The safety and efficacy of ambulatory urologic surgery

A paradigm shift towards optimizing resource use in outpatient settings

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ABSTRACT

INTRODUCTION: Amid substantial surgical wait lists, novel methods are needed to improve the delivery of surgical care in Canada. One strategy involves shifting select surgeries from hospitals into community ambulatory centers, which expedite procedures and allow hospitals to prioritize critical and complex patients. We sought to evaluate surgical outcomes at a novel, Canadian urologic clinic and surgical center.

METHODS: A retrospective study was conducted at a novel, accredited surgical facility and outpatient ambulatory clinic from August 2022 to August 2023. Procedures ranged from scrotal and transurethral surgeries to inflatable penile prosthesis insertion. Traditional outpatient procedures, including vasectomy and cystoscopy, were excluded. All patients were discharged the same day and seen 4–6 weeks post-procedure. Variables of interest included surgery type, anesthesia administered, additional clinic appointments, unplanned family physician appointments, visits to the emergency department (ED), and hospital admissions.

RESULTS: In a 12-month period, 519 surgeries were performed. The mean patient age was 49.6±17.3 years, with most classified as American Society of Anesthesiologists (ASA) 1–2 (88.8%). Most (95.8%, n=497) patients did not require medical care outside the clinic before their scheduled followup; 2.5% (n=13) visited the ED presenting for wound concerns, postoperative pain, query infection, or catheter-related concerns. Only 1.7% (n=9) required an unscheduled appointment with their family physician, with concerns being inadequate postoperative pain management (n=4) or suspected infection (n=4). No patient required hospital admission.

CONCLUSIONS: Many urologic surgeries classically performed in hospital operating rooms can be safely performed in a non-hospital, outpatient surgical facility with preservation of good outcomes. This strategy can potentially improve the efficiency of urologic healthcare delivery in select patients.

INTRODUCTION

In response to the mounting challenges posed by lengthy surgical wait lists, there is a critical need for innovative strategies to optimize access and enhance the delivery of surgical care in Canada. The growing demand for timely interventions has catalyzed a paradigm shift in the healthcare landscape, compelling a re-evaluation of the traditional approach to urologic surgeries. One novel strategy involves the relocation of select urologic surgical procedures from hospital settings to community ambulatory surgical centers (ASCs). This transformative approach not only facilitates expeditious surgical intervention but also alleviates the strain on hospital resources, permitting a more concentrated focus on patients with intricate and critical medical needs in the hospital system.

In recent decades, ASCs have experienced a significant surge in popularity as an alternative to traditional hospital-based surgery and are notably prominent in the U.S., where a majority of specific procedures occur in ASCs.[1-3] In contrast, in Canada, these procedures predominantly take place in large tertiary-care hospitals.[4]

The appeal of ASCs lies in its various benefits, with cost savings being particularly pertinent to our healthcare system. Undeniable data indicates substantial economic benefits, reporting up to 50% cost savings for urologic surgery in ASCs.[5,6] Recent Saskatchewan Health data shows a 26% cost savings across various surgeries in ACSs, with the added benefit of a 75% reduction in

KEY MESSAGES

- This initial study with 519 urologic outpatient surgeries demonstrated the safety and efficacy of performing select urologic procedures in an ambulatory setting.
- The absence of anesthesia-related complications, perioperative complications, or hospital admissions underscores the success of the outpatient approach in ensuring patient safety.
- Most patients did not seek medical care outside the clinic before their scheduled followup, indicating the effectiveness of postoperative care in the outpatient setting without placing an additional burden on the existing infrastructure.

patients waiting over three months for intervention.[7] Existing literature underscores that urologic ASCs do not strain healthcare infrastructure, demonstrating comparable complication rates to traditional hospital settings. Importantly, the introduction of ASCs has not led to increased hospitalization or mortality rates.[8] A comprehensive audit of Canada's largest day surgery center corroborated these findings, revealing minimal unplanned patient transfers and hospital admissions, emphasizing that ASCs do not contribute to an elevated burden on the existing healthcare infrastructure.[9]

Despite being a novel and appealing approach, a disparity exists in the literature concerning ASCs in Canada and their associated real-world outcomes. For example, classic endpoints include hospital admission rates, but in the real world, unplanned visits to primary care physicians or emergency departments (ED) (without admission) are often under-reported and yet still require the use of healthcare resources. In attempting to address this gap, our study aimed to explore the safety and efficacy of ambulatory urologic surgery within a newly established outpatient surgical center.

METHODS

A retrospective cohort study was conducted to evaluate peri- and postoperative outcomes at a novel, outpatient urologic surgical center — Men's Health Clinic Manitoba. This is an accredited surgical facility and outpatient ambulatory clinic for andrological, general urologic, and urologic oncology conditions. Approval for this study was obtained from the University of Manitoba's Health and Research Ethics Board (HS26339).

Between August 2022 and August 2023, all patients who underwent urologic surgery at the Men's Health Clinic Manitoba had their charts reviewed retrospectively to assess the following outcomes: patient age, body mass index (BMI), American Society of Anesthesiologists (ASA) classification, surgery type, anesthesia provider and anesthesia used, additional appointments required with a family medicine provider related to the procedure, ED visits related to the procedure, and instances of hospital admission to determine the burden placed on the existing healthcare infrastructure. Collected data was exported into a Microsoft Excel file (Microsoft Office, Microsoft Corporation, Redmond, WA, U.S.), and basic descriptive analysis was performed.

RESULTS

In a 12-month period between August 2022 and August 2023, over 2000 procedures were performed. After excluding common office-based procedures, such as vasectomy and cystoscopy, a total of 519 urologic surgeries met the study criteria and were included in the analysis. The mean patient age ± standard deviation was 49.6±17.3 years, and the mean BMI was 28.6±5.5 kg/m^2. Most patients were classified as ASA class 2 (54.63%, n=283), followed by ASA class 1 (34.15%, n=177), and ASA class 3 (11.22%, n=58).

Table 1 provides an overview of the surgeries performed, which varied from scrotal and transurethral surgeries to inflatable penile prosthesis insertion with varying anesthetic approaches, including spinal anesthesia, intravenous sedation (administered by nursing staff or by anesthesiology), and local anesthesia only. All procedures were completed successfully, without perioperative complications, anesthesia-related complications, procedural abortion due to intolerability, or transfer to hospital.

Only 1.73% (9/519) of patients had an unplanned family physician visit related to the procedure, with four patients presenting for pain control, four patients presenting for query infection, and one for constipation; 2.5% (13/519) of patients visited the ED prior to their scheduled followup appointment, with three patients presenting for a wound assessment, query infection, and inadequate pain control each, and two patients presenting for catheter issues and swelling each. No patient who underwent outpatient surgery required hospital admission. The remaining 95.8% (n=497) of patients did not seek medical care outside of the clinic

Table 1. Procedures conducted in one-year period at the Men's Health Clinic Manitoba by anesthesia used and frequency

Anesthetic modality	Surgery	Patients (n, %)
Local anesthesia	Scrotal surgery Hydrocelectomy Epididymectomy Spermatocelectomy Testicular biopsy	153 (29.5%) 57 (11.0%) 42 (8.1%) 36 (6.9%) 18 (3.5%)
	Circumcision	88 (17.0%)
	Lesion excision (scrotal or penile)	27 (5.2%)
	Dorsal slit/frenulectomy	22 (4.2%)
IV sedation (nursing administered)	Penile plication	23 (4.4%)
	Incision and grafting	2 (0.4%)
IV sedation (anesthesiologist administered)	Microscopic varicocelectomy	67 (12.9%)
	Microscopic denervation of spermatic cord	24 (4.6%)
	Penile plication	21 (4.0%)
	Radical inguinal orchiectomy	19 (3.7%)
	Microscopic vasovasostomy/ vasoepididymostomy	13 (2.5%)
	Orchiopexy	9 (1.7%)
Spinal anesthesia	Greenlight laser photovaporization of prostate	26 (5.0%)
	Inflatable penile prosthesis	25 (4.8%)
	Total	519

prior to their scheduled 4–6-week postoperative followup appointment, and 19.5% of patients (n=101) required an additional clinic visit prior to their scheduled followup.

DISCUSSION

Canada's already limited operating room resources have been further strained with the recent COVID-19 pandemic, resulting in a significant surgical backlog. ASCs have seen a dramatic increase in recent decades and are one potential solution to redistribute and alleviate the burden on an already overworked Canadian healthcare system. Men's Health Clinic Manitoba is a novel clinic, created by physicians, and is an ASC specializing in urology with a high-volume surgical output since its inception. Our study presents our 12-month initial experience at a highly specialized urologic ambulatory surgical center to assess its safety and efficacy, as well as its effect on the public healthcare system.

Over 2000 procedures were completed at the Men's Health Clinic in the initial 12-month period. After excluding procedures completed in the outpatient setting as the current standard of care, including cystoscopy and vasectomies, 519 urologic surgeries were analyzed. A wide range of surgeries were completed successfully from multiple subspecialties, including andrology, functional urology, benign prostatic hyperplasia, and oncology. Importantly, the procedures performed were those that would classically be performed in a hospital setting.

Notably, no anesthetic-related complications, nor any urgent transfers to a tertiary care hospital occurred. Similarly, low rates of transfer were seen at Canada's largest ASC in British Columbia, with a reported rate of 1.19%.[9] Although multiple specialties operate out of that center, urologic surgery had an unplanned transfer rate of 1.0% while performing cases of similar complexity to our institution. At the Men's Health Clinic, more penoscrotal cases are performed solely with local anesthetic, including cases that are traditionally performed in the operating room (i.e., hydrocelectomy, epididymectomy, etc.). Our group has also shown that this approach can be used with excellent tolerability and safety, with postoperative outcomes that compare favorably to the published literature.[10]

Long surgical wait time has been a chronic problem that has plagued the Canadian healthcare system for decades prior to the pandemic. With the COVID-19 pandemic, surgery for benign diseases was disproportionately affected, with a greater emphasis placed on maintaining the delivery of urgent/oncologic surgical care.[11-13] The implementation of ASCs provides an opportunity to transition cases suitable for the ambulatory setting while freeing up hospital resources for more complex and invasive cases.

In recent years, the U.S. has seen a significant rise in urology ASCs while preserving the quality of care for patients.[6] Additionally, this strategy can be associated with significant cost savings, with one study citing a $800–1800 reduction per urologic procedure.[14] It remains to be seen how these potential cost savings will translate in the Canadian landscape for urologic surgery, although Saskatchewan Health has reported a possible cost savings of 26% for procedures performed in an ASC.[7] For patients, there is the potential benefit of avoiding nosocomial infections associated with the hospital and the ability to recover in the comfort of their own home, which has been demonstrated to be preferred by patients.[15]

Despite the obvious advantages of a urologic ASC, care must be taken to not only preserve the quality of patient care but to ensure that additional load is not being placed on the healthcare system. In our study,

performing surgery in an outpatient ambulatory setting did not significantly contribute to the number of unscheduled family physician or ED visits, given the ability to manage postoperative concerns in our clinic setting. We intentionally included unscheduled family physician visits in our outcome measurements to offer a transparent view of the implications of performing surgery in a non-hospital setting. In fact, our rate of patients presenting to the ED for postoperative concerns was better than the published rates of 5–6% for return to hospital following surgery at an ambulatory center.[16-18] Thirteen patients did require presentation to the ED for postoperative concerns; however, considering that an average of 5000 patients are seen in local EDs each week, we feel this represents a very small and insignificant total.[19]

Importantly, no patient required hospital admission, which is ultimately the crux of our healthcare system with limited hospital beds. Most of the research evaluating the effect of urology ASC on the public healthcare system comes from the U.S., where such centers are more prevalent. In the U.S., over a 10-year period, the significant rise in urology ASC and outpatient surgical procedures did not affect hospital admission rates.[8] Although ongoing audits of outcomes are necessary, we believe that implementation of a specialized urology ASC provides a significant net benefit to the Canadian healthcare system.

While our hospital admission rate was quite low, it is important to note that 19.5% of patients undergoing outpatient surgery required a visit to the clinic. The ability to have the urologic clinic facility and surgical center in one place ensures that clinicians are always onsite and are available to address any perioperative concerns. As such, we have the unique ability to provide reassurance or possibly rescue complications before they occur, which further alleviates any burdens on the healthcare system. In ambulatory centers without a clinic space, these short-notice followup appointments may be more difficult to manage.

Limitations

Our study is not without limitations, the first of which would be its single-institution nature. Although prolonged surgical wait time is an issue that affects the Canadian healthcare system as a whole, certain provinces, such as Ontario, which has a higher number of urologists per capita, may be less affected. Therefore, our urology-specialized ASC model may not be as advantageous in such provinces. Additionally, no urgent transfer was required for anesthetic and no urgent surgical complications were seen in our cohort, although it is possible that this may have been due to a high proportion of cases being performed under solely local anesthetic.

Another limitation of our study is that our rate of presentation to the ED was likely ameliorated by the ability of patients to easily schedule semi-urgent followups with our clinic for any issues that arose during their postoperative course, which is a unique advantage of having a combined clinic facility and ASC. Although this would need to be accounted for in a potential cost-benefit analysis, our study still demonstrates that over a one-year period, the presence of our urology ASC did not significantly add to the load of the public healthcare system.

CONCLUSIONS

The Men's Health Clinic Manitoba represents the first ASC specializing in urology/men's health in Canada and has played an integral role in providing quality and timely urologic care to Manitoba. It remains to be seen whether this model can be implemented in other Canadian jurisdictions to the degree it has been in the U.S. or in other specialties. As ASCs in urology gain popularity in Canada, further research is imperative to examine their effect on the traditional public healthcare system, as well as evaluate surgical outcomes and potential cost savings.

COMPETING INTERESTS: Dr. Patel has been a consultant for Boston Scientific. The remaining authors do not report any competing personal or financial interests related to this work.

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