

# Unplanned Admission After Day-case Haemorrhoidectomy: A Retrospective Study

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**OBJECTIVE:** To identify the risk factors associated with unplanned admission after day-case haemorrhoidectomy.

**METHODS:** This was a retrospective review of the outcomes of patients who underwent elective, intended day-case haemorrhoidectomy in a surgical institution between January 2005 and December 2009. Data were generated from a computerized database. Information on patient demographics, type of surgery, mode of anaesthesia, operative time, operation end time, and perioperative drugs were collected and analysed. Unplanned admission was carefully recorded.

**RESULTS:** In a 5-year period, 243 patients underwent intended day-case haemorrhoidectomy. Of these, 43 (17.7%) had unplanned admission, with acute urinary retention as the most common cause ( $n = 30$ ). Using univariate analysis, male gender, the use of spinal anaesthesia, and a late operation end time of after 2 PM were found to be positive risk factors associated with unplanned admission, whereas the use of single-dose dexamethasone during induction was identified as having a negative effect on unplanned admission. However, multivariate analysis showed that only male gender, the use of spinal anaesthesia, and a late operation end time of after 2 PM were independent risk factors.

**CONCLUSION:** Good operation listing and the use of general anaesthesia are recommended in the practice of day-case haemorrhoidectomy. [*Asian J Surg* 2010;33(4):203–7]

**Key Words:** day-case haemorrhoidectomy, unplanned admission

## Introduction

Haemorrhoidal disease represents a significant proportion of the general and specialist colorectal surgeons' workload. Patients with symptomatic grade 3 or 4 haemorrhoids are best managed by surgery, i.e. hemorrhoidectomy.<sup>1,2</sup> Either an excisional or stapled procedure<sup>3</sup> may be performed, and both techniques have been reported with success in day-case settings.<sup>4–6</sup> However, while day-case haemorrhoidectomy is increasingly practised, unplanned admission that prolongs the length of stay and offsets the benefits of day

surgery continues to be a problem.<sup>5–7</sup> This study aimed to identify the factors associated with unplanned admission following day-case haemorrhoidectomy.

## Patients and methods

This study was a retrospective review of the outcomes of patients who underwent elective, intended day-case haemorrhoidectomy in Pamela Youde Nethersole Eastern Hospital, Hong Kong, between January 2005 and December 2009. The period was chosen because day-case

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haemorrhoidectomy was rarely practised in the institution before 2005. After 2000, all hospital operation records were computerized and entered into a database. Data from this database on patients who had been admitted to the day ward for haemorrhoidectomy were generated and retrospectively analysed. Case records were also retrieved for verification and further information.

#### *Patient selection*

Adult patients suffering from symptomatic grade 3 or 4 haemorrhoids were potential candidates. Patients were selected for day-case haemorrhoidectomy if: (1) they were aged 18–75 years (inclusive); (2) the American Society of Anesthesiologists (ASA) score was below or equal to 3; and (3) a companion was available to accompany the patient to go home after hospital discharge.

#### *Perioperative management*

One week prior to surgery, patients were assessed by surgeons and anaesthetists in the preadmission clinic. If patients were considered suitable day-case candidates, the day-surgery protocol was explained. Depending on the preanaesthetic assessment, patients' and surgeons' preferences, the type of surgery (excisional or stapled haemorrhoidectomy), and the mode of anaesthesia (general or spinal) were determined upon patients' approval, and informed consent was obtained.

Patients were admitted to the day ward on the morning of the operation day. Either excisional or stapled haemorrhoidectomy was performed under either general or spinal anaesthesia. Postoperatively, patients were prescribed analgesics and antiemetics as required. They were reviewed by the surgical and anaesthetic teams for hospital discharge according to the modified postanesthesia discharge scoring system (MPADSS) and adverse effects (VRS) scores.<sup>8</sup> If spinal anaesthesia was used during surgery, hospital discharge was governed by additional criteria for ambulation.<sup>9</sup>

#### *Operative technique*

For patients undergoing general anaesthesia, fentanyl and propofol were used for induction, and anaesthesia was maintained with isoflurane, supplemented with either an oxygen/air or oxygen/nitrous oxide mixture via a laryngeal mask airway. For patients undergoing spinal anaesthesia, hyperbaric bupivacaine (0.5%) was intrathecally injected, and additional intrathecal fentanyl was used if necessary.

All operations were performed in the lithotomy position. Electrocautery was used for dissection and haemostasis during excisional haemorrhoidectomy. For patients undergoing the stapled procedure, a PPH 33 circular stapler (Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) was used.

#### *Statistical analysis*

Data on patient demographics, type of surgery, mode of anaesthesia, operative time, operation end time (defined as the time when the operation ended as documented in the operation record), and perioperative drugs were collected. The MPADSS score, VRS score, and criteria for ambulation (if appropriate) for each patient were also examined. Any unplanned admission or readmission was carefully recorded. Unplanned admission was defined as whenever the patient failed to be discharged on the operation day. Unplanned readmission was defined as whenever the patient was readmitted to the hospital within 30 days of the operation.

Statistical analysis was performed using SPSS version 15 (SPSS Inc., Chicago, IL, USA). Univariate analysis was performed to identify factors associated with unplanned admission, using Student's *t* test for continuous variables and the  $\chi^2$  or Fisher's exact tests for nominal variables. A *p* value of less than 0.05 was considered significant. Factors with *p* values of less than 0.1 in univariate tests were further examined with multivariate analysis using a binomial logistic regression model.

## **Results**

In a 5-year period, 243 patients underwent intended day-case haemorrhoidectomy in the hospital. These included 129 men and 114 women with a median age of 51 years (range, 22–80 years). Of these 243 patients, 232 (96%) were ASA I or II candidates. A total of 130 patients underwent general anaesthesia, whereas 113 had spinal anaesthesia. Excisional haemorrhoidectomy was performed in 167 patients; the remaining 76 underwent the stapled procedure. The median operation time was 27 minutes (range, 10–90 min). No operative mortality occurred in this series. A total of 200 patients were successfully discharged on the day of operation. The remaining 43 (17.7%) had unplanned admission to the inpatient ward due to various causes (Table 1). Seventeen patients were readmitted to the hospital within 30 days of surgery, giving

an unplanned readmission rate of 7%. These included two patients with posthaemorrhoidectomy wound infection, nine with posthaemorrhoidectomy bleeding, and five with anal wound pain; the remaining patient was readmitted with a nonsurgical problem.

To identify risk factors associated with unplanned admission, the demographic and perioperative data of patients with unplanned admission were compared with those of patients who were successfully discharged on the operation day (Table 2). Compared with patients who were successfully discharged on the operation day,

significantly more patients in the unplanned admission group were male ( $p=0.02$ ), received spinal anaesthesia ( $p=0.006$ ), and had a late operation end time of after 2 PM ( $p<0.001$ ). On the other hand, significantly less patients in the unplanned admission group received dexamethasone during induction of anaesthesia ( $p=0.018$ ). Using multivariate analyses, an operation end time of after 2 PM ( $p<0.001$ ), male gender ( $p=0.014$ ), and spinal anaesthesia ( $p=0.028$ ) were found to be independently associated with unplanned admission after ambulatory haemorrhoidectomy.

**Table 1.** Patients with unplanned admission

Causes of unplanned admission	No. of patients
Acute urinary retention	30
Dizziness	2
Residual motor blockage after spinal anaesthesia	5
Patients not yet ambulatory	1
Chest pain/bradycardia	5
Total	43

## Discussion

The practice of day surgery, alternatively also known as ambulatory surgery, helps shorten patients' length of hospital stay. This is particularly important for common, large-volume surgical conditions (e.g. haemorrhoids) in the public healthcare system where resource constraints are a real concern. To ensure a "genuine" nature of day-case surgery and maximize efficiency, it is crucial to achieve a low postoperative unplanned admission rate.

**Table 2.** Comparison between patients discharged on operation day and patients with unplanned admission

	Patients discharged on operation day ( $n=200$ )	Patients with unplanned admission ( $n=43$ )	$p$
Age* (years)	51 (11)	52 (14)	NS
Female:male*	1:1	1:2	0.02*
Operation time† (min)	27 (10)	28 (10)	NS
Total intravenous† fluid used (mL)	496 (264)	565 (345)	NS
Presence of chronic medical disease ( $n$ )	54	16	NS
Benign prostatic hypertrophy ( $n$ )	6	3	NS
Operation end time ( $n$ )			
Before 10 AM	44	3	NS
10:01 AM–12 PM	61	12	NS
12:01 PM–2 PM	42	5	NS
After 2 PM	23	20	<0.01*
Excision:stapled ( $n$ )	142:58	25:18	NS
GA:SA ( $n$ )	115:85	15:28	0.006*
Use of dexamethasone ( $n$ )	39	5	0.02*
Use of NSAID ( $n$ )	49	6	NS
Use of tramadol ( $n$ )	8	3	NS
Use of morphine ( $n$ )	40	7	NS
Use of metoclopramide ( $n$ )	5	0	NS

\*Data are expressed as median and range; †Pearson  $\chi^2$  test. GA = general anaesthesia; SA = spinal anaesthesia; NSAID = nonsteroidal anti-inflammatory drugs; NS = not significant.

In this study, acute urinary retention accounted for the majority of unplanned admissions, with a rate of 12.3%. While this figure is consistent with the results of other studies on stapled haemorrhoidectomy,<sup>10,11</sup> it compares favourably with studies involving conventional haemorrhoidectomy.<sup>12</sup> Our data suggest that the use of spinal anaesthesia, compared with general anaesthesia, was independently associated with a higher unplanned admission rate. This is attributable to the strong causal relationship between spinal anaesthesia and urinary retention.

Spinal anaesthesia with bupivacaine causes a clinically significant disturbance of bladder function due to interruption of the micturition reflex.<sup>11,12</sup> It has been shown that the urge to void quickly disappears after spinal injection of local anaesthetics and that bladder function remains impaired until the sensory block has regressed to the S3 segment. This detrusor blockade by bupivacaine may last for 400–500 minutes.<sup>13,14</sup> Additionally, residual motor blockage and bradycardia resulting from high spinal block are other possible direct consequences of spinal anaesthesia resulting in unplanned admission.

The present study identified two other risk factors of unplanned admission following ambulatory haemorrhoidectomy: male gender and a late operation end time beyond 2 PM. These findings are hardly surprising. It is well known that male patients are anatomically more prone to develop urinary retention. Operation end time, understandably, is related to the same-day discharge outcome. Although there is no generally agreed-upon duration of phase II recovery before hospital discharge, experience suggests that a minimum of 6 hours is required to avoid unplanned admission. This period allows adequate time for pain management and recovery of bladder function. In practice, this implies that good operation listing is essential.

Interestingly, our data suggest that single-dose dexamethasone, when used as a prophylactic antiemetic during induction, was associated with reduced unplanned admission based on univariate analysis. None of the other drugs commonly used in operations, including nonsteroidal anti-inflammatory agents (diclofenac sodium or ketorolac), morphine, tramadol, and/or local anaesthetics, demonstrated such an association. The reason for this is obscure, but might have been related to the analgesic effect of steroids. Other investigators have shown a similar analgesic effect with the use of prophylactic betamethasone

prophylaxis.<sup>15,16</sup> However, the beneficial effect associated with the use of single-dose dexamethasone, if any, is likely to be small and marginal, and thus became statistically insignificant during multivariate analysis. A larger sample size is required to confirm this association.

In conclusion, the present report indicates that male gender, spinal anaesthesia, and a late operation end time of after 2 PM are independent risk factors leading to unplanned admission after ambulatory haemorrhoidectomy. Good operation listing and the use of general anaesthesia are therefore recommended to minimize unplanned admission.

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