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Welcome to the December edition of the *Journal*. Further details have now been released about the forthcoming International Symposium in Bruges, Belgium, next year. Point your browsers at www.iaascongress2022.com for all of the up to date details including the provisional programme and details about abstract submission.

There is sad news in the submissions this quarter. We are saddened to report the passing of Lindsay Roberts, an Australian stalwart of ambulatory surgery who rose to the level of IAAS President in 2001. Those who remember him report him as a man with a tenacity for development of our speciality, which he implemented so successfully.

An American study evaluates the development and implementation of selection criteria for patients selected for ambulatory surgery. Based upon a dataset of 29,000 patients, the authors developed criteria to screen patients for suitability for ambulatory care with collaborative use by anaesthetic colleagues. The criteria were developed into absolute and relative categories, the latter of which were referred for further consultation. The authors reported that implementation assisted with clinical guidance and appropriate triaging for their patient population.

A paper from Denmark reviews post-operative symptoms after uro-gynecological outpatient surgery, from which four main categories were identified. These were voiding difficulty, post-operative pain, being unprepared for bowel problems and unexpected post-operative fatigue. The authors reflect that concentration on these potential symptoms with the development of tailored information is useful for further quality improvement.

Mulchandani and Begani comment upon their rate of complications over a twenty year period from their Indian Day Care Centre, during which they conducted over 7000 surgical procedures. They reported 51 episodes with no mortality and reflect upon the processes already in place in their Centre that can further reduce the relative risk of day surgery.

Finally, an advertising feature from one of our sponsors for the forthcoming congress reporting the benefits of their trolley systems at a newly commissioned Swiss Hospital.

As the year now comes to a close, I hope you have a peaceful and joyous festive season with thoughts to the new year of further enhancement of ambulatory surgery aims

Dr Mark Skues
Editor-in-Chief

Lindsay Milton Roberts FRCS (England) 1959; FRACS 1964

17 February 1932 – 21 July 2021



The ca. 50 year career journey of Lindsay Roberts was ultimately guided by an intense belief in values that underpin delivery of the best possible service for his patients, and was characterised by a deep commitment to;

a) patients wellbeing,

regardless of their circumstances; b) professionalism of all medical services, incl. nursing; c) service improvements to deliver better experiences and outcomes for esp. patients, and; d) hard work(!).

While these characteristics are non-unique, his passion for them was exceptional, and unwavering.

Lindsay commenced studying medicine at Sydney University in 1950, and like many aspiring surgeons at the time, subsequently travelled to the UK, in 1958, to undertake specialist studies at the Royal College of Surgeons, Edinburgh, before commencing work as a Senior Surgical Registrar at the Royal Northern Hospital in London, in 1959. He returned to Australia in 1961 and worked as a General Surgeon for 25 years from 1962, and then as a specialist Breast Surgeon for 26 years, before retiring in 2008. His transition to, and interest in breast surgery, was driven by a combination of dissatisfaction with some aspects of the politically imposed Medicare system, and an opportunity to work with breast cancer researchers in the development and trialing of mono-clonal antibody therapies.

As Lindsay's career evolved and experience broadened, he developed a passion for and became an advocate for what is now widely known as Day Surgery – as an effective alternative to lengthy and expensive service delivery in acute bed hospitals. His efforts in this initiative were recognised with awards presented by the Australian Association of Surgeons and Royal Australasian College of Surgeons in 1987 and 1991 respectively, and his broader advocacy led to him being elected President of the International Association of Ambulatory Surgery in 2001. He also developed a frustration with some failing reforms in undergraduate medical education from ca. 2000, and argued for; commencement focus on didactic teaching of the basic sciences, and especially anatomy, and; the development of day surgery centers in Teaching Hospitals to ensure student access through this new format of service delivery.

Outside of medicine, Lindsay was dedicated to his family, and for himself had keen interests in ocean racing, and agriculture – both of which sheet back to his early life – and in his later years, volunteering for restoration work on the pilot vessel John Oxley at the Sydney Maritime Museum Sea Heritage Dock in Pyrmont, NSW. After almost 10 years of peaceful retirement, he was impacted by a stroke in September 2017, and despite a gritty tenacity for life, peacefully succumbed to his ailments on 21 July 2021. He is survived by his wife, Helen; their children, Rowan, Cathie, Anna and Lizi, 11 grandchildren, and seven great-grandchildren – the majority of whom have simply known him as 'Doc'. He will be very missed but his legacy lives on in all of them.

Patient Selection Criteria in Ambulatory Surgery – A Single-Center Experience to Reflect on Development, Implementation and Evaluation of its Impact

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Abstract

Aim: To describe ready-to-use patient selection criteria developed and implemented in a busy ambulatory surgical center as a single-center experience.

Methods: Data from May 2015-Jan 2018 constituting 29,000 patients were retrospectively analyzed at the center for metrics including appropriate booking site, day of surgery cancellation rate, and rate of hospital transfer and hospital admission after ambulatory surgical care at the center. Convenience samples for analysis were used when appropriate.

Results: The majority of patients reviewed using the patient selection criteria were booked appropriately at the ASC, however more than 1/3 were more appropriate for booking at the hospital setting according to our patient selection criteria. The center has a low day of surgery cancellation rate and a low rate of hospital transfer and hospital admission after ambulatory surgical care.

Conclusions: The development and implementation of the Patient Selection Criteria for ambulatory surgery has helped our single center provide clinical guidance and appropriate patient triaging while still allowing us to safely meet the clinical demand of this growing outpatient surgical volume.

Keywords: Ambulatory surgery; Patient Selection Criteria for Ambulatory Surgery.

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Introduction

Ambulatory surgery volume has dramatically increased over the past few decades (1). Causes for the shift from inpatient to outpatient care include a desire for increased efficiency, enhanced patient-centered experience, and improved cost control measures. In an effort to ensure safety, some evidence exists that identifies higher-risk patients who should be triaged out of the ambulatory surgery center environment (2-4). While many ambulatory surgical centers have developed their own processes to identify these high-risk patients, there remains no published ready-to-use clinical practice criteria to guide this process. A variety of patient comorbidities are known to increase perioperative morbidity and mortality and/or unanticipated hospital admission after ambulatory surgery, (2-4) such as increased body mass index (BMI) and a diagnosis of obstructive sleep apnea (OSA) (5,6). With respect to OSA, the ASA and the Society of Anesthesia and Sleep Medicine Task Force have formulated guidelines (5,6,8) and the Society for Ambulatory Anesthesia (9) has developed a consensus statement to address selection criteria for the ambulatory surgery setting. Other higher-risk patients (ASA 3-4) may also be suitable for low-risk surgery in the ambulatory setting, but processes to guide their care are not as clearly delineated. With an eye on this existing gap, we describe our experience at a busy ambulatory surgical center developing and implementing ready-to-use perioperative clinical practice criteria. The criteria guide decisions about the appropriateness of individual patients, including higher-risk patients, for ambulatory perioperative care in a facility that lacks overnight care.

The University of Rochester Medical Center is a large academic medical center serving the New

York State Finger Lakes region which includes an Ambulatory Surgery Center (ASC), named

Sawgrass Surgical Center, located two miles from Strong Memorial Hospital, the main university hospital. Sawgrass houses 11 operating rooms, two minor operating rooms and one endoscopy suite where approximately 11,000 anesthetics are performed annually. The anesthesia care-team model is utilized almost exclusively at Sawgrass with rare solo-anesthesiologist delivered care.

Criteria Development for ASC Patient Selection

Sawgrass opened in 2009, and it rapidly became apparent that formal patient selection criteria were necessary. At the time, patients with significant comorbidities were booked into the center after a basic screen without filtration of higher-risk patients (eg patients who are super obese, have severe end organ failure, or have severe OSA patients noncompliant with CPAP). Prior to criteria development, trained preoperative clinic Registered Nurses (RNs) called all Sawgrass patients three days before the scheduled surgery and used a scripted survey to screen for issues that might affect day of surgery care. However, there was not a uniform or systematic method for decision making after the screen to determine candidacy for ambulatory surgery.

A review of the literature in 2009 showed remarkably little published evidence about the establishment or use of patient selection criteria for ambulatory surgery centers. Evidence pertaining to risk factors for ambulatory surgery has grown over the last ten years; though, in 2009, ambulatory surgery center leadership at Sawgrass used the available literature, which is in part cited below (4,8,10,11). Thus, the evidence available at the time of criteria development was extrapolated primarily from in-hospital settings. Criteria

development followed an iterative approach with limited outpatient data to mine. Once preliminary criteria were developed, they were shared with surgical and nursing leadership, and with the anesthesiology-run preoperative clinic as the Center for Perioperative Medicine (CPM) for further review and critique. The criteria were finalized in their original form in February 2010. Since the first version, they have been updated at first quarterly, and then biannually. The latest version of the criteria is illustrated in Figure 1. In 2016, Pediatric Patient Selection Criteria were also developed using a similar process (Figure 2).

The criteria divide patient risk factors into Absolute Contraindications, which are contraindications deemed severe enough to preclude proceeding with surgery in the ambulatory setting, or Consultative Considerations, which are comorbidities that warrant further evaluation and/or optimization. Comorbidities identified as Absolute Contraindications are a “hard stop” for proceeding with surgery in the ambulatory setting. Patients with comorbidities that fall under Consultative consideration are then reviewed by the preoperative clinic anesthesiology team, and may proceed for ambulatory surgery if deemed appropriate after the consultation.

After criteria development, RNs continued to phone-screen patients with a new script developed by the preoperative clinic Physician Director with the criteria in mind. When patients screened positive based on the new patient selection criteria, screening RNs would contact an Anesthesiology physician (a resident or attending) or Nurse Practitioner for additional consultation. This consultation generated a more thorough patient chart review that could elicit an in-person patient assessment. In 2016, we began performing telemedicine video evaluations in order to expand our scope given some patients’ limited access to our physical facilities (e.g. transportation issues, large distances from the center). An attending ambulatory anesthesiologist who is intimately knowledgeable about the criteria and able to adjudicate on ultimate patient triage staffs every consult, chart review, and in-person patient assessment.

Methods to Evaluate the Criteria

Utilizing a database from the electronic medical records between May 2015 (when EMR was first instituted) until January 2018, which constituted approximately 29,000 patients, we assessed the following quality indicators in order to evaluate the criteria and its implementation at our single center: appropriate booking site, day-of-surgery cancellation rate, and postoperative transfer to hospital or admission to hospital.

Appropriate Booking Site

In order to evaluate whether patients were appropriately booked to the ambulatory surgical center based on the criteria, decisions at CPM regarding patient selection for Sawgrass were reviewed. Anesthesiology residents and nurse practitioners documented decision-making about patient selection from March-October 2017 in the Research Electronic Data Capture (REDCap) tool¹² hosted at the University of Rochester, constituting 131 charts. The documentation included why the patient was not accepted for ambulatory surgery; whether the reason was due to an absolute contraindication or consultative criteria, and included patient specifics as to the reason for exclusion (e.g. severe OS noncompliant with CPAP and BMI >45). The Physician Director at CPM also reviewed this same convenience sample of 131 charts in REDCap during the same timeframe to validate the process and confirm the documentation. Documentation from these two sources revealed the reasons higher-risk patients were triaged to have their procedure in the hospital setting and away from the ambulatory surgery center.

Day of Surgery Cancellation Rate

Day of surgery cancellations are tracked at Sawgrass via the EMR

since its availability in 2015.

Rate of Hospital Transfer and Admission to the Hospital after ASC discharge

Quality leaders at Sawgrass have internally tracked patient transfers from the ASC to the main hospital since 2015, as a metric to monitor trends.

In order to capture hospital readmission to the hospital after ASC discharge, a convenience sample of 8997 records (January-Nov 2017) in the EMR were reviewed.

Results/Metrics to Evaluate Progress

Appropriate Booking Site

From May 2015 until January 2018, Sawgrass performed about 29,000 surgeries utilizing anesthesia care. 131 out of 6,845 patients (1.9%) scheduled for surgery at Sawgrass were not approved for ambulatory surgical care during a convenience sample of March-October 2017. The majority (98%) were approved for surgery at Sawgrass after surgical booking. Details regarding what portion of the criteria excluded the 131 patients from ambulatory surgical care are included in the following table.

The percentage of patients who had medical comorbidities upon surgical booking, prompting CPM decision for non-ASC care is outlined (Table 1).

Day of Surgery Cancellation Rate and Day of Surgery Transfer to Hospital

The day of surgery cancellation rate was below 1.02% for the time period selected (May 2015-December 2017). The day of surgery transfer rate to the hospital at Sawgrass was between 0.18% and 0.22% for the same time period (Table 2).

Readmission to the Hospital after ASC discharge

Review of the convenience sample (Jan-Nov 2017) revealed a 0.8% (n= 71) rate of hospital readmission within four days of ASC discharge.

Discussion

At our single center, we developed Patient Selection Criteria that we implemented one year after the opening of Sawgrass Surgical Center. To our knowledge, this is the first report on the development and implementation of ready-to-use criteria for this setting.

Sawgrass has a low day of surgery cancellation rate, a low transfer rate to the hospital or admission to the hospital after ASC discharge despite a high volume of patients (more than 11,000 anesthetics annually), and a wide variety of patients with multiple comorbidities (ASA class I-IV). More than one-third of patients booked at Sawgrass have comorbidities that are categorized as an absolute contraindication based on the criteria, and precluded them from having surgery at Sawgrass.

Day of surgery cancellation rate in same day surgical suites or ASC’s have been reported in the literature to be anywhere from 5.1%-13.6% reflecting a significantly higher rate than Sawgrass (13,14). Though we are unable to associate the implementation of criteria to this downward trend, a robust preoperative screening and evaluation process has been described in the literature as having a similar impact on day of surgery cancellations (13,14). The post-surgical transfer rate to an inpatient facility from Sawgrass compares favorably with published rates. The average national ambulatory surgery center

Figure 1 Adult Patient Selection Criteria for URMedicine Ambulatory Surgery.

ABSOLUTE Contraindication	CONSULTATIVE Consideration (Give chart to CPM NP)
Cardiovascular	
Unstable Angina	Stable Angina / Ischemia on stress test
NYSHA CHF Class III or IV	History of CHF
AICD	Pacemaker
MI within 3 months; coronary intervention (PTCA) within 6 weeks	Stent within 12 months
Ejection Fraction <30%	History of CAD with poor functional capacity (<4 METS) or symptoms
Severe or Critical Aortic Stenosis	History of congenital heart disease of any kind
Patients with pending cardiac intervention	
Uncontrolled / Refractory Hypertension (>200/110 or poorly treated)	
Cyanotic, complex, or palliated congenital heart disease	
Neuro	
Seizures refractory to standard medical therapy	TIA/Stroke within last 12 months AND/OR with persistent deficit
Pulmonary	
Home Oxygen dependent (excluding sleep use)	Home oxygen use for sleep
Organ Failure	
ESRD on Hemo- or Peritoneal- Dialysis	CKD Stage III or IV
ESLD listed for Liver Transplant	Cirrhosis with decreased liver function or ascites
Severe uncontrolled DM (HbA1C >12)	Bleeding / Coagulation disorders / on anticoagulation (besides aspirin)
Morbid Obesity / Airway Concerns	
BMI >50	BMI >40 (Exception--if they had prior surgery at SG within the last year)
BMI >45 with untreated sleep apnea or newly diagnosed sleep apnea (either by: STOP-BANG criteria or a new diagnosis with sleep study and no therapy yet initiated)	OSA patients
BMI >45 for ANY patient requiring shoulder surgery	History of cervical spine issues, T-spine or L-spine precautions
BMI >40 with known / suspected difficult airway / ventilation	Craniofacial abnormalities
BMI >35 and moderate OSA AND surgery precluding CPAP in postop period	Moderate OSA and BMI <35 AND surgery precluding CPAP in postop
Severe OSA AND surgery precluding CPAP in postoperative period (BMI independent)	History of difficult airway
C-Spine precautions (neck collar or halo)	
Miscellaneous Anesthesia Concerns	
Pregnancy	Personal and/or Family History of Malignant Hyperthermia
Active Total Parenteral Nutrition (TPN) usage	Active cocaine or IV drug use
	Severe cognitive dysfunction / behavioral issues
	Down's Syndrome
	Difficult IV insertion, especially if Hx of central line insertion
	History of allergy to multiple opioids; opioid tolerance

FIGURE LEGEND

Figure 1: Adult Patient Selection Criteria for URMedicine Ambulatory Surgery

NYHA CHF: New York Heart Association Congestive Heart Failure; AICD: Automated

Implantable Cardioverter Defibrillator; MI/PTCA: Myocardial Infarction/ Percutaneous Transluminal Coronary Angioplasty; ESRD: End Stage Renal Disease; ESLD: End Stage Liver Disease; DM: Diabetes Mellitus; BMI: Body Mass Index; OSA: Obstructive Sleep Apnea; CAD: Coronary Artery Disease; METS: Metabolic equivalent; CKD: Chronic Kidney Disease

Supplemental Figure 1: Pediatric Patient Selection Criteria for URMedicine Ambulatory Surgery

ESRD: End Stage Renal Disease; ESLD: End Stage Liver Disease; DM: Diabetes Mellitus; BMI: Body Mass Index; ETCO2: End-tidal CO2; OSA: Obstructive Sleep Apnea; CHF:

Congestive Heart Failure; URI: Upper Respiratory Infection; RSV: Respiratory Syncytial Virus

Figure 2 Pediatric Patient Selection Criteria for URMedicine Ambulatory Surgery.

ABSOLUTE Contraindication	CONSULTATIVE Consideration (Give chart to CPM NP)
Cardiac	
Cyanotic, complex, or palliated congenital heart disease	History of CHF
Patients with pending cardiac intervention	History of congenital heart disease of any kind
	Patients with history of cardiac intervention
	Pacemaker
Neuro/Neuromuscular	
Family or personal history of Malignant Hyperthermia (<8 years old)	Family or personal history of Malignant Hyperthermia (age >8 years)
Seizures refractory to standard medical therapy	Seizures
	Severe cognitive dysfunction / behavioral issues
	Severe Anxiety
Pulmonary	
Home Oxygen use	Recent URI
	Recent exacerbation of asthma or bronchopulmonary dysplasia
	Recent ED visit/Recent sick visit to MD
	RSV within the past 6 weeks
Organ Failure	
ESRD	Bleeding / Coagulation disorders / on anticoagulation
ESLD	
Severe uncontrolled DM	
Prematurity and Age Considerations	
Ex-premie (born at <37 weeks) and <60 weeks post-conceptual age at time of surgery	Prematurity
Full term infants (>37 weeks) <4 weeks of age at time of surgery	Dental patients <24 months of age
Morbid Obesity / Airway Concerns	
Age <3 for Tonsillectomy	Age infant - 2 y: Weight for length >95 th %tile
Age <2 for Adenoidectomy	Age 2-18: BMI >95 th %tile
BMI >99 th percentile for any procedure on airway in children ≤ 10 years	Down's Syndrome
BMI > 95 th percentile for tonsillectomy in children without a documented sleep study	Confirmed or suspected OSA
Oxygen Nadir <80% on sleep study and/ or ETCO2 >50mmHg on sleep study	History of difficult airway
OSA in a child <10 years with AHI >10	Craniofacial abnormalities
OSA in a child age 11-18 years with AHI >24	BMI >99 th percentile for dental procedures in children ≤ 10 years
C-Spine precautions (neck collar or halo)	
Miscellaneous/ Teenager	
Pregnancy	Active cocaine, heroin or IV drug use
	Difficult IV insertion
	History of allergy to multiple opioids; opioid tolerance

Table 1 Chi-square test results: Association between gender of patients and their discharge outcome.

Characteristic	N=131 (100%)
Absolute contraindication	51 (39%)
Cardiovascular	3 (6%)
NYSHA CHF Class III or IV	1 (33%)
Severe or critical aortic stenosis	1 (33%)
Pending Cardiac intervention	1 (33%)
Neurological	1 (2%)
Refractory Seizures	1 (100%)
Pulmonary	0 (0%)
Organ failure	9 (18%)
Severe uncontrolled diabetes	8 (89%)
ESRD on hemo- or peritoneal- dialysis	1 (11%)
Morbid Obesity/Airway concerns	37 (73%)
BMI>99th percentile airway procedure/dental patients <= 10 years old	15 (41%)
BMI > 95th percentile for tonsillectomy in children without a sleep study	7 (19%)
OSA in a child < 10 years with AHI > 10	6 (16%)
BMI> 50	
BMI>45 with shoulder surgery	3 (8%)
Miscellaneous Anesthesia Concern	3 (8%)
Pregnancy	1 (3%)
Automatic Anesthesia Consult (Consultative Consideration)	80 (61%)
Cardiovascular	1 (1%)
Stable angina / Ischemia on stress test	1 (100%)
Neurological	0 (0%)
Pulmonary	3 (4%)
Recent exacerbation of asthma or COPD	3 (4%)
Organ failure	12 (15%)
Bleeding anticoagulation disorder/on anticoagulation meds	9 (75%)
CKD stage III or IV	3 (25%)
Morbid Obesity/Airway concerns	16 (20%)
OSA patients	12 (75%)
Craniofacial abnormalities	2 (13%)
History of difficult airway	2 (13%)
Miscellaneous Anesthesia Concern	48 (60%)
Acute illness	24 (50%)
Miscellaneous cardiac concerns (not specified in the criteria)	6 (13%)
Abnormal thyroid levels	5 (10%)
Inability to reach patient for consult/patient cancelled surgery	4 (8%)
Complex medical comorbidities	3 (6%)
Other	6 (13%)

Table 2 Percentage Day of Surgery Cancellation and Transfer to Hospital (2015-2017).

Year	Day of Surgery Cancellation %	Day of Surgery Transfer to Hospital %
2015 (8 mo)	0.51%	0.18%
2016	1.01%	0.12%
2017	1.02%	0.22%

(ASC) transfer rate is 0.42% while the average state ASC transfer rate for New York is 0.34% (15). The transfer rate from Sawgrass to an inpatient facility averaged from 2015-2017 was 0.17%. Thus, the Sawgrass transfer rate is approximately 52% lower than nationally and 65% lower than the state transfer rates. Hospital readmission rates within four days after Sawgrass discharge may indicate that discharge after ambulatory surgery was premature. A convenience sample review revealed a 0.8% (n= 71) rate of hospital readmission. This readmission rate to the hospital within four days after discharge from our ambulatory surgery center suggests patients did not have acute care issues requiring hospital care after their transition to home.

This review uncovered a significant amount of inappropriate booking (39%) of patients at Sawgrass, ie patients who had comorbidities that fell in the Absolute Contraindication section of the criteria and ideally would have preferentially been booked to the hospital and not Sawgrass. These patients were triaged to the hospital setting by CPM after review; the majority of these patients (73%) were morbidly or super obese, had potential difficult airways, or showed signs of severe end-organ failure. This analysis prompted an interdisciplinary quality improvement process that involved education of surgical office staff, including surgeons and surgical Nurse Practitioners, regarding appropriate use of the criteria so that patients who have comorbidities that fall under Absolute Contraindication for surgery at the ambulatory center would be automatically scheduled for surgery in a hospital setting.

We also identified that two-thirds of the patients triaged away from the ambulatory center to the hospital for surgery had comorbidities categorized in the Consultative Consideration section of the criteria. Of these cases, there was no preponderance of conditions; though, 25% of the cases were triaged to the hospital for concerns about organ failure (CKD, hematologic diseases) and 20% of the cases were triaged to the hospital due to concerns about morbid obesity/airway concerns.

Surgical teams appreciate consistency in the decision-making related to their patient's candidacy for ambulatory surgery at Sawgrass. In this system structured by standardized Patient Selection Criteria, decisions are made prior to the day of surgery with a high degree of certainty that the patient will not be cancelled by an anesthesiologist on the day of surgery. This reflects a level of trust in the criteria to enable patient care decisions and allows for efficient and streamlined workflows. As the volume of outpatient surgery continues to grow and there is increased complexity of surgical procedures and patient comorbidities scheduled for ambulatory surgery, ready-to-use criteria that have been applicable to a high volume of patients at a busy surgical center such as ours may serve as a useful tool.

Proper patient selection and advances in anesthetic and perioperative care over the past three decades have promoted the success and safety of ambulatory surgical procedures (2-4). In 2013, Mathis et al described the lack of prospectively collected data regarding optimal patient selection for ASC procedures and identified a list of specific patient comorbidities that increase morbidity and mortality after ambulatory surgery (2). More recently, Teja et al published

an instrument for prediction of unplanned 30-day admission after ambulatory surgical care which may be useful in identifying high risk patients scheduled for ambulatory surgery (16). To date there is no published patient selection criteria that provides ready-to-use guidance to a clinician making decisions about patient candidacy for ambulatory surgery.

There are limitations to the widespread adoption of these criteria to other ambulatory surgery centers. These criteria may not be applicable for ambulatory patients at other centers as they are not necessarily generalizable to other populations. Orthopedic surgery constitutes more than 60% of the surgical population at Sawgrass, allowing the avoidance of deeper anesthetics by implementing regional anesthesia techniques for anesthesia care for a subset of patients considered high-risk, which may not be an option for other facilities. Future studies evaluating metrics before and after implementation of developed patient selection criteria would be ideal. By disseminating these criteria, we also hope that similar practices to ours consider implementation and report on their utility and their outcomes. In this way, ambulatory anesthesia care might move towards adopting a more standard practice.

The Patient Selection Criteria have been instrumental in allowing the Sawgrass perioperative team to care for a large volume of a wide variety of patients in a safe, appropriate and efficient manner. As the volume of outpatient surgery continues to grow with an increasingly complex patient population, implementing the Patient Selection Criteria for ambulatory surgery has helped our single center provide clinical guidance and appropriate patient triaging while still allowing us to safely meet the clinical demand of this growing outpatient surgical volume.

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Postoperative Symptoms Experienced by Patients after Gynecologic and Urogynecologic Outpatient Surgery – A Qualitative Study

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Abstract

Outpatient surgery implies a short period of hospital surveillance before discharge. This study explored post-discharge symptoms postoperative day 1 after gynecologic and urogynecologic outpatient surgery. In a descriptive qualitative design, thirty patients were individually interviewed according to a semi-structured interview guide. Using inductive content analysis, four main categories were identified: "Voiding difficulty" challenged patients, particularly after urogynecologic procedures;

"Postoperative pain" was prevalent and inhibited recovery; "Being unprepared for bowel problems" ie bloating, abdominal discomfort and constipation; and finally, "Unexpected fatigue affecting daily activities." Systematic and procedure-specific postoperative follow-up rather than the current "one-size-fits-all" approach appears relevant for ongoing quality development.

Keywords: Gynecological outpatient surgery, Recovery, Postoperative symptoms, Postoperative pain, Postoperative voiding, Postoperative fatigue, Postoperative bloating and constipation.

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Introduction

New anaesthetic and surgical technologies, along with economic and political initiatives continue to enable expansion of the number and complexity of surgical procedures performed in the outpatient setting [1, 2]. Outpatient surgery implies a short period of surveillance at the surgical unit before home discharge. Patients can therefore experience symptoms and concern related to the surgery after discharge from hospital, some of which may impact postoperative recovery and require intervention from health care professionals (HCPs) [1].

Pain, nausea, and headache are well-researched post-discharge symptoms which differ in prevalence and intensity across surgical procedures [3]. Symptoms such as fatigue, sleep disruption and dizziness remain less investigated despite their potential for protracting postoperative recovery [3,4]. Likewise, patients' experience of concern, insecurity, or anxiety post-discharge after outpatient surgery have received sporadic priority [5]. Although not life-threatening, postoperative concern, insecurity and anxiety may physically and mentally inhibit patients, and delay postoperative recovery [6,7]. Additionally, different surgical procedures are likely to generate distinct symptoms and experiences of concern and anxiety. Hence, assessment of post-discharge symptoms and concerns across different procedures is relevant for ensuring patient safety and quality of care [8,9].

Gynecologic outpatient surgical procedures are complex procedures which, in Denmark, are increasingly performed in the outpatient setting [10]. Studies indicate that patients undergoing these procedures experience multiple symptoms post-discharge, including discomfort, fatigue and pain [11]. Post-discharge telephone follow-up provided by the outpatient clinic appears to reduce urogynecology patients' concerns about for example vaginal bleeding, constipation, voiding difficulty and pathology tests while pain and insufficient pain management persist [12].

Currently, our outpatient clinic offers a one size fits all telephone

follow-up to all patients on postoperative day (POD) 1 regardless of the specific surgical procedures performed. This approach may not sufficiently catch patients' experiences of procedure-related symptoms and concerns. As recommended by the IAAS, we therefore embarked on improving the quality of our follow-up for the growing group of patients undergoing gynecologic and urogynecologic surgery (Patient satisfaction surveys (iaas-med.com)). As a first step, we aimed to assess post-discharge symptoms and concerns as perceived by patients' postoperative day (POD) 1 after gynecologic and urogynecologic outpatient surgery.

Materials and Methods

This was a descriptive qualitative study conducted according to the COREQ criteria for reporting qualitative studies [13]. Data were collected using individual telephone interviews. Interviews were conducted POD 1 using a semi-structured interview guide (Table 1) inspired by existing literature on patients' experiences of symptoms after outpatient surgery and incorporating the clinical experience of nurses and physicians in the outpatient clinic [12]. Prior to interviewing, we pilot-tested the interview guide to evaluate relevance and ease of understanding of the interview questions. During interviews, participants were encouraged to freely describe their experiences. The interviewer followed the participants' lead, asked probing questions, and continuously checked her understanding of the participants' statements whilst simultaneously ensuring coverage of the topics in the interview guide [14]. Interviews were digitally recorded and transcribed verbatim.

The study was conducted at a surgical outpatient clinic in the Capital Region of Denmark. The clinic treats 3000 patients annually and covers 5 surgical specialties, gynecology/ urogynecology, gastroenterology, orthopedic, breast and plastic surgery, of which gynecologic and urogynecologic procedures comprise the majority. Current practice prior to discharge from the clinic is to offer all patients a consultation with a nurse to inform about the

Table 1 Semi-structured interview guide.

Theme	Sample questions
Patient background	How old are you? What is your family situation? Are you employed/retired/other? Which surgical procedure did you have?
Post-discharge recovery	Describe how you have been for the past 24 hours?
Post- discharge symptoms	What symptoms/problems – if any – have you experienced?
Postoperative pain	Have you experienced pain since discharge? Can you rate the worst pain you have experienced on a scale from NRS0-10 (0 =no pain - 10 =excruciating pain How would you describe your pain? (intensity, location) If yes to pain, did you take any pain medication? How has the pain affected you?
Postoperative nausea and vomiting	Have you had nausea and vomiting? If yes, how has this affected you?
Postoperative bleeding	Have you experienced vaginal bleeding? If yes, how has this affected you?
Voiding	Have you experienced problems in relation to voiding? If yes, can you describe the problems you have experienced (for example voiding difficulty– need to self- catheterize? – lacking control of your bladder function? – pain? – If you have experienced problem, how have they affected you?
Bowel function	Have you experienced bowel problems? If yes, how has this affected you?
Concerns and anxiety after discharge	Have you felt concerned or anxious after discharge? If yes, can you elaborate? Have you been in contact with the hospital staff due to any concerns/anxiety? If yes, why?
Daily activities after discharge	To what degree have you taken up usual activities? Have you needed support from family, friends or neighbors?

Table 2 Gynecological surgical procedures, anesthesia, local anesthesia, postoperative voiding schedules and recommended pain management.

Surgical procedure	Anesthesia	Local anesthesia	Postopera- tive voiding procedure	Recommended post- operative pain management	Recommended prn pain management
Colporrhaphia anterior, Colporrhaphia posterior Manchester Procedure	GA	U + L I	Voiding trial 1	Paracetamol 1000 mg x 4 Ibuprofen 400 mg x3	
Tension free Vaginal Tape (TVT)	S	U + L 0,25	Voiding trial 1	Paracetamol 1000 mg x 4 Ibuprofen 400 mg x 3	
Urethral Bulking	± S	U + L I	Voiding trial 1		Paracetamol 1000 mg Ibuprofen 400 mg
Botulinum Toxin A injection in the bladder	± S	U	Voiding trial 2		Paracetamol 1000 mg Ibuprofen 400 mg
Laparoscopic adnexal surgery	GA	B	Voiding trial 2	Paracetamol 1000 mg x 4 Ibuprofen 400 mg x 3	Morphine 10 mg
hysteroscopic surgery	GA or S	M	Voiding trial 2	Paracetamol 1000 mg x 4 Ibuprofen 400 mg x 3	

GA: General anesthesia: propofol (10 mg/ml) and ultiva (50 microgram/ml) + laryngeal mask for airway maintenance

S: Sedation: propofol (10 mg/ml and ultiva (50 microgram/ml) up to 8 ml/h + spontaneous breathing with oxygen on nasal catheter

L I: Infiltration: lidocaine 0,25% w/adrenaline 5 microgram/ml

L 0,25: Infiltration: lidocaine 0,25% w/adrenaline 2.5 microgram/ml

B: Bupivacaine 0.25%

M: Mepivacaine 2% w/adrenaline 10 microgram/ml

U: Urethral lidocaine-gel

Voiding trial 1: Intermittent catheterization is performed at the end of the operation where the bladder is emptied or up to 100 ml is left in the bladder on the discretion of the surgeon. 2-4 hours post-operative the patient is asked to void. If the patient voids at least 100 ml and the residual urine volume is less than 150 ml the patient passed the voiding trial, otherwise, the voiding is still observed. Intermittent catheterization is performed if the patient cannot void and has more than 400 ml in the bladder.

Voiding trial 2: If the patient can void spontaneously after the surgery, the patient passes the voiding trial. The voided volume and the residual urine volume are not measured.

expected postoperative recovery course, recommendations for pain management, voiding schedules and the option to be discharged with a catheter a demeure. Additionally, all patients are contacted 24 hours after discharge by a nurse from the outpatient clinic to inquire about any potential problems or uncertainties.

Inclusion criteria were patients scheduled for gynecologic and urogynecologic outpatient surgery, 18 years of age, and sufficient Danish language proficiency.

We used purposeful sampling to recruit participants undergoing the following gynecologic procedures: colporrhaphia anterior/posterior/Manchester surgical procedure, Tensionfree Vaginal Tape (TVT), Urethral Bulking, Botulinum Toxin A injection in the bladder, Laparoscopic adnexal surgery and hysteroscopic surgery [15]. Table 2 illustrates, the gynecologic procedures, anesthesia, local anesthesia, postoperative voiding schedules and recommended pain management.

Data analysis

Interview data were imported into Nvivo software (Version 11, QSR International, Pty Ltd, Victoria, Australia) and analyzed using inductive content analysis as described by Elo and Kyngäs (16). The first author (LB) conducted the initial coding of the interview data and subsequently all authors met to discuss and agree on the final categories.

Ethics

Eligible patients were informed in writing and orally of the voluntary nature of participation, confidentiality and freedom to withdraw at any time. Participants provided written informed consent prior to interviews. According to Danish law, the study is exempt from approval from The Regional Ethics Committee. The Danish Data Protection Agency approved the study (j. nr.: 2012-58-0004).

Results

From November – December 2018, we approached 36 eligible patients. A total of 30 patients accepted participation in the study. Two patients did not wish to participate, one due to lack of time, one due to a previous complicated postoperative course, one failed to answer the phone at the scheduled interview time, and one patient chose to withdraw from the study when called. Patient characteristics are shown in Table 3.

Table 3 Data characterising the participants. Data are presented as median (min-max) or as numbers.

Data	Median /numbers
Age (years)	56 (33-89)
Employed	16
Retired	10
Unemployed	4
Living alone	12
Cohabiting	18
Duration of interviews median (range)	18 minutes (8-22)

We identified the following 4 categories through analysis of the data: Voiding difficulty, postoperative pain, being unprepared for bowel problems, and unexpected fatigue limiting daily activities.

Voiding difficulty

Voiding difficulty was a general experience and overall trigger of anxiety and concern among participants. One participant described it

in the following way:

”It was a bit hard in the beginning – nothing really happened, only this stinging sensation... I had to go to the bathroom several times... I could not really sense if I had emptied my bladder. I thought I was done and then I could feel more coming. It was as if I had lost all control which made me really nervous.” (P 14).

The participants described symptoms resembling cystitis with pain, a feeling of having to go to the bathroom all the time and an intense stinging sensation in relation to voiding attempts. The symptoms drove participants back and forth to the bathroom constantly to attempt voiding. Some participants experienced that they could not empty their bladder, which led them to self-catheterize and in turn question whether the surgical procedure had been successful and even worthwhile. They lacked control of their bladder and voiding was difficult which resulted in considerable frustration and concern. Some went as far as to monitor their urine output in cups or mugs just to keep abreast of their urine output. Participants felt insufficiently informed about the voiding difficulties they experienced post-discharge. For example, they were uncertain about whether it was normal to experience symptoms resembling cystitis and not being able to urinate. Not being prepared for these symptoms resulted in anxiety with some participants contacting the outpatient surgical clinic for information and guidance. A younger participant who had received Botulinum Toxin A injection in the bladder said:

”I was really nervous, I couldn’t urinate when I got home, oh. I didn’t know what to do because I hadn’t been told how to use a catheter” (P 21)

According to her, the information she had received was that voiding might be difficult and catheterization therefore needed, however she had received no concrete instruction on how to self-catheterize.

Postoperative pain

Postoperative pain was prevalent and affected participants’ post-discharge recovery negatively. Nineteen of the thirty participants described having moderate to severe pain post-discharge with pain scores 5 on the Numerical Rating Scale. Participants undergoing diagnostic laparoscopy, gynecological prolapse surgery and Tensionfree Vaginal Tape (TVT) experienced the most severe pain. One participant described it as follows:

”Cramps... really bad cramps in my abdomen, I couldn’t do anything, just lie in my bed. I would say the pain was 9 (on the NRS) and maybe... I felt it was really intense.” (p 12)

Another participant described her pain as:

”I’d describe it like when you have just given birth, if you’d had stitches or really intense menstrual pain – the pain felt a bit like that. Aching with stabbing pangs.” (P 14)

The pain described by participants was mostly located to the surgical site. Participants also described pain that was not directly related to the surgical site and this worried them. Several described an intense stinging sensation when voiding or a feeling of heaviness in their abdomen. A participant said:

”It wasn’t so bad pain-wise when I was with you in the outpatient clinic. It was first after I got home that it (the pain) became worse, and I became worried. I felt this very intense stinging sensation especially when I had to urinate. NRS 7-8” (P 2)

A younger participant who had a Tension free Vaginal Tape (TVT) described her postoperative pain in the following way:

”...of course, it is painful, it feels like cystitis... so I thought the operation had gone wrong. The urine catheter was the worst -NRS 8.” (P 30)

Despite being informed about pain management and the importance of taking pain medication, this participant chose not to take the recommended pain killers because she was afraid of becoming too doped and therefore unable to look after herself. Another participant who had a laparoscopy adnexal surgery did not take the prescribed morphine medication despite having severe pain, because she was afraid of becoming addicted to the medicine.

Like the voiding problems experienced by participants, pain reinforced feelings of unease and concerns. Furthermore, pain reduced participants' ability and motivation to engage in daily activities and physical activity. One participant emphasized that her anxiety was easily curbed after calling the outpatient clinic and being reassured that everything was normal and that it was safe to take pain killers. Participants stressed the important role of informal caregivers in comforting and supporting them and helping with everyday practical issues.

Being unprepared for bowel problems

Bowel problems such as bloating, feeling unwell due to abdominal discomfort or constipation were common symptoms which the participants felt uninformed about. Lack of bowel movements and confusion regarding which medications to take to ease abdominal symptoms was distressing. A participant who had a colporrhaphia posterior said:

“I didn't expect to feel so bloated . . . and now I'm afraid that I won't be able to go to the toilet. In the pamphlet that I was given it says that you can take different kinds of laxative therapy but what's best – pills or liquid medicine?” (P 22)

Another participant said:

“I'm most worried about not having bowel movements and I daren't press too much. If I do, I'll have to take some more laxative medicine” (P 10)

Having bowel problems after outpatient surgery that so significantly affected well-being surprised patients and was something, they recommended patients be better informed and prepared for beforehand.

Unexpected fatigue limiting daily activities

Fatigue was common and a surprising symptom for participants. Many had difficulty sleeping due to pain, abdominal discomfort and voiding difficulties. A participant who lived alone expressed:

“After I got home, I had a lot of pain, nausea and I was so tired – I kept thinking who's going to do the shopping for me?” (P 9)

Another participant expressed:

“I'm tired and really worn out – I was surprised that I didn't have any energy at all. My husband had to take the children to kindergarten.” (P 17)

All participants were preoperatively independent in activities of daily living and able to take care of themselves. Postoperatively, at home, fatigue inhibited uptake of normal, daily activities. The participants had many questions about uptake of daily activities and found the written information pamphlets handed out at discharge, insufficient, confusing and overall unhelpful in preparing them for how to resume daily activities and when to return to work.

Discussion

Voiding problems, postoperative pain, bowel problems and fatigue limiting daily activities and causing considerable anxiety and worry were commonly experienced post-discharge symptoms after

outpatient gynecologic and urogynecologic surgery. The findings resonate with similar studies in the field [17].

Voiding dysfunction after urogynecologic surgery occurs frequently and is considered a routine occurrence by health professionals. For patients however, voiding dysfunction requiring self-catheterisation or an indwelling catheter is far from routine. A recent study found that patients having to self-catheterize (CISC) or have an indwelling catheter (IFC) experienced substantial catheter burden following urogynecologic surgery when measured using the Short-Term Catheter Burden Questionnaire (STBC) [18]. The STBC assesses catheter burden in relation to difficulty of use and embarrassment [18]. The burden was high regardless of type of catheterization, CISC or IFC [18]. Elkadry et al similarly found that postoperative catheterization was perceived by patients as worse than the pre-existing condition necessitating surgery [19]. Like other studies, the participants expressed that they were not informed and not sufficiently prepared for voiding problems and ill-prepared for having to self-catheterize post-discharge [19].

Even though patients are informed and instructed about voiding problems and how to deal with them post-discharge while in the outpatient clinic, they nevertheless still feel ill-prepared and bewildered when problems arise [20]. It therefore seems appropriate to consider alternative routes of information that reinforce patients' feelings of security and coping post-discharge. A way forward could be through active involvement of patients in developing the content, route of delivery, and duration of information and communication regarding postoperative recovery. Alternative channels of communication, using interactive digital platforms would appear relevant to include [21].

Pain is reported to be the most frequent complication after surgery, including ambulatory surgery [4]. Our study likewise indicates that a substantial number of participants experienced moderate to severe pain, specifically patients undergoing diagnostic laparoscopy, urogynecological prolapse surgery and TVT surgery. Pain after ambulatory surgery as reported by HCPs is mostly assessed to be mild [22]. A newly published study showed that patients' self-reported pain scores from 4 hours after gynecologic surgery until POD 1 were generally higher than when assessed by nurses [23]. There appears to be persistent difficulty in managing postoperative pain optimally, suggesting that HCPs need to prioritize communication with patients in relation to pain assessment along with more detailed pathways of pain assessment [23].

Insufficient pain management after hospital discharge can lead to anxiety, depression, fatigue and immobility with the risk of further complications [4]. This in turn can delay uptake of habitual activity and return to work and therefore could have considerable individual as well as societal impact [3].

There may be several underlying reasons for the relatively high number of participants reporting moderate to severe pain. First, the current strategy as presented in Table 1 for pain management may be insufficient. Alternatively, participants might not have been relevantly informed about pain management, and the importance of taking pain medications, or maybe they did not fully comprehend or could not remember the information after discharge. Some participants specifically chose not to take pain killers as recommended for fear of becoming lethargic or disoriented. This was also reported by Brix [4] who found that ambulatory surgical patients had a low consumption of pain killers despite reporting moderate to severe postoperative pain [4]. Others were confused about how much and for how long they should continue taking pain killers. According to Yang et al. [23], information about postoperative pain management needs to incorporate generic information about surgical pathways

overall as well as information tailored to specific surgical procedures, including procedure-specific symptoms. Insufficient knowledge of pain management, whether due to lack of relevant and focused information or lack of understanding, may leave patients confused about when to take which medications. It seems that clearer recommendations for postoperative pain management are needed. This could include provision of pre-packed medicine to patients at discharge [24]. Also, postoperative follow-up calls used as an intervention to ensure adequate pain control and pain management seem to have a positive effect on patients' compliance [12].

Improving postoperative pain management is a complex process requiring knowledge, a positive managerial attitude ensuring that HCPs have adequate training, and development and implementation of evidence-based clinical guidelines [23].

Bloating and constipation were frequent symptoms which took participants by surprise. Herling and colleagues similarly found that bloating and constipation were frequent symptoms after robotic-assisted hysterectomy and, furthermore, that patients were unsure of what type of laxative to take [25]. Close observation and focus on prevention of postoperative constipation is of utmost importance after outpatient surgery. The frequency and duration of constipation after outpatient procedures should be systematically monitored and research into effective interventions is warranted. Currently, the importance of preventing constipation is emphasized only in selected information pamphlets in the outpatient unit, more precisely pamphlets for anal or urogynecologic procedures. However, the pamphlets do not include specific instructions on how to prevent or treat constipation, leaving patients without concrete solutions for how to deal with the problem after discharge. Hand-out materials for patients therefore need to be scrutinized closely and the information aligned to include clear and specific information on constipation, including both preventive and treatment options.

Participants were surprised by the level of postoperative fatigue and its impact on uptake of normal activities. Cox & O'Connell [26], similarly found that 51% of gynecologic outpatient surgical patients reported persistent fatigue and difficulty concentrating up to as long as 5-10 days postoperatively. Postoperative symptoms such as pain, bleeding, and anxiety negatively affect sleep quality and daily activities [27]. A previous study found a 33% reduced level of activity POD 1 which was associated with pain in 54% of gynecological, orthopedic and breast cancer patients and with fatigue in 17% [28]. Postoperatively, participants in the current study depended on family or friends for shopping, cleaning, and picking up children because they were too tired to do so themselves. A previous qualitative study of patients undergoing ambulatory shoulder surgery likewise described the importance of family in helping with daily chores and activities, indicating the considerable support provided by informal caregivers' post-discharge [29]. There are few studies on fatigue after ambulatory surgery. As with constipation, postoperative fatigue and the impact on postoperative recovery should be monitored systematically in outpatient surgical patients, preferably taking the specific surgical procedure into account. The knowledge gained would qualify preoperative provision of information to patients and family about what to expect after discharge in relation to daily tasks, returning to work, independent activities of daily living and implications for family members supplying care.

Participants in the present study appeared unprepared for postoperative symptoms of voiding difficulties, pain, fatigue and bowel problems, despite receiving routine information. This indicates that both the timing and route of information provision to patients should be reconsidered [30]. Individual preoperative consultations to elicit patients' symptoms and expectations followed by telephone consultation POD 1-7 post-discharge, might serve

to align expectations, and prevent unnecessary worry. It could be an advantage to use a self-reporting digital instrument with a mutual communication with HCP's [30,31]. This is also in line with recommendations for follow-up by telephone for outpatient surgery [12] and recommended by the IAAS (Patient satisfaction surveys (iaas-med.com)).

Systematic monitoring of postoperative symptoms is also essential for increasing our knowledge of the patient experience, for providing relevant guidance and for ongoing quality development.

Strengths and limitations

The size and variation in our sample regarding different types of gynecological surgical procedures allowed us to gain sufficient information power to capture the breadth of participants' experience of symptoms the first day after outpatient surgery [32]. This strengthens the transferability of the findings. We collected data using telephone interviews. Telephone interviews are logistically less demanding than face-to-face interviews and they may be less intimidating for some than face-to-face interviews, thereby facilitating openness [33]. On the other hand, we cannot rule out that face-to-face interviews might have uncovered other aspects of patients' symptoms. Researcher triangulation involving the first author (LB) and 2 outpatient surgery nurses (ACT, SL) with different clinical and academic positions and therefore also distance to the phenomenon of interest, in the analysis of data increases the validity and relevance of the findings [32]. Throughout the conduct of the study, the author group continuously discussed the different preconceptions brought into the study as recommended by Malterud [32].

Data from a single site is a potential limitation of the study as the findings may reflect characteristics specific to this outpatient surgery unit. However, we consider the findings to be transferable to gynecology and urogynecology patients at other outpatient surgical sites. We only interviewed participants POD 1. Longitudinal data with repeated interviews for example POD 5-10 would have generated deeper knowledge of the participants' recovery course. Sampling of participants requiring readmission due to postoperative complications might similarly have uncovered other nuances.

Conclusions

The participants in the present study experienced numerous burdensome symptoms in the first 24 hours after discharge. Symptoms were voiding difficulty, postoperative pain, bowel problems and fatigue. These symptoms led to concern, anxiety and worry and affected daily activities. Systematic follow-up of symptoms and interventions focusing on prevention as well as early reduction of symptoms, especially prevention of postoperative pain after discharge, is important for successful outpatient surgery, both clinically and personally for the individual patient. Active involvement of patients in the development of tailored information and follow-up services is suggested as a path towards quality improvement.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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Complications in Day Care Surgery: Our data over 20 years of ambulatory surgery

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Abstract

Background: Abhishek Day Care Institute and Medical Research Centre, has completed 2 decades in the field of Ambulatory or Day Care surgery and was a dedicated Multi speciality Day Care General Surgery Centre before the concept even took root in India. We are proud to be one of the pioneers in this field and offer services like General Surgery, Minimal Access Surgery, Urology, Plastic Surgery, Orthopaedics, Vascular Surgery etc including GI endoscopies and Chemotherapy at our centre. Our experience in Ambulatory Surgery over a period of 20 years, include over 30000 cases within our centre and at tertiary hospitals combined. During the period of 20 years, we have performed 7036 surgical procedures, 28 NeoV Laser Procedures, 6700 OPD procedures and 7088 Endoscopic procedures under local anaesthesia and some form of sedation at our Day Care Centre.

Methods: The place of study was Abhishek Day Care Institute and Medical Research Centre, Mumbai, India. The data was collected comprising of patients that were operated during the period from June 2000 (when the centre opened) to December 2020.

Results: During the period of 20 years, we have had minimal serious complications with few mild complications that would not disallow day care surgery. We report that day care surgery is a safe and effective means of economic and fast track surgery.

Conclusions: We conclude that with experience and proper protocols in place, day care or ambulatory surgery can safely be performed for minor and major cases with the same rate of complications as found at in patient surgery and these complications can be managed effectively in the ambulatory setting along with having a backup hospital close by for those who may need admission care.

Keywords: Day Care Surgery, Ambulatory Surgery, Complications, Safety, Fasttrack Surgery.

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Background

Abhishek Day Care Institute and Medical Research Centre, has completed 2 decades in the field of Ambulatory or Day Care surgery and was a dedicated Multi speciality Day Care General Surgery Centre before the concept even took root in India. We are proud to be one of the pioneers in this field and offer services like General Surgery, Minimal Access Surgery, Urology, Plastic Surgery, Orthopaedics, Vascular Surgery etc including GI endoscopies and Chemotherapy at our centre. Our experience in Ambulatory Surgery over a period of 20 years, include over 30000 cases within our centre and at tertiary hospitals combined.

During the period of 20 years, we have performed 7036 surgical procedures, 28 NeoV Laser Procedures, 6700 OPD procedures and 7088 Endoscopic procedures under local anaesthesia and some form of sedation at our Day Care Centre.

Complications:

Appendicectomy: 6 patients (14.2%) had to be hospitalised overnight.

Laparoscopic Cholecystectomy: 1 patient had a severe bleed intra operatively due to an aberrant vessel and had to be stabilised and shifted to a nearby tertiary centre for further management. The patient was discharged in 2 days following admission.

Haemorrhoidectomy: 11 patients (1.11%) had to be hospitalised for secondary bleeding, managed conservatively, no transfusion had to be given.

Bilateral hernioplasty: 1 patient (1.6%) had to be admitted due to excessive drowsiness.

1 patient had a colonic perforation in the year 2005 while undergoing a hernioplasty where the bowel was stuck to the hernial sac. They

were shifted to the hospital and managed with surgery.

1 patient of piles had a severe bleed which required 2 pints of blood transfusion.

1 patient who was undergoing a sebaceous cyst excision on the back had an on table reaction to the local anaesthesia (Xylocaine 2% + Sensorcaine 0.5% 3:2) which may have entered the systemic circulation. The patient had involuntary movement of the legs while lying in prone position during the procedure. These involuntary movements included flexing of the leg below the knee, jerking of the forearms and sweating. The patient was injected with Avil, Hydrocortisone and Atropine and settled within 30 minutes.

Syncopial attacks occurred in 12 patients over the period of 20 years and were all managed conservatively with leg raising, fluids and rest.

18 male patients, with underlying Benign Prostatic Hypertrophy, had to be catheterised post operatively, as they went into retention. The patients were given a trial before discharge and if unsuccessful they were discharged with the catheter which was subsequently removed the following morning.

Discussion

Factors relevant for the success of day care surgery

Day care surgery demands the highest standards of professional skills and organization. Although, the operations could be minor, an anaesthetic is never minor. Listed below are some of the factors relevant for the success of day care Surgery (7).

- A thorough selection process
- Information disseminated

- c. Preoperative assessment / tests.
- d. Proper anaesthetic and post anaesthetic care
- e. Patient acceptability
- f. Audit

Selection of the suitable patient

This is perhaps the most important aspect of the selection process. Selection is not simply a matter of choosing patients with conditions that may be treated on a day care basis, but also involves informing those patients who are unsuitable for medical and social reasons that they will not be able to participate in the day care process. One of the more important factors in this regard is the expected duration of surgery. Federation of Ambulatory Surgery Association (FASA) concludes: that incidence of complications is directly related to the duration of surgery and anaesthesia. In surgeries lasting for less than 1 hour, the complication rate is 1 in 155 patients and in surgeries of 2 hours, it is 1 in 55 surgeries (3).

b. Dissemination of Information

Comprehensive and well presented information using terminologies for patients and their relatives in a language and manner in which they would easily understand the information presented is essential for the success of day surgery. Day Care patients, unlike admitted patients, do not have ready access preoperatively and postoperatively to health care professionals to answer their questions and deal with their queries. As suggested by Baskerville et al (4), the information given to patients should commence with a brief description of the surgical condition that they are being treated for and the procedure planned for the same. Clear instructions regarding what patients must do before coming to the unit, the postoperative analgesic regimen, what they should do at home, and what is expected in the days following their operation and how they must react to certain instances are to be explained in full. Finally, patients need advice on when they can return to various activities. The most important communication should be about what to expect at home and what are the possible complications that may arise and the ready solutions for the same along with contact details of a Doctor in case of emergencies.

c. Preoperative Assessment / tests

An asymptomatic low risk patient does not need a battery of screening tests unless the medical history or the physical examination suggests otherwise. In the paediatric population, a routine haemoglobin (Hb) evaluation and urine examination are done. In adults above 40 years, in addition to Hb and urine, ECG is also required. In older patients (patients >50 years, chest X-ray and serum glucose are also advised. The preoperative assessment should be detailed and similar to in-patients.

d. Post anaesthetic care

Several recent innovative facilities for post anaesthesia care after outpatient surgery have allowed surgeons to do more complicated surgeries on sicker patients as outpatient procedures and have made outpatient anaesthesia less risky.

In an overnight stay unit (23-hour admission unit): post-surgery patients are observed overnight but discharged the next morning, within 23 hours of surgery. This course overcomes the arbitrary limit to quality for reimbursement as an outpatient procedure in terms of insurance regulations. Even these are now changing to accept the advantages of ambulatory procedures not only to the patient but to the insurance provider as well.

After the operation, vital signs are monitored till the patients are ready to be discharged. A detailed discharge card is given, including the details of the procedure / postoperative analgesia, when to remove sutures (if required) and on follow up appointments. A clear section should provide the contact details of the doctors and nurses

who will be involved in the after care of the procedure performed.

e. Patient acceptability

Methods of gauging the acceptability of day care surgery in patients are to look for a number of unsolicited complaints, incidence of readmission after patients have returned home, and postoperative complication rates. Pain scoring is a very useful tool to understand the acceptance of the procedure and its nature as an ambulatory choice for the said ailment.

f. Regular Review of the SOPs

As in other areas of practice, a regular audit of the standard operating protocols is essential to maintain and improve standards of care. All complication rates and patients feedback must be reviewed to determine the best way forward for improvements.

Contraindications for Day Care Surgery:

These are becoming increasingly rare with the advent of newer techniques of anaesthesia and modern 'fast-track' surgery and minimal access surgery⁶. Almost all patients can be treated in an ambulatory setting for routine cases with the following exceptions:

- Medically unfit for discharge on the same day.
- Mental retardation / psychologically unstable.
- Highly infectious disease.
- Upper respiratory tract infection. (Now manageable with newer anaesthetic drugs)
- Premature or less than 6 month old babies.
- Requiring extensive post-op monitoring.
- Long distance from home. (Possible if living close to a hospital/ nursing home)
- Shock / trauma.
- High fever.

Conclusion

A vast experience gathered over the years in the field of ambulatory surgery has helped us bring down common complications that would otherwise occur at routine surgery to a minimum even while performing day care surgery. This is evident from the fact that most of our complications occurred in the earlier days of our ambulatory practice. Having said that, complications are a part and parcel of surgery and can occur at any instant. The best way to deal with them is to be prepared for them and to have in place protocols that would minimize the risk of developing those complication. Stringent selection criteria, detailed check lists, good training of all staff involved in day care and experience of the team involved all play an essential part in the staving off for complications that arise. The fact that Dr. Begani has had 2 years of training in the field of anaesthesia helped immensely in knowing what to expect with Short Anaesthesia and TIVA so we could plan the amount of local anaesthetic, the recovery time, control PONV appropriately and ensure that the patient could be safely discharged within a period of 8 hours to 23 hours to fit in the criteria of ambulatory or day care surgery. Therefore, we conclude that with experience and proper protocols in place, day care or ambulatory surgery can safely be performed for

minor and major cases with the same rate of complications as found at in patient surgery and these complications can be managed effectively in the ambulatory setting along with having a back up hospital close by for those who may need admission care.

Competing interests

The authors declare that they have no competing interests.

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Advertising Feature: Case Study

QA4 Surgical Trolley System

Introduction

Anetic Aid Distributor OZG Healthcare was invited to work with planners of a new 240 bed public hospital in Solothurn¹ in the North West of Switzerland.

The hospital wanted to increase the number of procedures carried out as day cases, and was designing the theatre suite with this specifically in mind.

Approach

They decided on a total of eight operating theatres, two to be equipped exclusively with surgical trolleys.

They embarked on a rigorous series of trials to evaluate the capabilities of the available options of surgical trolley, one of which involved two months using the Anetic Aid QA4 Surgical Trolley System.

Outcome

The QA4 was found to have, by far, the greatest functionality and versatility of the options tested.

Key benefits included:

- the variety of specialisms that could be carried out
- the ability to integrate the system with the existing inventory of operating table accessories
- the manoeuvrability and minimal lifting and handling required in using the QA4 – particularly the ease of using its powered functions
- the efficiency that elimination of transfers brought to the department as a whole

The hospital opening was delayed because of the pandemic, but it is now fully operational and staff are using the QA4s for specialisms including gynae, ENT, arthroscopy and faciomaxillary as well as general surgery.

OZG's Gregor Tiso has continued to keep in close contact with the hospital and reports that staff are finding the QA4 even more versatile than they first thought it would be.



OZG HEALTHCARE 

Reference

¹ <https://www.solothurnerspitaeler.ch/unsere-spitaeler/buergerspital-solothurn/>



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***Ambulatory Surgery* is the official clinical journal for the International Association for Ambulatory Surgery.**

Ambulatory Surgery provides a multidisciplinary international forum for all health professionals involved in day care surgery. The editors welcome reviews, articles, case reports, short communications and letters relating to the practice and management of ambulatory surgery.

Topics covered include basic and clinical research, surgery, anaesthesia, nursing, administrative issues, facility development, management, policy issues, reimbursement, perioperative care, patient and procedure selection, discharge criteria, home care. The Journal also publishes book reviews and a calendar of forthcoming events.

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