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Recovery to usual activity after outpatient anorectal surgery

THESE

préparée sous la direction du Professeur Dieter Hahnloser

et présentée à la Faculté de biologie et de médecine de
l'Université de Lausanne pour l'obtention du grade de

DOCTEUR EN MEDECINE

par

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ORIGINAL SCIENTIFIC REPORT

Recovery to Usual Activity After Outpatient Anorectal Surgery

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Abstract

Background Most elective anorectal procedures are performed in an outpatient setting, and the supposed recovery time is short. The aim of the present study was to assess return to usual physical activity (UPA), return to work and quality of life (QOL).

Methods This prospective single-center cohort study included consecutive patients undergoing outpatient anorectal procedures. Physical and work activities were assessed using the validated International Physical Activity Questionnaire 7 days before surgery and 7, 14 and 30 days thereafter. In addition, patients were inquired daily on their postoperative QOL until postoperative day (POD)10 on a visual analogue scale (0–10). Patients were stratified by their preoperative physical activity score (POPAS; low, moderate and high).

Results Out of 379 patients, 100 (63 men) were included with a median age of 40 years [interquartile range (IQR) 27]. General QOL was rated at a median of 8/10 (IQR 3.5) at POD10. On POD30, only 69% and 71% of patients had returned to UPA and work, respectively. Patients who returned to UPA at POD30 had a better median QOL at POD10 than those who did not (9 vs. 7/10, $p = 0.015$). Patients with low POPAS and moderate POPAS returned to UPA earlier than patients with high POPAS (83%, 86% and 44% on POD30, respectively, $p = 0.005$).

Conclusions Return to UPA and work after outpatient anorectal surgery took longer than expected despite a good QOL 10 days after surgery. High physical activity was associated with longer recovery time. These elements should be emphasized during preoperative counseling.

Introduction

Anorectal diseases are frequent and mainly affect young, physically active and working people [1]. Patients requiring surgery want to return to work and to their normal physical activity as soon as possible. Today, 90% of elective anorectal surgery is performed in an outpatient setting [2, 3]. There are recommendations and guidelines for outpatient anorectal surgery, like perianal block and enhanced recovery after surgery protocol with eight elements pathway allowing decreased postoperative pain [3–7]. However, little is known about timing of return to usual physical activity (UPA), recovery in quality of life (QOL), return to work as well as factors that influence these important outcomes.

The aim of the present study was to assess return to UPA, return to work and QOL after outpatient anorectal surgery.

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Materials and methods

Study design and participants

All consecutive patients undergoing outpatient anorectal surgery between November 2013 and January 2017 at the Lausanne University Hospital CHUV, Switzerland, were eligible to participate in this prospective observational cohort study. Patients <16 years and those not speaking French were excluded. The following demographic parameters were collected prospectively: gender, civil status, children at home, work, salaried versus independent workers. Only patients who completed all parts of the survey were included for final analysis. The study was approved by the Institutional Review Board (CER-VD 2013-312/13). All patients provided written consent. The study was conducted and reported according to STROBE criteria [8].

Physical activity

The validated International Physical Activity Questionnaire (IPAQ) long form was used to assess physical activity. The questionnaire was self-administered, validated in French and had one version for people working and one for those who did not [9]. It assessed physical activity in various daily domains such as work, transportation, housework, sport or leisure time including sitting time. With this questionnaire, it was possible to calculate the usual metabolic equivalent task (MET-min/week) and the sitting time per week. Patients had to fill in the questionnaire the day before the operation (IPAQ1), at postoperative day (POD) 7 (IPAQ2), POD14 (IPAQ3) and POD30 (IPAQ4). Return to usual physical activity (UPA) was defined as return to >75% of IPAQ1 score, and return to work was defined as return to >75% of the physical activity at work filled in the IPAQ1.

Preoperative physical activity score (POPAS) was defined according to the IPAQ1 score and determined a baseline for every individual patient. Every patient was standardized to himself. Low-activity group included patients realizing less than 600 MET-min/week, moderate-activity group included patients realizing at least 20 min of vigorous activity, or 5 or more days with at least 30 min of moderate-intensity activity, or 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities with at least 600 MET-min/week, and high-activity group included patients realizing 3 or more days of vigorous-intensity activity and at least 1500 MET-min/week, or 7 days of any combination of walking, moderate-intensity or vigorous-intensity activities with at least 3000 MET-min/week.

In addition, patients were stratified depending on their weekly sitting time in two different groups: low sitting time (<5 h/day) and high sitting time (>5 h/day). The 5-h cutoff was defined by the median sitting time of the cohort.

Patient's QOL

Patients had to daily grade their subjective QOL and symptoms on a visual analogue scale (VAS, 0 = very bad, 10 = usual status) during the first 10 days after the operation. The following aspects were assessed using this VAS: general QOL, sleep, hunger, bowel movements, housework physical activity, leisure-time physical activity, physical activity at work. Sitting time was evaluated using another VAS definition (0 = no sitting time at all, 5 = usual preoperative sitting time, 10 = double usual preoperative sitting time), as well as pain at rest, pain at mobilization and pain at defecation (0 = no pain, 10 = worst pain).

Follow-up

Patients were asked to answer the questionnaires at timepoints using stamped envelopes that had to be returned by mail. Every week a study-nurse or a surgeon called the patient by phone to answer any questions and to ask to fill in the forms and to send them back. All patients were followed up at our institution until wound healing and/or at least 6 weeks. Readmission is defined as rehospitalization within 30 days after surgery. Visits to the general practitioner do not count as readmission.

Surgical procedures

All patients had a perineal block for pain control before the incision (bupivacaine 0.5%, 20 ml) with the exception of operations for pilonidal sinus, which were done in local anesthesia. Paracetamol, NSAIDs and tramadol were prescribed systematically postoperatively. Laxatives were prescribed depending on the type of surgery.

Sick leave

Our standard approach was to give a sick leave for 6 days, the time of the first postoperative visit. During that visit, sick leave was prolonged individually according to patients' symptoms and work.

Statistical methods

Based on similar studies, 100 patients were considered sufficient for the purpose of the study [10, 11]. Continuous variables were presented as mean (standard deviation, SD) or median (interquartile range, IQR) according to their

distribution (Shapiro–Wilk test) and compared with Mann–Whitney *U* test or Kruskal–Wallis test when appropriate. Categorial variables were presented as frequencies (percentage) and compared with Pearson's Chi-square or Fisher's exact test as appropriate. A *P* value ≤ 0.05 was considered statistically significant, and all tests were two-sided. Statistical analysis was performed using IBM© SPSS© Statistics 25, USA.

Results

Patients

A total of 379 patients with outpatient anorectal surgery were screened during the study period. Of those, 258 consented to participate during the initial visit. On the day of surgery, 146 patients had answered the first questionnaire IPAQ1 and 100 patients completed all questionnaires during the follow-up. The flowchart is shown in Fig. 1. Demographics for the study cohort are displayed in Table 1.

Table 1 Patient demographic characteristics

	Total *N* = 100
Median age	40 years (IQR 27)
Gender (m/f)	63:37
Married/single	55:45
Children at home (yes/no)	36:64
Work (yes/no)	69:31
Independent workers/salaried	8 (12%):61 (88%)
POPAS (low/moderate/high)	12:35:53
Sitting group (low/high)	51:49
Operations	
Pilonidal sinus excisions	30
Fistulectomies	21
Hemorrhoidectomies	21
Fissurectomies	12
Multiple skin tag excisions	7
Condyloma resections	4
Supralevator abscess drainages	3
Plasties for anal strictures	2

Return to UPA

28% of patients recovered their UPA at POD7, 51% at POD14 and 69% at POD30. If the wound was closed at POD30, UPA was 73% as compared to 62% ($p = 0.361$) in patients with a wound still needing medical care. Figure 2a shows return to UPA regarding different criteria. There is no significative difference for return to UPA according to gender, marital status, children at home, work or between the three main operations. Figure 3a, b shows mean VAS score from postoperative day 1 to 10 demonstrating that all the items progressed in a favorable way tending to reach the preoperative patient's baseline. Pain gradually decreased from day 1 to 10.

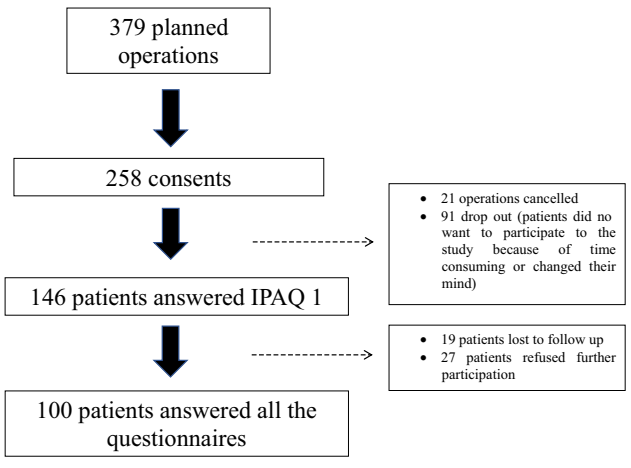

Fig. 1 Flowchart

Return to work

At POD7, 8/69 (12%) of workers resumed at least 75% of their professional activity, 42% at POD14, and 71% at POD30. In patients who had a healed wound at POD30, 79% returned to work versus 58% of patients with still a need for wound management ($p = 0.099$). Figure 2b shows return to work at POD30. There is no significant difference for return to work regarding gender, marital status, children at home, work or between the three main operations.

POPAS

There was no significant difference between low-, moderate- and high-POPAS patients in terms of demographics (Online Appendix 1). Median QOL and pain scores were not significantly different between low-, moderate- and high-POPAS patients at POD10 (8.5, 7.7 and 7.6/10; $p = 0.52$ and 1.3, 2.4 and 2.4/10; $p = 0.33$, respectively). There was no difference in quality of sleep at POD10 (9.1, 8.3 and 8.4/10; $p = 0.45$). Return to work at POD30 among the three groups was 67%, 57% and 77% ($p = 0.13$). Return to UPA at POD30 was significantly lower for the high-POPAS patients (83%, 86% and 55%; $p = 0.005$). Figure 4 shows patients with low POPAS more returned to their UPA at POD30. The mean physical activity evolution according to the POPAS is shown in Fig. 5.

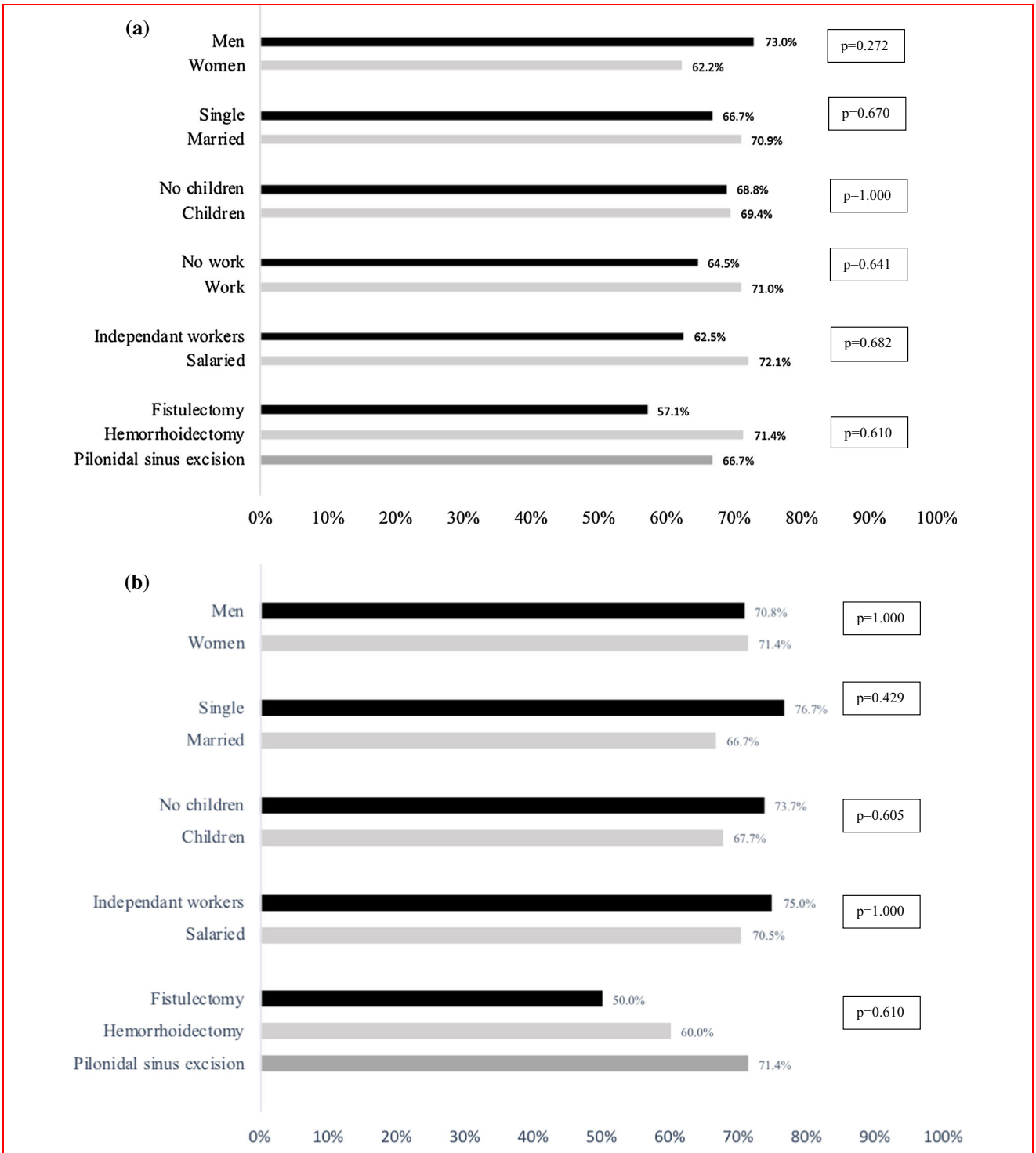

Fig. 2 **a** Return to usual physical activity at postoperative day 30. **b** Return to work at postoperative day 30

QOL

Figure 6 shows patients who returned to UPA at POD30 had a significant better subjective general quality of life from POD1 to POD10.

Sitting time

Demographically, there was no significant difference between low- and high-sitting-time groups (Online Appendix 2). There was also no significant difference

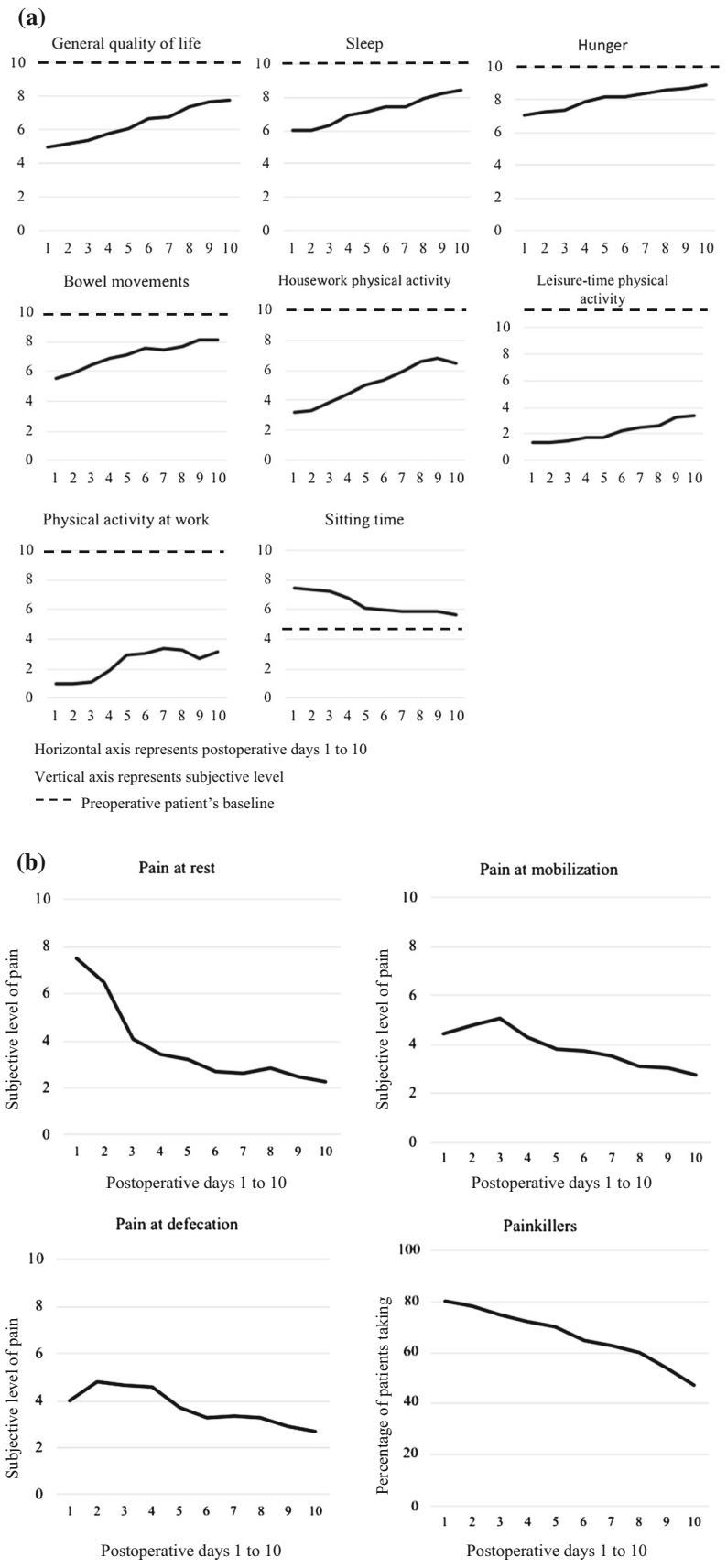

Fig. 3 **a** Mean VAS score from postoperative day 1–10. **b** Mean pain VAS score from postoperative day 1–10

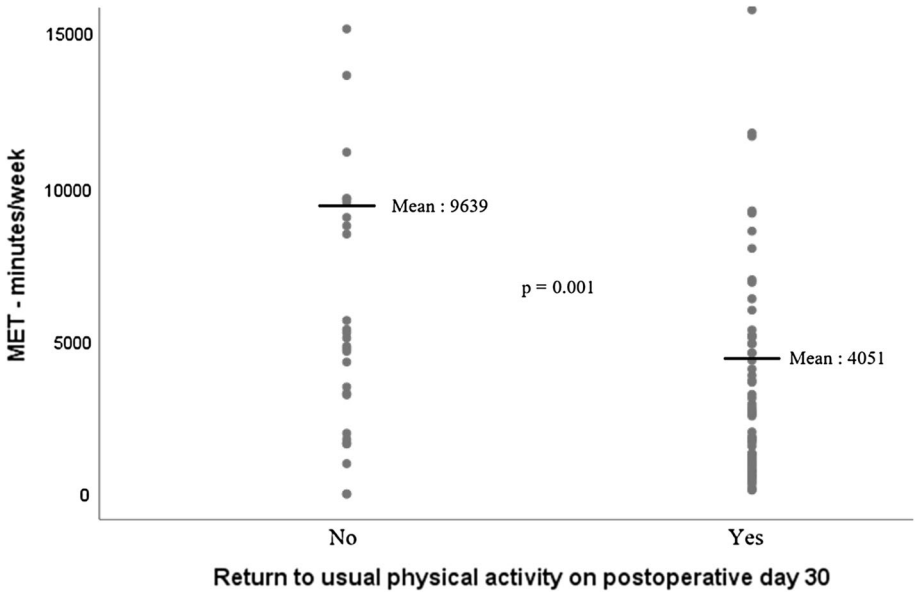

Fig. 4 Comparison between patients returning to their usual physical activity at postoperative day 30 according to their preoperative activity score

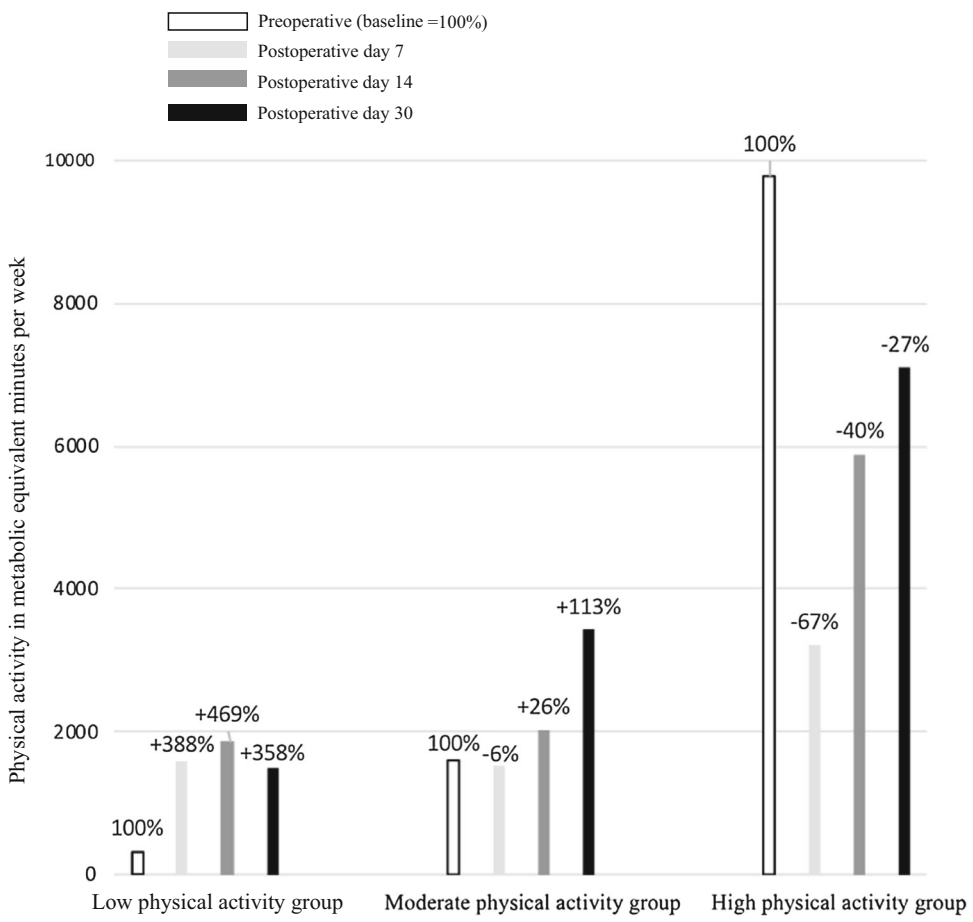

Fig. 5 Mean physical activity evolution according to the activity group

between low- and high-sitting-time groups for return to UPA at POD30 (65% vs. 73%, $p = 0.392$), return to work at POD30 (71% vs. 71%, $p = 1.000$) or healed wounds at POD30 (63% vs. 69%, respectively, for low- and high-sitting-time groups, $p = 0.531$).

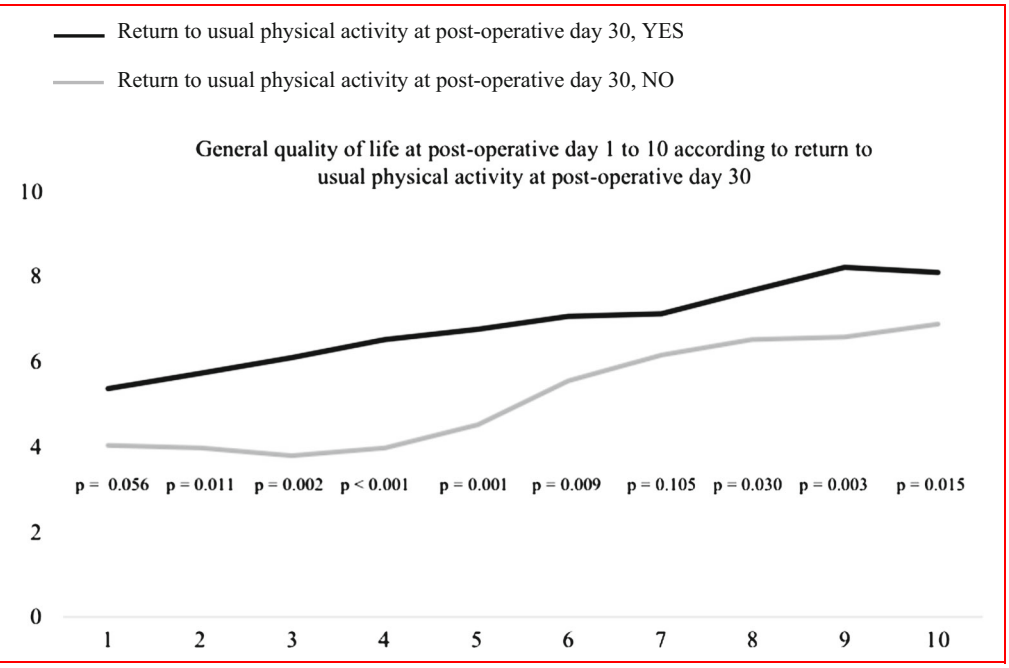

Fig. 6 General quality of life on the VAS score from postoperative day 1–10 in patients with and without return to usual physical activity at postoperative day 30

Readmission

Three out of 100 patients (3%) were hospitalized within 30 days after the operation for pain control, bleeding and urinary retention, respectively.

Discussion

Return to UPA and work after outpatient anorectal surgery took longer than expected despite good QOL and pain control 10 days after surgery. Patients with high preoperative physical activity (according to POPAS score) recovered their UPA less quickly. Preoperative sitting time had no influence on return to UPA or work. Also, no significant difference was found regarding gender, civil status, children at home and work. These results could help to plan recovery time and correctly adapt patient's expectations.

Pain was well controlled, and patients had a good subjective QOL at POD10 but still did not return to work or recover their UPA. These findings correlate with another prospective study of 222 anorectal surgery cases, with mean pain scores of 3.4 at POD1 and 1.2 at POD7 [12]. It is accepted that perineal block with local anesthesia reduces postoperative recovery time and decreases the use of painkillers [5]. A prospective study showed that most patients improved QOL after anorectal surgery with improved pain from 3.9 to 2.9 ($p = 0.001$) and an overall postoperative satisfaction of 92.4% [7]. In this present study, patients who had a good quality of life in the 10 first postoperative days recovered faster.

Compared with other general surgery procedures, this present study showed a similar recovery time needed to return to work. An observational study published in 2015 showed that mean return to work after general surgery (laparoscopic cholecystectomy, unilateral inguinal hernia and hemorrhoidectomy) was 35.7 days [10]. The reasons for not returning earlier to work were fear of complications (37.5%), pain control (37.5%), surgeon recommendation (12.5%) and general practitioner recommendation (12.5%). These numbers may be regarded as high but may also be easily understood because of the limitation for carrying heavy loads at work after cholecystectomy and inguinal hernia repair. However, return to work was described after 4–19 days after outpatient anorectal surgery [13, 14]. This is in contrast to the present study where one out of 3 patients only was not able to return to work at POD30. The reasons may be that an objective and validated tool (IPAQ) was used to asses return to work, which could be therefore more likely representative. Of note, healing after proctological procedure may be long; for example, 35 patients assessed prospectively 6 weeks after lateral internal sphincterotomy showed 94% healing [15]. The present study was limited to a follow-up at 30 postoperative days, and 58% of patients with delayed healing had not returned to work. Thus, wound healing issues seemed important in delayed return to UPA and work, despite a good QOL and pain control. This longer recovery time needs to be emphasized when counseling preoperatively patients.

In this present study, patients with a high POPAS needed more time to return to their level of preoperative physical activity than sedentary people. A high POPAS

means more time to recover this high level of physical activity after surgery. It is interesting to observe that patients with low POPAS and moderate POPAS exceeded over their baseline activity after surgery, so they gained more activity. This postoperative increased activity could be explained by their pathology before surgery. Similarly to the present findings, a Spanish prospective study with 108 consecutive patients showed a significant physical functioning improvement 6 months after lateral internal sphincterotomy ($p = 0.005$) [11].

Another point to emphasize is the sitting time. In the present cohort, sitting time had no influence on return to UPA. In fact, sitting time after surgery was higher than preoperatively, suggesting that patients did not avoid sitting on the operation site. Thereby, preoperative sitting time seemed not to be an important factor for recovery. Surgeons should therefore not focus on sitting time when evaluating the patient's sick leave duration.

In this study, the 30-day readmission rate was 3%. This is less that what is described in the literature. In Switzerland, readmission is defined as rehospitalization within 30 days after surgery. Visits to the general practitioner do not count as readmission. In a retrospective study in Southern California with 5929 anorectal operations, they showed an 8% return to care after anorectal surgery [16].

One of the most important findings of the manuscript is that now patients can be counseled on their return to usual activity before the operation and meet their expectations better. This additional information in now imbedded in our daily practice as all patients are asked on their physical activities. Like in an ERAS (Enhanced Recovery program After Surgery), preoperative information is crucial also for proctological operations. This result is used to inform our patients and to prepare them to their expected recovery. Patients can anticipate their time needed to return to their physical activity and work. They are told that the return to their physical activity takes longer and that sick leave will be approximately 10–14 days at least.

Several limitations of the present study need to be addressed. First, due to the lack of preliminary data and available studies, the sample size was based on clinical considerations and arbitrarily fixed at 100 patients. Secondly, the drop-out rate was high. This could be explained by the fact that the questionnaires were long and time-consuming to fill in, especially for active working patients. A selection of bias of only highly motivated patients eager to resume full physical activity may be possible. Some patients, not satisfied with surgery, may also have stopped to answer the survey. Thirdly, preoperative symptoms were not analyzed. The IPAQ questionnaire assessed the physical activity within the 7 days before the operation and in theory not their "usual" physical activity without the symptoms of the proctological disease. Therefore, we can assume that his preoperative physical activity takes into account his symptomatology. As the operation cured the symptoms, some values after the operation were higher than the preoperative values. We can imagine patients more disabled because of their preoperative pathology could recover faster because surgery solved their problem. A preoperative questionnaire could have reinforced the hypothesis that patients with low POPAS and moderate POPAS had exceeded over their baseline activity after surgery because they had gained more activity when they were operated. Fourthly, we did not individually measure if patients were compliant and took their prescribed pain medication. However, pain was assessed daily on a VAS scale and was well controlled (see Fig. 3b). We can assume pain medications were taken on a regular basis. Furthermore, this may be an important bias; IPAQ was never used for anorectal surgery before. On the other hand, IPAQ was validated for assessing physical activity and proctology surgery has an impact on physical activity; thus, IPAQ use may be justified [17]. Another point is that previous IPAQ studies described some overestimation of physical activity [18]. Overestimation was observed when participants self-reported their duration and frequency of physical activity on the day they most often practiced activities. In the present study, the comparison focused on patient's evolution at different time points, rather than using comparison to a normal population. This fact may strengthen the results of the present study. Another limitation is we did not study indirect costs (due to non-return to work, for example). However, we can now inform the individual patient on the expected return to usual activity, so he can better plan his sick leave. This should help reduce indirect costs.

In conclusion, return to UPA and work after outpatient anorectal surgery took longer than expected despite good postoperative QOL and pain control, possibly because of wound healing issues. Patients with a high preoperative physical activity recovered slower. Sitting time seemed to have no influence on recovery. These results could help to plan optimal recovery time during preoperative patient's counseling.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Informed consent was obtained from all individual participants included in the study.

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