

# Postoperative analgesia: pain control scenario\*

## *Analgesia no pós-cirúrgico: panorama do controle da dor*

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### ABSTRACT

**BACKGROUND AND OBJECTIVES:** Postoperative pain control, although of recognized importance, is still described as inadequate. So, this study aimed at exposing the scenario of postoperative pain control in patients hospitalized for general abdominal surgery.

**METHOD:** This is a transversal, quantitative, observational, descriptive and non randomized study carried out through a questionnaire applied to patients hospitalized up to 48 h after abdominal surgery. The questionnaire addresses the following variables: age, gender, surgical procedure, postoperative hours, presence of pain and intensity by the visual analog scale (VAS).

**RESULTS:** Participated in this study 165 patients of whom 40 have referred pain, being 26 females (28,57%) and 14 males (18,92%). Procedures to which patients were submitted were classified in open and closed, being closed the most common procedures. Open surgeries were among the most painful procedures (colectomy, hiatal hernia repair, choledochotomy, colostomy, gastrostomy) with 100% of pain and laparotomy with approximately 60%. Less painful closed procedure was cholecystectomy (88,33%), and just 11,67% had mild to moderate pain. There has been predominance of mild to moderate pain among males and of moderate to severe pain among females.

**CONCLUSION:** Pain prevalence and intensity observed in the postoperative period have shown that the control is adequate for laparoscopic procedures; however, it has to be adjusted for patients submitted to open procedures, for senescence and for females.

**Keywords:** Abdominal surgery, Analgesia, Pain measurement, Postoperative pain.

### RESUMO

**JUSTIFICATIVA E OBJETIVOS:** O tratamento da dor no pós-operatório, apesar de ter importância reconhecida, continua sendo descrito como inadequado. Assim, este estudo teve como objetivo expor o panorama do controle da dor pós-operatória em pacientes internados para cirurgia abdominal geral.

**MÉTODO:** Estudo transversal, quantitativo, observacional, descritivo e não randomizado, realizado por meio da aplicação de questionário em pacientes internados até 48h após cirurgia abdominal. O questionário abrange as variáveis: idade, sexo, procedimento realizado, horas de pós-operatório, presença de dor e intensidade por meio da escala analógica visual (EAV).

**RESULTADOS:** Foram entrevistados 165 pacientes; destes, 40 referiram dor, sendo 26 mulheres (28,57%) e 14 homens (18,92%). Os procedimentos aos quais os pacientes foram submetidos classificaram-se em abertos e fechados; os mais realizados foram os fechados. Dentre os mais dolorosos, destacam-se as cirurgias abertas (colectomia, hernioplastia hiatal, coledocotomia, colostomia, gastrostomia), com 100% de dor, e a laparotomia com aproximadamente 60%. Dentre os procedimentos fechados, o que gerou menos dor foi a colecistectomia (88,33%), e apenas 11,67% apresentaram dor leve a moderada. Observou-se a prevalência de dor leve nos adolescentes e de dor intensa na senescência. Houve um predomínio de dor leve a moderada em homens e moderada a intensa nas mulheres.

**CONCLUSÃO:** A prevalência e a intensidade de dor verificadas no pós-operatório demonstraram que o controle desta está adequado para procedimentos laparoscópicos; entretanto se faz necessária a adequação em pacientes submetidos a procedimentos abertos, na senescência e nas mulheres.

**Descritores:** Analgesia, Cirurgia abdominal, Dor pós-operatória, Medição da dor.

### INTRODUCTION

Pain was defined by the International Association for the Study of Pain (IASP) as "a disagreeable sensory and emotional experience associated to real or potential injuries or described in terms of such injuries. Pain is always subjective and people learn how to use this term according to their experiences". This definition shows that pain is an experience that goes beyond physical aspects and the way patients live their pain should be taken into consideration. Due to its subjective character, pain was defined in 1989 as "what the individual feeling it says it is and exists when the individual feeling it says it exists"<sup>1</sup>.

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Pain severity is not directly proportional to the amount of injured tissue. Many factors may influence the perception of this symptom, such as fatigue, depression, anger, fear, anxiety, lack of hope and protection feelings. The Brazil with no Pain Project described the concept of “Total Pain”, which is made up of the following components: physical, mental, social and spiritual. Due to this multidimensional nature, the use of analgesics is just part of a multiprofessional strategy involving actions on physical, psychological, social and spiritual distress of each patient<sup>1</sup>.

Very common in patients submitted to surgical procedures, pain is interpreted as something natural for these patients in spite of being often the most uncomfortable symptom. So, the assistance to other surgical complications, such as fistulae, infection and bleeding, among others, becomes the priority<sup>2</sup>. To adequately manage pain and offer quality assistance to patients, it is critical that pain is systematically evaluated at regular intervals, allowing necessary adjustments to treatment. Pain control therapy should always be multimodal, with the association of two or more agents or peripheral or central analgesic techniques, including non pharmacological methods, because the synergy among different techniques allows the use of fewer drugs, minimizing their side-effects and improving their analgesic activity<sup>3</sup>.

Aiming at improving postoperative pain control, analgesia may and shall start even before surgery. Preemptive or preventive analgesia is the administration of drugs or the use of analgesic techniques before incision, favoring patients’ faster response and the early recovery of organic functions, since pain, in such situations, may lead to postoperative complications. The best control of pain in response to preventive analgesic therapy is to prevent genesis or conduction of painful stimuli to the central nervous system, thus preventing spinal cord sensitization<sup>3</sup>.

Face to the above, this study is justified since postoperative pain control, in spite of its recognized importance and the existence of several pain control drugs and techniques, is still described as inadequate in some situations. It is critical to know the magnitude of the problem to adequately manage pain and offer a quality treatment to patients.

This study aimed at showing the postoperative pain control scenario for patients admitted for general abdominal surgical procedures.

**METHOD**

With a quantitative, transversal, observational, descriptive and non randomized approach, this study was carried out with hospitalized patients, after abdominal surgery, in the Red Cross Hospital of Paraná, city of Curitiba, from July to September 2012.

Sample was made up of the set of patients interviewed during this period, in a total of 165. Inclusion criteria were: hospitalized patients until the first 48 postoperative hours of abdominal surgery. Exclusion criteria were patients with neurological or visual deficits preventing them from answering the visual

analog scale (VAS) or from understanding the questions. This hospital uses preemptive analgesia consisting of the administration of dipirone, fentanyl, paracoxibe and dexamethasone during anesthetic induction, being doses adjusted according to each patient. In addition, tramadol is administered in the recovery unit when there is pain complaint. After leaving the recovery unit, dipirone is prescribed every 6h and nalbuphine hydrochloride, another opioid derivate, if there is severe pain.

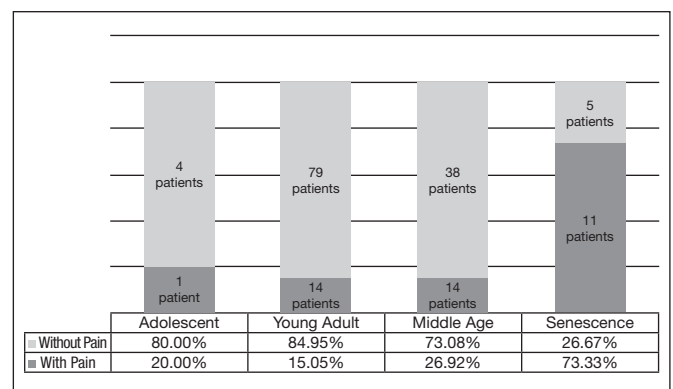
Patients were interviewed by the investigators with a data collection tool about: age; gender; surgical procedure, differentiating between open (laparoscopic) and closed (videolaparoscopic); how many postoperative hours; if during interview they were in pain and which was the intensity, classifying it in mild, moderate and severe, according to VAS. Together with this tool, patients have signed the Free and Informed Consent Term (FICT).

Data were analyzed in percentages and were interpreted in a universal and separate way.

This study was approved by the Research Ethics Committee, Positivo University, process 062/2011.

**RESULTS**

Between July and September 2012, 165 patients were interviewed. From these, 74 were males and 91 females, corresponding to 44.85% and 55.15%, respectively. From 91 interviewed females, 28.57% (26) have reported postoperative pain and 71.43% (65) have reported no pain. From 74 interviewed males, 18.92% (14) have mentioned some type of postoperative pain and 81.08% (60) have not. Patients’ age has varied from 18 to 86 years, with mean of 40 years. After collecting the questionnaires it was possible to distribute respondents according to life division used in psychiatry, determining stages of life: adolescence between 12 and 19 years of age, adult phase – divided in young adult (20 to 45 years of age) and middle age (46 to 65 years of age) – and senescence corresponding to individuals above 65 years of age. In total, there were 5 (3.03%) adolescents, 93 (56.36%) young adults, 52 (31.52%) middle age and 15 (9.09%) senescents.



Graph 1 – Life stages versus pain.

In parallel, this distribution by stages of life was related to the presence or not of postoperative pain (Graph 1). The highest percentage of pain was observed among senescent patients, 73.33% (11), while the lowest rate was observed among young adults (15.05% or 14 patients).

Table 1 shows the 11 procedures (distributed in 7 categories) to which interviewed patients were submitted, correlating the percentage of such procedures and mean postoperative hours of each one for the interview.

Table 1 – Types of procedures and mean post-procedure hours.

Procedures	Types	n and %	Mean Postoperative Hours
Cholecystectomy	Closed	60 (36.36)	22
Apendectomy	Closed	50 (30.30)	22
Bariatric	Closed	29 (17.57)	24
Laparotomy	Open	8 (4.85)	27
Laparoscopy	Closed	6 (3.64)	26
Gastroesophageal reflux	Closed	4 (2.42)	27
Other procedures: colectomy, hiatal hernia repair, choledoctomy, colostomy, gastrostomy.	Open	8 (4.86)	24

Considering all procedures, it was observed that mean postoperative hours at the moment of the interview was 24.5h, with a minimum of 4h and maximum of 48h. Still considering the procedures, most common were closed procedures, among them cholecystectomy with 36.36% (60); and less common were open procedures in a total of 9.7%.

Among most painful procedures shown in table 2 there are open surgeries (colectomy, hiatal hernia correction, choledoctomy, colostomy, gastrostomy), with 100% of pain, and laparotomy with approximately 60%. On the other hand, among closed procedures the less painful was cholecystectomy (88.33% or 53 patients), being that just 11.67% (7) had mild to moderate postoperative pain. Similarly, only 14% of patients (7) undergoing appendectomy and 16.66% (1) laparoscopy have reported pain during the interview, varying from mild to moderate. However, among most painful closed procedures, there are gastroesophageal reflux surgery with 50% (2 patients) and bariatric surgery with 34.48% (10 patients).

Table 2 also shows pain intensity characterized by the 40 patients reporting it during the interview. So, correlating pain intensity and type of surgery, it is observed that most open procedures have triggered postoperative pain: in laparotomy, 62.5% of patients (5) have referred pain, being that 4 have classified it as mild and 1 as moderate; in remaining open procedures, 100% (8) of patients have reported pain, being that 3 have classified it as moderate and 5 as severe. Analyzing

Table 2 – Types of procedures and presence or not of pain.

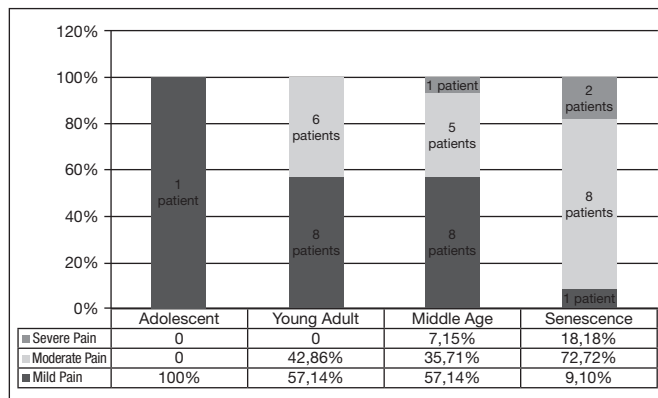
Procedures	Patients		Pain Intensity
	W/O pain	WITH pain	
	n (%)	n (%)	
Cholecystectomy	53 (88.33)	7 (11.67)	Mild – 4 Moderate – 3 Intensa – 0
Apendectomy	43 (86)	7 (14)	Mild – 5 Moderate – 2 Severe – 0
Bariatric	19 (65.52)	10 (34.48)	Mild – 4 Moderate – 5 Severe – 1
Laparotomy	3 (37.5)	5 (62.5)	Mild – 4 Moderate – 1 Severe – 0
Laparoscopy	5 (83.34)	1 (16.66)	Mild – 0 Moderate – 1 Severe – 0
Gastroesophageal reflux	2 (50)	2 (50)	Mild – 1 Moderate – 1 Severe – 0
Other procedures: colectomy, hiatal hernia repair, choledoctomy, colostomy, gastrostomy.	0 (0)	8 (100)	Mild – 0 Moderate – 3 Severe – 5

Table 3 – Pain intensity and gender (n and %).

Mild pain	Males – 8 (57.14) Females – 10 (38.46)
Moderate pain	Males – 5 (35.32) Females – 11 (42.30)
Severe pain	Males – 1 (7.14) Females – 5 (19.23)

gender and pain intensity it was observed that percentage and numerical difference is small between 14 males and 26 females reporting pain, as shown in table 3. However, there has been predominance of mild to moderate pain among males and of moderate to severe pain among females.

Graph 2 relates pain intensity and stage of life of interviewed patients. There, it is observed that the stage most often reporting mild pain is adolescence, corresponding to 100%



Graph 2 – Pain intensity versus stages of life.

(1 patient); followed by young adults and middle age with 57.14% each (8 patients each), and finally senescence with 9.1% (1 patient). In addition, it is possible to observe that severe pain frequency was directly related to age. There is no report of severe pain among adolescents and young adults, but in middle age this type of pain corresponds to 7.15% (1 patient) and in senescence this value increases to 2 patients or 18.18%.

## DISCUSSION

In our study, the prevalence of pain in the first 48 postoperative hours was 24.24% (40 patients), differently from the literature where higher prevalence is found, such as those described by Ashburn (77%)<sup>4</sup>, Bassanezi and Oliveira Filho (80%)<sup>2</sup> and Couceiro et al. (46%)<sup>5</sup>.

The hospital concerned has a well-established protocol to treat postoperative pain, which may explain the low prevalence found, which is in line with Moizo et al.<sup>6</sup> findings with even lower prevalence (2.2%) in a service which has also established approaches.

It has been described that females have lower pain threshold and tolerance; however it is questioned if this could be due to better females' verbalization and to differences in female endogenous opioid system, which might have lower sensitivity as compared to males and supports our results where 28.57% of females referred postoperative pain as compared to 18.92% of males<sup>5</sup>. Females also refer more severe pain, as found by a different study<sup>7</sup>.

The correlation between age and postoperative pain is shown by the literature as inversely proportional<sup>8</sup>, which differs from our findings where the upper age extreme has referred more pain as compared to mean age (40 years). This fact could be justified by the higher incidence of depression in senescent populations, which may increase pain frequency and intensity, as shown by a study measuring pain in the elderly<sup>9</sup>. With regard to other age groups, 100% of adolescents and approximately 58% of young and middle age adults have reported mild pain, again differing from the literature, since lower extreme and middle age in general have lower pain scores.

Authors<sup>10</sup> have carried out a pain research in the Clinicas Hospital of Goiás with 40 patients undergoing cholecystectomy. In this study, 16 had severe pain, 15 moderate pain and 9 mild pain. In our study, there were 60 gallbladder removal procedures and just 4 patients had mild pain, 3 moderate pain and none had severe pain, characterizing the procedure inducing the least pain (88%)<sup>10</sup>. Considering such findings and possible comparisons, it is possible to establish a parallel among the types of procedures. In the former hospital, all cholecystectomies were conventional, that is, open procedures; in our study, procedures were all videolaparoscopic, which is in line with the literature where postoperative pain is lower in closed procedures<sup>11</sup>. Similarly, other open procedures have added to results 8 patients with pain, where 3 had severe pain and 5 moderate pain.

With regard to this same topic, one cannot exclude the pos-

sibility that different types of procedures – open/laparoscopic or closed/videolaparoscopic – may have interfered with global pain evaluation.

Another influencing factor with regard to pain control is medical teaching and the fact that Red Cross Hospital of Paraná is a teaching hospital where students and residents work. Studies have shown that medical students and newly graduated physicians may have poor knowledge about acute pain, lack of continuous education, lack of experience with pain control protocols and routines, in addition to not being well oriented as to the choice of analgesic methods. So, they look for the most frequently prescribed drug and not for the best for patients, which may result in recovery delay and postoperative chronic pain, interfering with patients' quality of life<sup>5,9,12</sup>. At the same time, chronic pain limits functions and may increase agitation and the risk of emotional stress and mortality, especially among the elderly<sup>9</sup>.

There are controversies about the ideal postoperative pain control, but according to our data, it is observed that such control may vary according to age and gender. Still within this context, a multidisciplinary approach (physicians, psychologists, physical therapists, pharmacists and nurses) is needed because it helps patients before and after the surgical procedure and may bring benefits, especially those related to pain and procedure anxiety, as well as with possible complications. As patients are adequately oriented and listened to, there is better control of factors which may interfere with pain intensity<sup>12</sup>.

## CONCLUSION

Our study results have shown the pain scenario and allow concluding that it is adequate for laparoscopic procedures. Analgesia might have to be adjusted for open procedures, senescence and females, since these groups have shown higher prevalence and intensity of postoperative pain.

The lack of understanding of physicians about acute pain and the lack of continuous education may be causes of inadequate approaches. So, better care with medical education and qualification of multidisciplinary teams may contribute to improve assistance, decrease pain-related complications and patients' distress.

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