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ORIGINAL CONTRIBUTIONS

Same-Day Discharge After Laparoscopic Roux-en-Y Gastric Bypass: a Cohort of 500 Consecutive Patients

Suzanne C. Kleipool[1] · Leontien M. G. Nijland[1] · Steve M. M. de Castro[1] · Marlou Vogel[2] · H. Jaap Bonjer[3] · Hendrik A. Marsman[1] · Pim W. J. van Rutte[1] · Ruben N. van Veen[1]

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Abstract

Introduction There is an increasing demand on hospital capacity worldwide due to the COVID-19 pandemic and local staff shortages. Novel care pathways have to be developed in order to keep bariatric and metabolic surgery maintainable. Same-day discharge (SDD) after laparoscopic Roux-en-Y gastric bypass (RYGB) is proved to be feasible and could potentially solve this challenge. The aim of this study was to investigate whether SDD after RYGB is safe for a selected group of patients.

Methods In this single-center cohort study, low-risk patients were selected for primary RYGB with intended same-day discharge with remote monitoring. All patients were operated according to ERAS protocol. There were strict criteria on approval upon same-day discharge. It was demanded that patients should contact the hospital in case of any signs of complications. Primary outcome was the rate of successful same-day discharge without readmission within 48 h. Secondary outcomes included short-term complications, emergency department visits, readmissions, and mortality.

Results Five hundred patients underwent RYGB with intended SDD, of whom 465 (93.0%) were successfully discharged. Twenty-one patients (4.5%) were readmitted in the first 48 h postoperatively. None of these patients had a severe bleeding. This results in a success rate of 88.8% of SDD without readmission within 48 h.

Conclusions Same-day discharge after RYGB is safe, provided that patients are carefully selected and strict discharge criteria are used. It is an effective care pathway to reduce the burden on hospital capacity.

Keywords Roux-en-Y gastric bypass · Same-day discharge · Day case surgery

Introduction

More than 1 billion people worldwide have obesity, and this number is still increasing [1]. As bariatric and metabolic surgery has proven to be an effective and safe treatment for obesity, there is a concomitant increase in bariatric procedures [2–4]. Meanwhile, the demand on hospital capacity worldwide has been increased due to the COVID-19 pandemic and local staff shortages. In order to ensure the continuation of bariatric care in these times of increasing demand but decreased capacity, novel care pathways have to be developed. A very promising innovation is same-day discharge (SDD) with remote monitoring after laparoscopic Roux-en-Y gastric bypass (RYGB). SDD is defined as discharge on the same day as the surgery, without overnight hospitalization.

The development of *enhanced recovery after surgery* (ERAS) has led to guidelines regarding optimal perioperative care in bariatric and metabolic surgery. This

Key Points
- RYGB with same-day discharge is safe for low-risk patients.
- Strict selection and discharge criteria for SDD are crucial for patient safety.
- There should be a low threshold for readmission in case of signs of complications.
- Patient expectation should be managed for successful SDD.

✉ Suzanne C. Kleipool
s.c.kleipool@olvg.nl

[1] Department of Surgery, OLVG Hospital, Amsterdam, The Netherlands

[2] Department of Anesthesiology, OLVG Hospital, Amsterdam, The Netherlands

[3] Department of Surgery, Amsterdam UMC, Amsterdam, The Netherlands

includes prehabilitation, a multimodal approach for analgesia and postoperative nausea and vomiting (PONV) and early mobilization after surgery [5]. The application of ERAS protocols in bariatric and metabolic surgery is safe and feasible, effectively shortening the length of a hospital stay without compromising morbidity, and accelerating patient recovery [6, 7]. The development of ERAS and innovations in remote monitoring has given the opportunity to make the bariatric care pathway even more efficient. Hospitals increasingly start performing bariatric and metabolic surgery with same-day discharge. Our hospital started with SDD after RYGB in 2020, after feasibility was proved for our protocol in a pilot study [8]. However, safety of SDD after RYGB has not been investigated in a large singe-center study. Therefore, the aim of the present study was to investigate whether SDD after RYGB is safe for a selected group of low-risk patients.

Methods

A single-center cohort study was performed in a high-volume bariatric center in the Netherlands. All patients undergoing laparoscopic Roux-en-Y gastric bypass with intended same-day discharge were included. For this study, the need to obtain informed consent was waived by the local Medical Ethics Committee.

Preoperative Screening

The study population consisted of patients who were scheduled for primary laparoscopic RYGB, according to the International Federation for the Surgery of Obesity and metabolic disorders (IFSO) criteria [9]. Patients were deemed eligible for same-day discharge, if they met the selection criteria as presented in Table 1. The objective of these criteria was to exclude patients with high risk of complications, for instance, presence of cardiovascular diseases, use of anticoagulants, or a body mass index (BMI) > 50 kg/m^2. All patients were enrolled in a preoperative multidisciplinary program to assess medical history, nutritional, endocrine, and psychological status. Standard diagnostic tests were performed on all patients before surgery, including screening of blood anomalies and a respiratory polygraphy for screening of obstructive sleep apnea (OSA). The anesthesiologist performed a preoperative screening before giving final approval for the surgery and for SDD.

Perioperative Protocol

Patients were admitted to the hospital early in the morning of the surgery. Vital signs were checked, and a blood sample was drawn to determine the hemoglobin level. Patient expectations were managed by providing information about pain and the importance of mobilizing as soon as possible after the surgery. The procedures had to start before noon and were the first, second, or third procedure on the bariatric

Table 1 Selection and discharge criteria

Selection criteria for intended SDD
- BMI 35–50 kg/m^2
- Age 18–65 years
- Poorly controlled diabetes mellitus or use of insulin, cardiovascular disease (i.e., history of myocardial infarction, heart rhythm disorder) and coagulation abnormalities or use of anticoagulants
- No severe pulmonary disease or OSA with AHI > 15 or use of CPAP
- No history of major abdominal surgeries, including laparotomy
- Approval of intended SDD by both surgeon and anesthesiologist
- Ability to understand and use the remote medical devices
- Residing within a maximum of 45 min travel time to the hospital
- An informal caregiver available for the first 24 h following hospital discharge
Postoperative criteria for approval of SDD
- No abnormalities or complications during the surgical procedure
- No anesthetic abnormalities or complications
- No severe pain (NRS > 4 with analgesics) or clinically important PONV[b]
- Minimum oral intake of 200 ml of fluids postoperatively
- Normal vital signs after six hours of observation[a]
- Maximum decrease in hemoglobin level postoperative of 1.0 mmol/L
- Approval of bariatric surgeon and patient for discharge

[a]Divergent vital signs defined as: tachycardia > 100 bpm, temperature > 38 °C, oxygen saturation < 95% [10]

[b]Clinically important PONV defined as: continuous feeling of nausea with vomiting more than once [11]

BMI body mass index, *CPAP* continuous positive airway pressure, *NRS* numeric rating scale, *OSA* obstructive sleep apnea, *PONV* postoperative nausea and vomiting, *SDD* same-day discharge

program of that day, to warrant at least 6 h of postoperative clinical observation. Only experienced and certified bariatric surgeons performed all procedures, according to the international guidelines for bariatric and metabolic surgery [9]. The anesthetic protocol was specially developed for use in bariatric surgery following the ERAS concept [12]. The protocol was standardized with multimodal analgesia, combining local infiltration of the abdominal trocar sites with bupivacaine, intravenous propofol (dose using adjusted bodyweight), intravenous remifentanil (dose using ideal body weight), 30 mg rocuronium, acetaminophen, metamizol, and morphine [13–15]. Postoperative analgesics consisted of standardized oral medication. Patients received prescribed acetaminophen 1000 mg four times daily, naproxen 500 mg two times daily (maximum of 3 days), and if necessary rescue medication oxynorm 5 mg with a maximum of four times daily (maximum of 3 days). For the prevention of postoperative nausea and vomiting, all patients received antiemetics (dexamethasone and granisetron) during and after surgery.

Postoperative Treatment

Patients were admitted to the recovery room after surgery, for assessment of vital signs, postoperative nausea, and pain. The aim was to return the patient to the surgical ward within an hour after the procedure. A specialized bariatric nurse took care of the patients on the ward, according to a strict recovery protocol. Patients had to start to mobilize as soon as possible and start with a liquid diet. After a minimum of 6 h of observation, patients were assessed for discharge by the operating surgeon. Patients with abnormal vital signs, more than 1 mmol/L loss in hemoglobin level or disapproval of the surgeon because of suspected clinical abnormalities, were classified as failure for same-day discharge. Upon discharge, patients were given a one-time-only injection with low-molecular-weight heparin, according to our national guideline [16]. The criteria for approval of same-day discharge are summarized in Table 1.

Before discharge, all patients received an information sheet describing symptoms that require emergency consultation and the hospital's 24-h emergency telephone numbers. A pulse oximeter (Nonin Onyx Vantage 9590) and a tympanic thermometer (Covidien Genius 2) were provided to all patients. During 48 h postoperatively, patients were instructed to report on pain, heart rate, oxygen saturation, and body temperature three times a day on their information sheet, in order to detect early complications. In case of severe pain (numeric rating scale > 4), hematemesis, rectal blood loss, or divergent vital signs, patients had to reach out to the hospital. Patients were contacted by telephone by their surgeon on postoperative day (POD) 1, for assessment of potential complications. On POD 2 or 3, patients had an appointment at the outpatient clinic for a thorough medical check-up by a specialized bariatric nurse.

Outcomes

The primary outcome of this study was the number of patients that achieved successful same-day discharge without readmission within 48 h. Secondary outcomes included short-term complications (< 30 days), according to the Clavien-Dindo classification [17], emergency department (ED) visits, readmissions within 30 days postoperative, and mortality.

Statistical Analysis

All data were analyzed using SPSS 22.0 for Windows (SPSS Inc. Chicago, Illinois, USA). Patient characteristics were described as mean ± SD, median (interquartile range) and categorical data as counts and percentages. The normality of the variables has been judged by visual inspection of histograms and Q-Q plots. Categorical variables were compared using the Pearson's chi-square test. The independent samples *t*-test and Mann–Whitney *U* test were used for continuous variables. Statistical significance was set at $p < 0.05$.

Results

A total of 500 consecutive patients were included in this study and operated between October 2020 and April 2022. The mean (SD) age was 37 ± 11 years, the mean (SD) preoperative BMI was 42 ± 4 kg/m^2, and the majority of the participants were female (89.6%). Baseline characteristics are presented in Table 2.

Of these 500 patients, 465 (93.0%) underwent RYGB with successful same-day discharge. The most common reasons for overnight hospitalization were nausea ($n = 7$) and divergent vital signs ($n = 7$), followed by pain ($n = 4$), decrease in hemoglobin level of more than 1 mmol/L ($n = 4$), dizziness ($n = 4$), perioperative complication ($n = 3$), request of patient ($n = 2$), delay in OR program ($n = 2$), and no informal caregiver present ($n = 2$). Twenty-one (4.2%) patients were readmitted to the hospital in the first 48 h postoperatively. This results in a success rate of SDD without readmission within 48 h of 88.8%. Out of the 21 patients who were readmitted within the first 48 h after surgery, thirteen patients had hematemesis or rectal blood loss with stable vital signs, and were clinically observed and treated conservatively (Clavien-Dindo 1 or 2). Three patients were readmitted because of anastomotic leakage and were re-operated (Clavien-Dindo 3b). The other five patients were readmitted with abdominal pain, fever or dysphagia, and none of them needed additional treatment (Clavien-Dindo 1).

Table 2 Baseline characteristics

Age at surgery, years (mean, SD)	37 ± 11
Female (n, %)	448 (89.6)
Weight, kg (mean, SD)	118 ± 16
BMI, kg/m^2 (mean, SD)	42 ± 4
ASA classification (*n*, %)	
2	156 (31.2)
3	344 (68.8)
AHI (median, IQR)	4 (2–8)
Associated medical problems (*n*, %)	
Hypertension	76 (15.2)
NIDDM	29 (5.8)
Dyslipidemia	23 (4.6
Smoking (*n*, %)	
No	264 (52.8)
Former	128 (25.6)
Current	58 (11.6)
Operation time, minutes (mean, SD)	46 ± 11
Duration of hospital admission, hh:mm (median, IQR)	10:33 (9:50–11:02)

AHI apnea hypopnea index, *ASA* American Society of Anesthesiologists, *BMI* body mass index, *IQR* interquartile range, *NIDDM* non-insulin dependent diabetes mellitus, *SD* standard deviation

Table 3 Postoperative outcomes

Primary outcome (*n* = 500)	
Same-day discharge (*n*, %)	465 (93.0)
Same-day discharge without readmission within 48 h (*n*, %)	444 (88.8)
Secondary outcomes after SDD (*n* = 465)	
Readmissions POD 0–30 (*n*, %)	41 (8.8)
POD 0–2	21 (4.5)
POD 3–30	20 (4.3)
Severe complications[a] POD 0–30 (*n*, %)	6 (1.3)
POD 0–2	3 (0.6)
POD 3–30	3 (0.6)
ED visits POD 0–30 (*n*, %)	66 (14.2)
POD 0–2	31 (6.7)
POD 3–30	35 (7.5)
Mortality	0

[a]Severe complications according to Clavien-Dindo classification ≥ 3

ED emergency department, *POD* postoperative day, *SDD* same-day discharge

In the follow-up period between 48 h and 30 days postoperatively, another 20 patients were readmitted. Three of whom had a severe complication (Clavien-Dindo ≥ 3) that required surgical intervention, namely, two patients with anastomotic leakage and one patient with an early internal herniation. All of the other readmitted patients were treated conservatively, varying from observation for one time hematemesis to antibiotic treatment for an abscess or a urinary tract infection.

Out of the patients who were successfully discharged, 66 (14.2%) visited the ED during the 30-day follow-up period. Almost a third of them (21 patients) did not have a complication and were not treated or readmitted. The most common reason for their ED visit was abdominal pain without any morbidity. The other 45 patients were treated in the ED or readmitted to the hospital. There was no mortality. The outcomes are summarized in Table 3.

Patients who stayed overnight had a significant higher risk of severe complications ($p = 0.044$) compared to patients who were discharged the same day. Furthermore, prolonged operation time resulted in a significant higher risk of overnight hospitalization. Patients with dyslipidemia on medication had a higher risk of ED visits and readmission in the 30 days follow-up period. Current smokers had a significantly higher risk of severe complications, just like patients with a lower preoperative weight and BMI. There were no statistical differences in associations between the readmitted patients in the first 48 h postoperatively and the patients who were readmitted between day 3 and day 30 after surgery.

The tests for potential associations between patient characteristics, successful SDD, and postoperative outcomes are summarized in Tables 4 and 5.

Discussion

The aim of this study was to investigate whether same-day discharge after RYGB is safe for a selected group of patients. In this present study, we found a high success rate of 88.8% for SDD without readmission within 48 h. Furthermore, there was a low rate of severe complications of 1.3% in the 30 days follow-up period and no mortality. None of these complications was related to bleeding, which is the most feared and potentially lethal early complication in bariatric and metabolic surgery. It could be argued that the six severe complications (five patients with anastomotic leakage and one patient with an early internal herniation) found in this cohort were not influenced by the SDD protocol. These patients most likely would have been discharged on POD 1, as none of them had severe complaints during their telephonic consultation on POD 1. In a recent systematic review and meta-analysis, SDD after RYGB seemed promising, but with still limited evidence to draw definitive conclusions. The success rate of our study is comparable with results of this study (93% vs 88–98%). Our overall morbidity was higher (9.9 vs. 2.5–4%), but our reoperation rates were lower (1.3% vs 1.9–2.5%) [18]. This is most likely to our low threshold for readmission, where all readmitted patients were registered as morbidity.

There was a variety of reasons for overnight hospitalization. Most of the patients were not fit for discharge, due to pain, nausea, or dizziness. A smaller group of patients was

Table 4 Analysis of risk factors for unsuccessful SDD

	SDD yes ($n=465$)	SDD no ($n=35$)	p value
Age at surgery, years (mean, SD)	37 ± 11	38 ± 11	$p=0.711$ ‡
Female (n, %)	417 (89.7)	31 (88.6)	$p=0.836$ ¥
Weight, kg (mean, SD)	118 ± 16	120 ± 15	$p=0.425$ ‡
BMI, kg/m^2 (mean, SD)	42 ± 4	43 ± 5	$p=0.195$ ‡
ASA (n, %)			
2	145 (31.2)	11 (31.4)	$p=0.976$ ¥
3	320 (68.8)	24 (68.6)	
AHI (median, IQR)	4 (2 – 8)	5 (3 – 7)	$p=0.444$ §
Associated medical problems (n, %)			
Hypertension	70 (15.1)	6 (17.1)	$p=0.902$ ¥
NIDDM	25 (5.4)	4 (11.4)	$p=0.140$ ¥
Dyslipidemia	20 (4.3)	3 (8.6)	$p=0.245$ ¥
Smoking (n, %)			
No	247 (59.2)	17 (51.5)	$p=0.129$ ¥
Former	120 (28.8)	8 (24.2)	
Current	50 (12.0)	8 (24.2)	
Operation time, minutes (mean, SD)	45 ± 11	52 ± 15	**$p=0.004$** ‡
Complication within 30 days (n, %)	46 (9.9)	8 (22.9)	**$p=0.017$** ¥
Severe complication[a] (n, %)	6 (1.3)	2 (5.7)	**$p=0.044$** ¥

P values of $p<0.05$ are considered statistically significant and displayed in bold

¥ chi-square, ‡ independent-samples *t*-test, §Mann–Whitney *U*

[a]Severe complications according to Clavien-Dindo classification ≥ 3

AHI apnea hypopnea index, *ASA* American Society of Anesthesiologists, *BMI* body mass index, *IQR* interquartile range, *NIDDM* non-insulin dependent diabetes mellitus, *SD* standard deviation, *SDD* same-day discharge

kept in the hospital by the surgeon due to divergent vital signs or decrease in hemoglobin-level. In this study, patients who had overnight hospitalization showed significantly more overall and more severe complications (Clavien-Dindo ≥ 3; intervention required). This confirms that the strict criteria upon discharge are effective and needed. In line with our expectations, a significant prolonged operation time was associated with a higher risk of overnight hospitalization. A prolonged operation time could be a reflection of the surgical difficulty of the operation and therefore an increased risk of postoperative complications [19]. It could be a reason for the surgeon not to approve upon discharge, as the operation was more challenging than expected.

An important finding in this study was the relative high number of ED visits, as a total of 66 (14.2%) patients who were successfully discharged on the same-day discharged presented at the ED. About half of them visited the ED in the first 48 h postoperatively and the other half in the remaining follow-up period of 30 days. A previous study in our center showed a lower ED rate of 9.4% for patients after a primary RYGB or sleeve gastrectomy without SDD[20]. An obvious explanation for the high number of ED visits could be that the patients are provided with comprehensive and strict instructions before discharge. To prevent any delay in the detection of complications, patients were encouraged to contact the hospital in case of any complaints or alarming signs (e.g., severe pain, hematemesis, rectal blood loss, divergent vital signs). With limited studies available on same-day discharge after bariatric metabolic surgery, we took a cautious approach, so no complications would be missed. This probably resulted in a relatively high number of patients who presented at the ED, of whom 41 out of 66 (62%) patients were readmitted. Half of this group were already discharged after one or two nights of observation. Arguably, a considerable number of these patients was in no need of visiting the ED or being readmitted. The burden on the ED could be reduced, if patients were to be checked-up at the outpatient clinic during office hours, instead of in the ED. The strict instructions may have caused overtreatment in this study. However, an increase in ED visits do not outweigh the benefits of early detection of those patients that do have a complication and need medical attention.

In the present study, smokers had a significantly higher chance of severe complications and in particular a significant higher chance on anastomotic leakages ($p=0.001$). Five out of six leakages were caused by ischemia and there was one surgical error. This finding could be expected, as smoking has been described as a risk factor for complications after bariatric surgery [21]. Therefore, it could be recommended to exclude active smokers from SDD.

An interesting finding was that patients with dyslipidemia with pharmacological treatment had a significantly higher risk of ED visits, readmission, and severe complications after. In addition, patients with diabetes mellitus on oral medication had a significant higher risk of readmission, but no higher risk of ED visits or severe complications. This is not in line with the study of Nijland et al., who did not find dyslipidemia and diabetes mellitus on oral medication as a risk factor for readmission in a large cohort of 1669 patients with one or more overnight stay [20]. However, this finding could be explained by looking at dyslipidemia and diabetes mellitus as a part of the metabolic syndrome. This syndrome is a cluster of risk factors that can lead to developing chronic conditions, such as cardiovascular disease. In a recent systematic review on colorectal surgery, patients with metabolic syndrome were more likely to develop severe complications, which is in accordance with the findings in the present study [22]. Moreover, patients in our study with lower BMI and weight had a higher risk of severe complications. A discrepancy between BMI and morbidity and mortality has been described earlier, as a BMI between 30 and 40 kg/m^2 can have a "protective effect" [21]. Besides, the aim of this study

Table 5 Analysis of risk factors for postoperative outcomes

	ED visit: no ($n=400$)	ED visit: yes ($n=65$)		Readmission: no ($n=424$)	Readmission: yes ($n=41$)		Severe complication: no ($n=459$)	Severe complication: yes ($n=6$)	
Age at surgery, years (mean, SD)	37 ± 11	36 ± 10	$p=0.520$ ‡	37 ± 11	38 ± 11	$p=0.522$ ‡	37 ± 11	43 ± 12	$p=0.231$ ‡
Female (*n*, %)	359 (89.8)	58 (89.2)	$p=0.898$ ¥	380 (89.6)	37 (90.2)	$p=0.901$ ¥	411 (89.5)	6 (100.0)	$p=0.403$ ¥
Weight, kg (mean, SD)	119 ± 16	116 ± 17	$p=0.235$ ‡	118 ± 16	115 ± 18	$p=0.210$ ‡	118 ± 16	104 ± 13	**$p=0.032$** ‡
BMI, kg/m^2 (mean, SD)	42 ± 4	41 ± 4	$p=0.445$ ‡	42 ± 4	41 ± 4	$p=0.487$ ‡	42 ± 4	38 ± 3	**$p=0.028$** ‡
ASA (*n*, %)									
2	123 (30.8)	22 (33.8)	$p=0.617$ ¥	129 (30.4)	16 (39.0)	$p=0.256$ ¥	141 (30.7)	4 (66.7)	$p=0.059$ ¥
3	277 (69.3)	43 (66.2)		295 (69.6)	25 (61.0)		318 (69.3)	2 (33.3)	
AHI (median, IQR)	4 (2–8)	4 (1–7)	$p=0.384$ §	4 (2–8)	5 (2–8)	$p=0.719$ §	4 (2 – 8)	2 (0–8)	$p=0.245$ §
Associated medical problems (*n*, %)									
Hypertension	58 (14.5)	12 (18.5)	$p=0.407$ ¥	60 (14.2)	10 (24.4)	$p=0.080$ ¥	69 (15.0)	1 (16.7)	$p=0.911$ ¥
NIDDM	20 (5.0)	5 (7.7)	$p=0.372$ ¥	20 (4.7)	5 (12.2)	**$p=0.043$** ¥	24 (5.2)	1 (16.7)	$p=0.217$ ¥
Dyslipidemia	13 (3.3)	7 (10.8)	**$p=0.006$** ¥	12 (2.8)	8 (19.5)	**$p<0.001$** ¥	18 (3.9)	2 (33.3)	**$p<0.001$** ¥
Smoking (*n*, %)									
No	217 (60.3)	30 (52.6)	$p=0.076$ ¥	227 (59.9)	20 (52.6)	$p=0.065$ ¥	244 (59.4)	3 (50)	**$p=0.010$** ¥
Former	105 (29.2)	15 (26.3)		111 (29.3)	9 (23.7)		120 (29.2)	0	
Current	38 (10.6)	12 (21.1)		41 (10.8)	9 (23.7)		47 (11.4)	3 (50)	
Operation time, minutes (mean, SD)	45 ± 11	47 ± 11	$p=0.120$ ‡	45 ± 11	48 ± 10	$p=0.221$ ‡	45 ± 11	51 ± 6	$p=0.332$ ‡

P values of $p<0.05$ are considered statistically significant and displayed in bold

¥ chi-square, ‡ independent-samples *t*-test, §Mann–Whitney *U*

AHI apnea hypopnea index, *ASA* American Society of Anesthesiologists, *BMI* body mass index, *ED* emergency department, *IQR* interquartile range, *NIDDM* non-insulin dependent diabetes mellitus, *SD* standard deviation

was to demonstrate safety for SDD and not to determine risk factors for severe complications.

For clinical practice, we consider that expectation management in patients is a crucial factor for successful same-day discharge. Patients should be motivated to be discharged at the end of the day and therefore have to start mobilizing early after the surgery. It is important to have a dedicated bariatric team on the nursing ward to support them in this process. In addition, extensive information on potential complications and any modality of remote monitoring has to be provided by the bariatric team upon discharge.

The present study has several limitations. Firstly, no randomization between patients undergoing bariatric surgery in SDD or with overnight hospitalization was performed, which would give a more valid comparison between the outcomes of these patients. However, the rate of severe complications is lower than the national average of 1.6%, based on the database of the *Dutch Audit for Treatment of Obesity,* probably due to strict selection of patients [2]. Another important limitation to take into consideration is patient satisfaction, which was not measured in this study. It would be relevant to test patient satisfaction, as the responsibility of detection of complications is partially relocated to the patients instead of healthcare providers. Finally, simple remote monitoring was used in this study, by providing the patients with a pulsoximeter and thermometer. These data were not analyzed in this study, so no recommendations can be given on remote monitoring. In the future, more research should be done to in order to investigate the optimal modality of remote monitoring and follow-up after surgery. In addition, patient satisfaction on SDD should be evaluated, and the selection criteria for eligible candidates for SDD should be further investigated. At last, an extensive cost-effectiveness study should be performed, as only a small study by Ignat et al. in 2022 implied that day-case bariatric surgery appears beneficial in terms of cost [23].

Conclusion

There is an increasing demand on hospital capacity worldwide due to the COVID-19 pandemic and local staff shortages. Because of our SDD protocol, our hospital could continue performing bariatric surgery in these challenging times, even with the high burden on clinical capacity. With the results of this study, safety of this protocol has been demonstrated. It is important to carefully select patients, to have strict discharge criteria and to have a low threshold in readmitting patients, in order to reduce the impact of complications. Moreover, patient expectation is crucial for successful same-day discharge. This promising novel care pathway can ensure the continuation of bariatric and metabolic surgeries in times of increasing demand and decreased hospital capacity.

Data Availability The data that support the findings of this study are available on request from the corresponding author.

Declarations

Ethical Approval and Informed Consent The study has been performed in accordance with the Declaration of Helsinki, originally adopted in 1964, and its later amendments or comparable ethical standards. The need to obtain informed consent for this study was waived by the local Medical Ethics Committee.

Conflict of Interest The authors declare no competing interests.

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