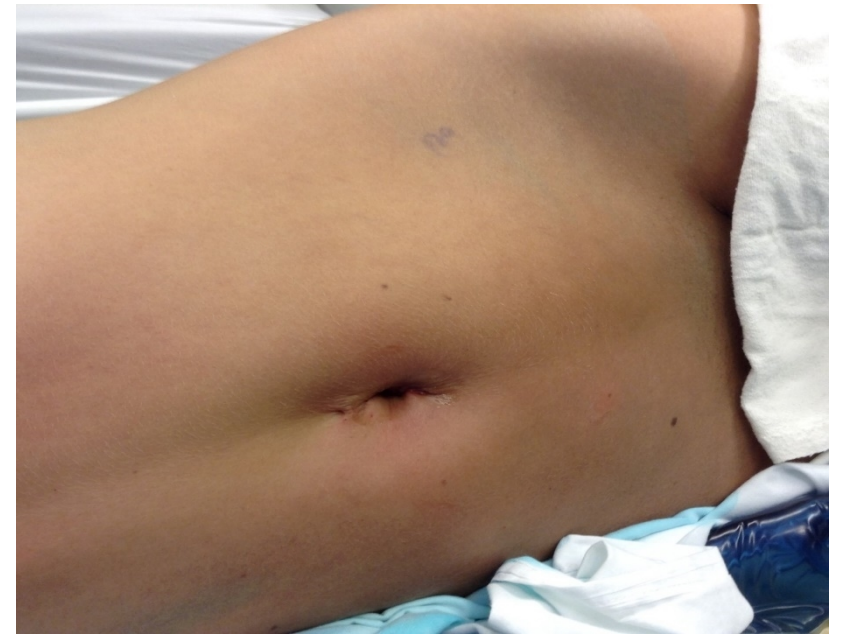
Same Day Discharge (SDD)

- Rate of SDD in SP procedures was higher compared to our historical SDD for MP robotic surgeries despite uniformly offering SDD to all patients (88% vs 51%, $p < 0.0001$)



Complications

- Overall, 68/1606 (4.2%) patients experienced complications within 90 days postoperatively
 - SP Complications 2/100 (2%)
 - Both Clavien-Dindo I and managed as outpatients
 - One urinary retention and one catheter occlusion
 - MP Complications 66/1506 (4.4%)
 - 19/1,506 (1.3 %) Clavien-Dindo grade III - IV complications
 - DVT, intrabdominal abscess, pelvic hematoma, ileus, pyelonephritis, infected lymphoceles, and diverticulitis
- Epigastric artery injury
 - MP – 3 cases
 - SP – 0 cases



Conclusions

- SDD can be safely offered for the majority of SP urologic surgery without increasing complications or readmissions
- Our initial experience with SP robotic surgery suggests earlier discharge is possible with the large majority (88%) so far opting to go home the same day as surgery
- Further experience will be necessary to allow analysis of pain scores and analgesic usage as potential causative factors
- Other potential benefits
 - Open up hospital beds for other conditions
 - Reduce cost of postoperative care
- Larger and multi-institutional studies are needed, but the significant impact on SDD that we observed suggests that SP surgery may have real benefits warranting further investigation.

- Available by email for questions at christopher.murphy2@ohiohealth.com