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**FMUP** FACULDADE DE MEDICINA  
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**MESTRADO INTEGRADO EM MEDICINA**

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Mariana Francisca Costa Ramos da Rocha Marques

Qualidade de recuperação e dor aguda pós-operatória em  
doentes oncológicos

Quality of recovery and acute postoperative pain in  
oncologic patients

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Mariana Marques

Aos meus pais,  
ao Avô Maneca, à Verinha e  
ao meu irmão.

# **QUALITY OF RECOVERY AND ACUTE POSTOPERATIVE PAIN IN ONCOLOGIC PATIENTS**

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*There are no conflicts of interests*

## ABSTRACT

**Study Objective:** Evaluate acute postoperative pain and its impact in the quality of postoperative recovery in patients scheduled for oncologic surgery.

**Design:** An observational prospective study.

**Setting:** Post-Anesthetic Care Unit.

**Patients:** Patients undergoing oncologic surgery under general anesthesia.

**Interventions:** The Postoperative Quality of Recovery Scale (PQRS) and the Quality of Recovery 15 (QoR-15) were used to evaluate the quality of recovery. QoR-15 was applied on the day before (D0) and the first day after surgery. PQRS was evaluated at D0 and after surgery at minute 15 (T15), 40 (T40) and days 1 (D1) and 3, to evaluate recovery in five domains: Physiologic (PD), Nociceptive (ND), Emotional (ED), Cognitive (CD) and Activities of Daily Living (ADL).

**Measurements:** Patients were considered to have Moderate to Severe Acute Postoperative Pain (MSAPP) if they rated  $< 10$  in the 11<sup>th</sup> and 12<sup>th</sup> questions of QoR-15. Poor Quality of Recovery (PQR) was defined as a QoR-15 score lower than the mean QoR-15 score minus 1 standard deviation at D1.

**Main results:** One-hundred thirty eight patients were enrolled. The incidence of MSAPP was 62%. Patients with MSAPP presented PQR more frequently (25% vs. 2%,  $p<0.001$ ) and were younger (62 vs. 70,  $p=0.002$ ); they had lower scores in 9 items of QoR-15 and lower total QoR-15 scores at D1 (median: 103 vs 126,  $p>0.001$ ). The complete recovery was better in patients with MSAPP in CD at T15 (12% vs. 2%,

p=0.037) and worse in ND at T15 (87% vs. 68% p=0.014), T40 (81% vs. 63% p=0.029) and D1 (83% vs 66%, p=0.028).

**Conclusions:** Patients with MSAPP were younger than patients without MSAPP. Patients with MSAPP had a PQR suggesting an adverse impact of pain in PO recovery. However, these patients recovered faster in some PQRS domains (cognitive).

## **KEYWORDS**

Acute pain; pain, postoperative; quality of life; postoperative care



## 1. Introduction

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage, according to the International Association for the Study of Pain [1].

Pain treatment has assumed an important role in perioperative care over the last decade. In fact, it was recently considered the sixth human sense, and the impact was so significant that studies on the subject have increased in recent years [2]. A major leap forward in the management of cancer-related pain occurred during the years after the publication of guidelines by the World Health Organization (WHO) in 1986. However recent studies documented that relief of cancer pain is far from satisfactory, even in the most developed parts of the world [3-5].

Although there is a substantially increased attention focused on effective pain control, inadequate treatment of postoperative (PO) pain continues to be an important clinical problem despite advances in analgesic techniques [6, 7]. Evidence suggests that less than half report adequate PO pain relief [8] and a significant proportion of patients develop chronic PO pain, with deleterious consequences [9].

The recovery after surgery and anesthesia is a complex process and, in the past, most of the studies examining interventions in the perioperative period were primarily focused on physiological endpoints, recovery times, and the incidence of adverse events, such as major morbidity (postoperative organ dysfunction or surgical complications) and mortality [10, 11]. Recently, studies about postoperative outcomes changed its perspective and started to focus on patient-reported outcome measures. Additionally, PO pain assessment is useful to evaluate the postoperative quality of recovery and it is a major cause of delayed recovery and discharge after surgery [9].

Qualities of recovery (QoR) scores are patient-reported outcome measures evaluating recovery and anesthesia after surgery and their impacts on physiological, emotive and cognitive domains [12].

Quality of Recovery 15 items questionnaire (QoR-15) is a clinically acceptable and feasible patient-centered outcome measurement of quality of life after surgery. The score evaluates domains such as patient support, comfort, emotions, physical independence and pain; and it has demonstrated good validity, reliability, responsiveness and acceptability and feasibility in surgical patients (**Fig.1**) [13].

The Postoperative Quality of Recovery Scale (PQRS) is a measurement tool to quantify the quality of recovery after surgery and anesthesia. It has several questions that objectively measure patient recovery from patient's perspective, which are clustered into five domains: physiological (PD), nociceptive (ND), emotive (EM), cognitive (CD) and activities of daily living (ADL). It has been designed to measure recovery over multiple time periods [12].

QoR-15 and PQRS were recently developed and tested, being both valid and efficient for the evaluation of PO quality of recovery [12, 13].

Following a vast literature search, it was determined that recovery should be measured in multiple domains and extended beyond the immediate recovery period. For many anesthesiologists, physiological safety is the paramount concern but the emerging thinking is that "what happens in the operating room may influence recovery well beyond hospital discharge" and ties in well with techniques and protocols to enhance recovery after surgery. The group agreed that a baseline recording would be required and then immediate, early, late and long-term assessments would be performed [14]. It was also agreed that the final tool must be usable in any clinical setting for any procedure anywhere in the world and that it would provide data which could be used for

clinical trials and also for simple audit processes. The concept of measuring multiple domains of recovery over repeated times enables the researcher to investigate how the different recovery domains interact, as well as the follow-on consequences of poor recovery in one domain on other aspects of quality of recovery [14, 15].

The aim of our study was to investigate the presence of acute postoperative pain in patients scheduled to oncologic surgery and its impact in the quality of postoperative recovery.

## 2. Materials and methods

We conducted an observational prospective study in the Post Anesthetic Care Unit (PACU) of Centro Hospitalar São João (CHSJ), Porto, Portugal, after the approval of our Institute Ethic Committee (n° 164/16). The CHSJ is a tertiary hospital, with 1.124 beds, located in a metropolitan area covering 3.000.000 people. Informed consent was obtained from patients scheduled for elective oncologic surgery that would be admitted to PACU between June and September of 2016. Patients were included if they were older than 18 years and were submitted to oncologic surgery from four surgical departments: general surgery, gynecology, plastic and reconstructive surgery and urology. Patients were excluded if one of the following factors were present: inability to give informed consent, inability to speak Portuguese, had distress or any severe pre-existing medical condition that limited objective assessment after the operation or the presence of any life-threatening postoperative complication and cognitive impairment.

We collected the following clinical variables: patient demographics data, American Society of Anesthesiologists (ASA) physical status, medical history, comorbidities, usual medication, revised cardiac risk index (RCRI), duration of anesthesia and level of education.

Adapting a classification scheme developed by Lee and colleagues, we calculated the Revised Cardiac Risk Index (RCRI) score for each patient, assigning one point for each of the following risk factors: high-risk surgery, coronary artery disease, congestive heart failure, diabetes mellitus on insulin, cerebrovascular disease and chronic kidney disease with preoperative serum creatinine  $\geq 2$ mg/dl [16]. According to Lee, high-risk surgery includes all intrathoracic, intraperitoneal and supra-inguinal vascular procedures.

Anesthesiologists were blinded to patient involvement in the study and anesthesia was provided and monitored according to the usual standard care and criteria of the anesthesiologist in charge.

The QoR-15 questionnaire is a recently developed patient-reported outcome measurement of PO quality of recovery. It reproduces the psychometric properties of the QoR-40 and yet be more feasible to use. It has 15 questions that assess the patient-reported quality of postoperative recovery using an 11-point numerical rating scale (for positive items, 0 = "none of the time" to 10 = "all of the time"; for negative items the scoring was reversed) that leads to a minimum score of 0 (poor recovery) and a maximum score of 150 (excellent recovery). QoR-15 questions were applied the day before surgery (D0) and in the first day after surgery (D1).

Patients with MSAPP were defined as patients who presented Moderate to Severe Acute Postoperative Pain reported less than 10 in 11<sup>th</sup> or 12<sup>th</sup> questions of QoR-15.

Poor Quality of Recovery (PQR) was defined as a QoR-15 score lower than the mean QoR-15 score minus 1 standard deviation at D1.

The PQRS objectively measures patients' recovery and it was evaluated at D0 and after surgery at minute 15 (T15), 40 (T40) and at D1 and 3<sup>rd</sup> PO day (D3). Complete recovery was defined as a return to baseline values or better values for all PQRS questions.

The baseline (pre-surgery) and in-hospital questionnaires were performed by face-to-face interview.

Regarding statistical methodology, descriptive statistics were applied and nonparametric and parametric tests were performed for comparison between numerical variables according to their distribution, and chi-square or fisher test for categorical variables.

### 3. Results

We recruited one hundred and thirty eight patients and all of them have completed the study (n=138). The **Table 1** shows the main characteristics of our sample.

The incidence of MSAPP was 62% (n=85) and we did not detect differences in pain severity in gender, level of education, ASA physical status, body mass index (BMI), medication, comorbidities RCRI or duration of anesthesia (**Table 2**) . Patients with MSAPP were younger (62 vs. 70 years,  $p=0.002$ ).

**Table 3** resumes the PQRS scores obtained according to the presence of moderate to severe acute postoperative pain and it shows a significant difference between the two groups of patients in Nociceptive domain (at T15, T40 and D1) and in Cognitive domain at T15.

Regarding QoR-15 questionnaire, there were no differences in the baseline evaluation between patients with MSAPP and patients without MSAPP, except in the 15<sup>th</sup> question (Supplementary Material 1). However, several differences were obtained at D1, as it is presented in **Table 4**.

Twenty-two patients (16%) presented PQR. MSAPP patients had a higher incidence of PQR (25% vs 2%,  $p<0.001$ ).

#### 4. Discussion

The main findings of this study were: the incidence of patients with MSAPP (62%); the association between lower age and the presence of MSAPP, and the negative impact of MSAPP in PQRS domains and QoR-15, which highlights its detrimental impact in the recovery of patients who underwent oncologic surgery.

The incidence of patients with MSAPP in our study (62%) is, in general, in accordance with literature. In fact, although there are some previous studies which indicates that less than half of the patients, who underwent major surgery, experienced MSAPP on Day 1 (43%), in recent studies, it was shown that the majority of them reported moderate to severe postoperative pain (75%) [8, 17]. This shows that, despite of all the efforts in the management of postoperative pain, MSAPP is still very present in postoperative recovery in oncologic patients [18, 19].

In our sample, we could verify that there's no clearly association between previous comorbidities/medication or education environment (level of education) and MSAPP. Also, the length of stay in PACU or in hospital does not have influence. This may not be in accordance with what we expected since elderly patients have co-existing diseases and concurrent medications, diminished functional status and physiological reserve, and pharmacokinetics changes that make the management of postoperative pain (and its relief) a difficult task [20, 21]. However, we were able to detect an association between age and MSAPP: the group of patients with MSAPP was younger. Previous experimental studies suggest that older adults, compared with young adults, report a lower intensity of PO pain, despite such findings may depend on the age range of the sample and the type of scale used to measure pain [22, 23]. In fact, there is an age-related decrease in pain perception (sensitivity) and report, mainly after the age of 70

years, although the cause for this still remains inconclusive; however one can postulate that it may be due to aging process or reflect comorbid disease, bio cultural effects or either psychosocial influences) [22].

Postoperative recovery has been described by Allvin et al [24] as a complex process that includes five definition attributes: an energy-requiring process; a return to a state of normality and wholeness defined by comparative standards; regaining control over physical , psychologic, social and habitual functions; returning to preoperative levels of (in)dependency in activities of daily living; and regaining one's optimum level of well-being [24]. Since the whole construct of recovery will only be fully captured if every dimension will be assessed, we evaluated all the PQRS domains in the two groups of patients and, according to our results, we could establish some differences between them [11].

According to our findings, the complete recovery was worse in patients with MSAPP in all time frames of Nociceptive-PQRS domain except at Day 3. In fact, acute pain over the first 3-4 postoperative days increases the risk of transition to a persistent pain state [25]. We could also observe that patients with MSAPP had a better recovery in Cognitive domain at T15. This probably may happen because physically, extended periods of unrelieved severe pain can result in physiologic changes that include pituitary-adrenal activation of central action of the pain such as stimulation of stress hormones (cortisol) which, in turn, may improve the short time memory and diminished immune response. There is also sympathetic activation in association with pain, which may result in an upwards patients arousal which could justify this results in patients with MSAPP [19]. However, maybe it will be useful to have more future research on



the comprehension of the exact impact of pain in these specific domains in patients with MSAPP.

Assessing postoperative pain is useful to evaluate the postoperative quality of recovery (and life) and, in fact, a significant proportion of patients who report moderate to severe acute PO pain have shown worst outcomes in the quality of life, functional recovery, risk of post-surgical complications, and even the risk of persistent postsurgical pain [8].

As it was demonstrated by QoR-15, there were some domains where patients with MSAPP had lower scores at D1 after surgery. In fact, our results shows that this group of patients had a poor recovery not only in physical well-being (pain, physical comfort and physical independence) – questions 3, 4 and 8- but also in mental state (psychological support and emotional state) - questions 7, 9, 10 and 15 [5, 13].

In our findings there was an association between PQR and MSAPP. As expected, the PQR was more frequent in patients with MSAPP as it was demonstrated in previously studies such as Myles et al [8]. Since the Poor Quality of Recovery was measured by QoR-15, we could verify that postoperative pain had a negative impact on patient's quality recovery. This is in accordance with literature, which shows that an inadequate treatment of acute postoperative pain have potentially negative consequences for health systems, including extended lengths of stay, readmissions, patient dissatisfaction and in quality of life in cancer survivors. These may increase overall costs and also lead health systems to disadvantage in a competitive healthcare environment [26]. Therefore, treatments should include a multidisciplinary biopsychosocial approach which aims to address all aspects and ramifications of the pain and disability [19]. Recently, there has been a significant change in concepts away from the previously supported pre-emptive analgesia approach to a preventive analgesia approach, with regard to the prevention of

chronic postsurgical pain [2]. There is an urgent need for more research to show the importance of the pain in other dimensions not only as a simple symptom.

Thus, in our study, we could verify that the results in PQRS and in QoR-15 are complementary in D1 with impact not only in pain domains.

There are some limitations in this study that should be addressed. First, the number of enrolled patients was small and the sample size of the study was not previously been calculated. Second, this study is a single-center design performed in an university hospital and, as so, the results might not be applicable to other centers. Third, the evaluation of underlying diseases was not complete and cognitive changes such as cognitive impairment, depression or anxiety were not performed what may have affected pain evaluation. Due to the limited number of patients we did not evaluated any association between postoperative pain and types of surgery performed.

## 5. Conclusions

MSAPP is present in the majority of the patients in postoperative period.

According to our study, previous patients' comorbidities did not influence the presence of moderate to severe PO pain, however lower age was associated with its presence.

Patients with MSAPP have worse recovery in nociceptive domain during the first 24 hours after surgery but they recover better in the cognitive domain at minute 15.

Patients with MSAPP had poor quality of recovery in many physical and mentally domains after surgery and also more frequently PQR. This suggests a significantly adverse impact of acute pain in postoperative recovery and it may be concluded that pain significantly contributes to a decreased quality of recovery after surgery in cancer survivors.

### Highlights

- MSAPP was present in the majority of the studied patients
- MSAPP patients were younger
- MSAPP had a negative impact in the quality of recovery after surgery
- Pain significantly contributes to a decreased quality of recovery after surgery in cancer survivors.

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**Fig. 1**

The Quality of Recovery score (QoR)-15 questionnaire [5].

### QoR-15 Patient Survey

Date: \_\_/\_\_/\_\_

Study #: \_\_\_\_\_

Preoperative

Postoperative

#### PART A

*How have you been feeling in the last 24 hours?*

(0 to 10, where: 0 = none of the time [poor] and 10 = all of the time [excellent])

- |   |                  |   |   |   |   |   |   |   |   |   |   |    |                 |
|---|------------------|---|---|---|---|---|---|---|---|---|---|----|-----------------|
| 1. Able to breathe easily                                 | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 2. Been able to enjoy food                                | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 3. Feeling rested   | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 4. Have had a good sleep                                  | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 5. Able to look after personal toilet and hygiene unaided | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 6. Able to communicate with family or friends             | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 7. Getting support from hospital doctors and nurses       | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 8. Able to return to work or usual home activities        | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 9. Feeling comfortable and in control                     | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |
| 10. Having a feeling of general well-being                | None of the time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | All of the time |

#### PART B

*Have you had any of the following in the last 24 hours?*

(10 to 0, where: 10 = none of the time [excellent] and 0 = all of the time [poor])

- |                                |                  |    |   |   |   |   |   |   |   |   |   |   |                 |
|--------------------------------|------------------|----|---|---|---|---|---|---|---|---|---|---|-----------------|
| 11. Moderate pain              | None of the time | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | All of the time |
| 12. Severe pain                | None of the time | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | All of the time |
| 13. Nausea or vomiting         | None of the time | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | All of the time |
| 14. Feeling worried or anxious | None of the time | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | All of the time |
| 15. Feeling sad or depressed   | None of the time | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | All of the time |

**Table 1**

Characteristics of the sample (N=138).

Variable	Total (n=138)
Age (y), median	64.5
<b>Gender, n (%)</b>	
Male	60 (43.5)
Female	78 (56.5)
<b>Level of education, n (%)</b>	
No education	4 (3)
Elementary school	95 (70)
Secondary school	21 (16)
Higher school	15 (11)
<b>ASA physical status, n (%)</b>	
I/II	94 (68)
III/IV	44 (32)
<b>BMI (Kg/m<sup>2</sup>), median</b>	25.5 (22.8-28.9)
<b>Medication</b>	
Beta-blocker therapy	25 (18)
Pre medication with benzodiazepines	28 (21)
Medication with benzodiazepines	26 (19)
Medication with statins	49 (36)
<b>Comorbidities (RCRI)</b>	
Major surgery	56 (41)
Coronary disease	17 (12)
Cardiac failure	13 (9)
DM insulin dependent	7 (5)
Renal failure	7 (5)
Cerebrovascular disease	1 (1)
<b>RCRI total</b>	
<2	118 (86)
≥2	20 (14)
<b>Type of Anesthesia, n (%)</b>	
General	96 (70)
Combined (general+ regional)	31 (22)
Regional	10 (7)
<b>Length of PACU stay (min), median</b>	134 (92-245)
<b>Length of hospital stay (days), median</b>	7 (2-8)

MSAPP: Moderate to Severe Acute Postoperative Pain; ASA: American Society of Anesthesiologists; N:

Number of patients; BMI: Body Mass Index; RCRI: Revised Cardiac Risk Index; DM: Diabetes Mellitus;

PACU: Post Anesthetic Care Unit; Y: Years; Min: Minutes.



**Table 2**

Characteristics of patients with and without MSAPP.

<b>Variable</b>	<b>MSAPP (n=85)</b>	<b>Without MSAPP (n=53)</b>	<b>P value</b>
<b>Age (y), median</b>	62 (52-75)	70 (60-78)	<b>0.002</b>
<b>Gender, n (%)</b>			0.713
Male	38 (45)	22 (42)	
Female	47 (55)	31 (58)	
<b>Level of education</b>			0.252
No education	1 (1)	3 (6)	
Elementary school	54 (65)	41 (79)	
Secondary school	18 (22)	3 (6)	
Higher school	10 (12)	5 (10)	
<b>ASA physical status, n (%)</b>			0.762
I/II	59 (69)	35 (66)	
III/IV	26 (31)	18 (34)	
<b>BMI (Kg/m<sup>2</sup>), median</b>	26 (23-29)	25 (23-29)	0.617
<b>Medication</b>			
Beta-blocker therapy	16 (19)	9 (17)	0.697
Pre medication with benzodiazepines	21 (26)	7 (13)	0.108
Medication with benzodiazepines	13 (15)	13 (25)	0.177
Medication with statins	34 (40)	15 (28)	0.255
<b>Comorbidities (RCRI)</b>			
Major surgery	39 (46)	17 (32)	0.108
Coronary disease	11 (13)	6 (11)	0.778
Cardiac failure	7 (8)	6 (11)	0.546
DM insulin dependent	5 (6)	2 (4)	0.583
Renal failure	5 (6)	2 (4)	0.583
Cerebrovascular disease	0	1 (2)	0.204
<b>RCRI total</b>			0.530
<2	73 (86)	45 (85)	
≥2	12 (14)	8 (15)	
<b>Type of Anesthesia, n (%)</b>			0.373
General	63 (74)	34 (64)	
Combined (general+ regional)	18 (21)	13 (25)	
Regional	4 (5)	6 (11)	
<b>Length of PACU stay (min), median</b>	135 (90-286)	133 (95-207)	0.879
<b>Length of hospital stay (days), median</b>	7 (4-9)	7 (2-8)	0.170

MSAPP: Moderate to Severe Acute Postoperative Pain; ASA: American Society of Anesthesiologists; N:

Number of patients; BMI: Body Mass Index; RCRI: Revised Cardiac Risk Index; DM: Diabetes Mellitus;

PACU: Post Anesthetic Care Unit; Y: Years; Min: Minutes.

**Table 3**

Complete recovery in patients with MSAPP and without MSAPP in PQRS.

<b>PQRS (domain)</b>	<b>Time</b>	<b>MSAPP N (%)</b>	<b>Without MSAPP N (%)</b>	<b><i>P value</i></b>
<b>PD</b>	<b>T15</b>	11 (12.9)	6 (11.3)	0.778
	<b>T40</b>	22 (26.2)	16 (30.8)	0.563
	<b>D1</b>	63 (74.1)	39 (73.6)	0.945
<b>ND</b>	<b>T15</b>	58 (68.2)	46 (86.8)	<b>0.014</b>
	<b>T40</b>	53 (63.1)	42 (80.8)	<b>0.029</b>
	<b>D1</b>	56 (65.9)	44 (83)	<b>0.028</b>
	<b>D3</b>	57 (70.4)	41 (77.4)	0.372
<b>ED</b>	<b>T15</b>	28 (32.9)	17 (32.1)	0.916
	<b>T40</b>	31 (36.9)	14 (26.9)	0.229
	<b>D1</b>	35 (41.2)	18 (34)	0.397
	<b>D3</b>	35 (43.2)	19 (35.8)	0.396
<b>CD</b>	<b>T15</b>	10 (11.8)	1 (1.9)	<b>0.037</b>
	<b>T40</b>	15 (18.1)	6 (11.3)	0.288
	<b>D1</b>	13 (15.1)	12 (22.6)	0.276
	<b>D3</b>	20 (24.4)	9 (17)	0.306
<b>ADL</b>	<b>T40</b>	17 (20.2)	10 (19.2)	0.886
	<b>D1</b>	26 (30.6)	19 (35.8)	0.521
	<b>D3</b>	37 (45.1)	24 (45.3)	0.985

PQRS: Postoperative Quality of Recovery Scale; MSAPP: Moderate to Severe Acute Postoperative Pain;

PD: Physiologic Domain; ND: Nociceptive Domain; ED: Emotive Domain; CD: Cognitive Domain;

ADL: Activities of Daily Living; N: Number of patients; T: minute; D: Day; N: Number of patients.

**Table 4**

QoR-15 median scores at D1 after surgery in patients with and without MSAPP.

QoR-15 Questions	D 1		
	PWP	Without PWP	P value
1. "Able to breathe easily"	10	10	0.070
2. "Been able to enjoy food"	5	8	0.086
3. "Feeling rested"	6	9	<b>&lt;0.001</b>
4. "Have had a good sleep"	6	8	<b>0.019</b>
5. "Able to look after personal toilet and hygiene unaided"	6	7	0.300
6. "Able to communicate with family or friends"	10	10	0.083
7. "Getting support from hospital doctors and nurses"	10	10	<b>0.020</b>
8. "Able to return to work or usual home activities"	5	7	<b>0.018</b>
9. "Feeling comfortable and in control"	7	9	<b>0.002</b>
10. "Having a feeling of general well-being"	7	9	<b>&lt;0.001</b>
11. "Moderate pain"	5	10	<b>&lt;0.001</b>
12. "Severe pain"	10	10	<b>&lt;0.001</b>
13. "Nausea or vomiting"	10	10	0.154
14. "Feeling worried or anxious"	8	9	0.339
15. "Feeling sad or depressed"	8	9	<b>0.028</b>
<b>QoR-15 Total</b>	<b>103</b>	<b>126</b>	<b>&lt;0.001</b>

MSAPP: Moderate to Severe Acute Postoperative Pain; D: Day

**Supplementary material 1**

QoR-15 median scores at D0 in patients with and without MSAPP.

QoR-15 Questions	D 0		P value
	PWP	Without PWP	
1. "Able to breathe easily"	10	10	0.608
2. "Been able to enjoy food"	10	10	0.518
3. "Feeling rested"	8	8	0.646
4. "Have had a good sleep"	7	6	0.685
5. "Able to look after personal toilet and hygiene unaided"	10	10	0.271
6. "Able to communicate with family or friends"	10	10	0.922
7. "Getting support from hospital doctors and nurses"	10	10	0.109
8. "Able to return to work or usual home activities"	10	10	0.429
9. "Feeling comfortable and in control"	9	10	0.642
10. "Having a feeling of general well-being"	8	8	0.946
11. "Moderate pain"	10	10	0.437
12. "Severe pain"	10	10	0.217
13. "Nausea or vomiting"	10	10	0.662
14. "Feeling worried or anxious"	5	5	0.226
15. "Feeling sad or depressed"	6	8	<b>0.048</b>
<b>QoR-15 Total</b>	<b>128</b>	<b>133</b>	<b>0.346</b>

MSAPP: Moderate to Severe Acute Postoperative Pain; D: Day

## Agradecimentos

Ao Professor Doutor Fernando José Abelha , pela sua orientação ao longo da elaboração deste trabalho , total apoio, pelas críticas e opiniões que permitiram valorizar este projecto final.

Ao Professor Doutor Luís Guimarães Pereira pela sua total disponibilidade e colaboração na supervisão final do trabalho .

Aos meus pais , pelo amor e alegria com que me criaram , pelos valores que me inculcaram, que têm sido faróis da minha vida, e por serem incansáveis no meu crescimento pessoal e académico.

Ao meu Avô, por ser o meu maior exemplo de Vida e por todos os dias me mostrar que o amor e a sabedoria são eternos . Um especial obrigado pela forma exemplar e louvável que sempre exerceu Medicina.

À minha Tia Vera, por estar sempre presente, pela forma incondicional como me acompanhou ao longo da minha vida e pela sua dedicação desmedida aos sobrinhos .

Ao Diogo, meu irmão, pela sua cumplicidade e atenção que sempre me devotou e pela sua sensibilidade na procura do conhecimento.

A toda a minha família por serem a base daquilo que eu sou, por vivenciarem alegremente todas as minhas conquistas e por me ajudarem a ultrapassar todas as adversidades sempre com coragem, determinação e alegria. Sou-lhes muito grata !

Ao Vasco, pelo seu apoio incondicional, pela amizade, por todas as partilhas ao longo destes 6 anos e por sempre me ter dado a força e confiança necessárias para alcançar os meus Sonhos.

Aos meus amigos por tornarem especial e inesquecível este meu percurso!

Anexos:

1. Parecer da Comissão de Ética
2. Normas da Revista *(JCA)*

Parecer da Comissão de Ética




**Unidade de Investigação**

Tomei conhecimento. Nada a opor.

2 de Novembro de 2016


A Coordenadora da Unidade de Investigação



(Prof.ª Doutora Ana Azevedo)

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22/11/2016

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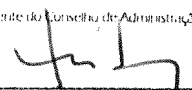


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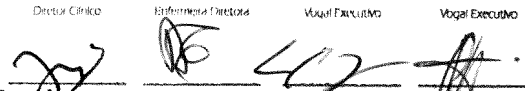
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Presidente do Conselho de Administração



Dr. António Oliveira-Saiz

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Exmo. Senhor

**Presidente do Conselho de Administração do Hospital de S. João – EPE**

**Assunto:** Pedido de autorização para realização de estudo/projecto de investigação

**Nome do Investigador Principal:** Fernando José Pereira Alves Abelha

**Título do projecto de investigação:** Avaliação da qualidade do recobro em doentes submetidos a cirurgia neoplásica curativa

**Assunto:**

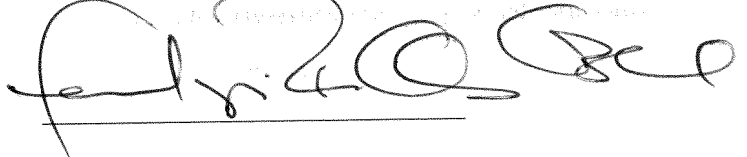
Pretendendo realizar no(s) Serviço(s) de Anestesiologia do Hospital de S. João – EPE o estudo/projecto de investigação em epígrafe, solicito a V. Exa., na qualidade de Investigador/Promotor, autorização para a sua efectivação.

Para o efeito, anexa toda a documentação referida no dossier da Comissão de Ética do Hospital de S. João respeitante a estudos/projectos de investigação, à qual endereçou pedido de apreciação e parecer.

Com os melhores cumprimentos.

Porto, 2 / Junho / 2016

O INVESTIGADOR/PROMOTOR



**Comissão de Ética para a Saúde – Centro Hospitalar São João / FMUP**

**Parecer**

**Título do Projecto:** Avaliação da qualidade do recobro em doentes submetidos a cirurgia neoplásica curativa.

**Nome do Investigador Principal:** Prof. Doutor Fernando José Pereira Alves Abelha

**Local onde será realizado o estudo:** Serviço de Anestesiologia – CHSJ, havendo autorização do respectivo Diretor de Serviço para a realização do mesmo.

**Objectivo do estudo:**

O objetivo deste estudo prospetivo é avaliar a qualidade do recobro e a qualidade de vida dos doentes submetidos a cirurgia neoplásica curativa.

**Período previsto de conclusão:** 6 meses

**Benefício:** N/A

**Risco:** N/A

**Respeito pela liberdade e autonomia do sujeito do ensaio:** Prevê-se a obtenção de consentimento informado, complementado por um suporte de informação escrita para os participantes, que refere os objectivos do estudo, os riscos/benefícios, bem como a liberdade em participar. *No entanto, deve ser utilizado o modelo de consentimento informado aprovado pela Comissão de Ética – CHSJ.*

**Confidencialidade dos dados:** está garantida a confidencialidade dos dados e esta informação será restrita aos investigadores.

O Investigador Principal dispõe de competência técnica e científica para a realização do estudo.

Prevê a realização de questionários. *No entanto, os mesmos tem de ser anonimizados.*

**Custos:** O estudo não prevê custos acrescidos para a instituição.

**Parecer:** Em face da análise do protocolo de estudo, proponho a sua aprovação pela CES do CHSJ, após resposta às questões em itálico.

Porto, CHSJ, 20 de junho de 2016

O Relator



Dr. John Preto

*Os documentos em falta  
foram adicionados.*

*Peter Butts*

*10.10.16*

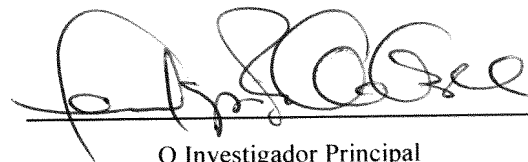
# CES

## COMISSÃO DE ÉTICA PARA A SAÚDE

### 8. TERMO DE RESPONSABILIDADE

Eu, abaixo-assinado, Fernando José Pereira Iliar Abelho,  
na qualidade de Investigador Principal, declaro por minha honra que as informações prestadas neste questionário são verdadeiras. Mais declaro que, durante o estudo, serão respeitadas as recomendações constantes da Declaração de Helsínquia (com as emendas de Tóquio 1975, Veneza 1983, Hong-Kong 1989, Somerset West 1996 e Edimburgo 2000) e da Organização Mundial da Saúde, no que se refere à experimentação que envolve seres humanos.

Porto, 2 / julho / 2016

  
O Investigador Principal

17/06/16  
A Comissão de Ética para a Saúde, tendo aprovado o parecer do Relator, aguarda que o Investigador/Promotor esclareça as questões nele enunciadas para que possa emitir parecer definitivo.

  
Prof. Doutor Filipe Almeida  
Presidente da Comissão de Ética

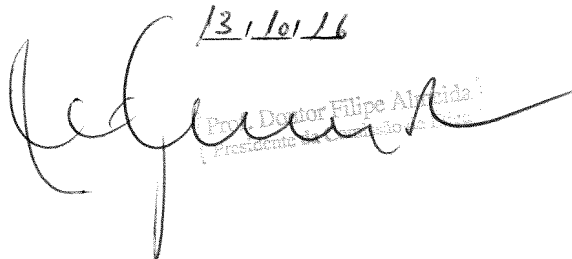
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13 / 10 / 16  
  
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Presidente da Comissão de Ética

Normas da Revista *(JCA)*



# JOURNAL OF CLINICAL ANESTHESIA

An International Journal of Anesthesiology and Perioperative Medicine

## AUTHOR INFORMATION PACK

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The *Journal of Clinical Anesthesia (JCA)* addresses all aspects of **anesthesia practice**, including **anesthetic administration**, **pharmacokinetics**, **preoperative** and **postoperative** considerations, **coexisting disease** and other complicating factors, **cost** issues, and similar concerns anesthesiologists contend with daily. Exceptionally high standards of presentation and accuracy are maintained.

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