

Understanding factors affecting postoperative quality of life

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Valorization

The aim of this paragraph is to describe how the “academic wisdom”, as obtained by the studies described in this thesis, can be translated to societal benefit. There are several domains where benefit from the study findings can be expected. In the first place there is the potential impact on the target population of this dissertation, surgical patients. More in general, the societal and economic value can be considered. Finally, by this thesis new scientific insights have been obtained, and it may generate new scientific initiatives. These issues will be described in this order below.

THE IMPACT ON THE SURGICAL PATIENT.

The most important aspect of this thesis is reflected by the call for further optimization of perioperative (preventive) treatment, aiming at the reduction of the impact of established risk factors of poor postoperative quality of life. Further optimization is necessary, notwithstanding the fact that for hysterectomy, similar to other surgery types, improvements in care pathways have been implemented continuously. Over the last decade, many of the publications on this subject focused on implementation of enhanced recovery pathways, also with regard to hysterectomy, as reflected by the comprehensive review of Kalogera and Dowdy.¹ To achieve an enhanced recovery after surgery (ERAS), meaning an earlier return of normal bowel function and a shorter length of stay, with a stable complication rate compared with previous care paths, a combination of pre-, per-, and postoperative interventions is performed. The preoperative interventions (I) concern patient counseling and education, preoperative diet, bowel preparation, and use of preemptive analgesia. An important intraoperative intervention (II) is the application of anesthesia types that allow for rapid awakening, decreased systemic opioid requirements, and prevention of postoperative nausea and vomiting (PONV). Other objectives are to maintain normothermia and normovolemia and to avoid nasogastric tubes and peritoneal drains. Postoperative interventions (III) aim at continuation of the normovolemic status, early postoperative feeding and mobilization, early urinary catheter removal, prevention of ileus, and application of multimodal analgesia.¹ Particularly for two of these aspects, namely preoperative counseling and education, and peri-

operative pain treatment, the results of this thesis are indicative for further fine tuning of perioperative care.

In the first place, preoperative counseling and education as described in the ERAS protocol aim at informing the patient about the procedure and how patients can contribute to their own healing process. However, the ERAS protocol seems not to differentiate between patients with different psychosocial characteristics. Based on the findings that preoperative anxiety and catastrophizing are risk factors of chronic postoperative pain after different types of surgery, and based on the establishment of other psychosocial predictors of poor postoperative quality of life after hysterectomy besides surgical worries, this thesis adds support to the idea that preoperative patient preparation should be more tailor made. To achieve this, propositions are made for a more comprehensive preoperative screening, including psychosocial measures. In addition, a quick scan of existing literature on treatment options for the established risk factors is described in the discussion: several promising findings are reported, in particular for music listening and hypnosis. In the end, patients with an increased preoperative psychosocial risk profile might benefit from a better postoperative quality of life because of early detection and treatment of established risk factors.

The second issue from the ERAS protocol that also is a subject of this thesis is perioperative pain treatment. Concerning the preoperative interventions (I) with regard to pain, ERAS promotes the start of preemptive analgesia. In this thesis a call was made for studies on more extended or aggressive treatment of preoperative pain. Because preoperative pain is a known risk factor of acute and chronic postsurgical pain, it would be worth studying whether preemptive analgesia starting earlier than 24 hours before surgery could be effective. Until now such studies are rare. Another aspect that might be helpful for future patients is the implementation of transitional pain service (TPS) teams as proposed by Clarke et al.² Implementing a preoperative screening to detect patients with increased pain-related risks, and subsequently, the application of preoperative education and a tailor-made treatment plan, do perfectly match the conclusions of this thesis and the current opinion favoring a more patient-centered health care. Intraoperative analgesic treatment (II) will also affect the acute postoperative period. The results of this thesis revealed that among the hysterectomy patients no less than 42% indicated an NRS pain score ≥ 4 one hour after arrival at the PACU. This once more underlines the necessity of further improvements to achieve in the reduction of acute postoperative pain. Several suggestions are done, concerning (re-) consideration of treatment options such as gabapentin, pregabalin, ketamine, patient-controlled analgesia, or trunk blocks. Some of these options are meant to be started intraoperatively. Concerning the postoperative analgesic interventions (III) ERAS also proposes multimodal pharmacological analgesia in combination with regional analgesia. Patients may benefit if the suggested TPS teams are implemented including postdischarge follow-up. In addition, e-health technology could be supportive in terms of information supply for discharged patient, and by using interactive systems patients can enter their actual

health status, facilitating postdischarge monitoring. These measures could be beneficial to patients postoperative quality of life. However, 39% indicated an NRS pain score ≥ 4 at postoperative day four: the implementation of postdischarge follow-up including e-health monitoring might not be sufficient for all of these patients. Therefore, the principle of early discharge as promoted by ERAS might need reconsideration for a subset of patients at risk of an impaired recovery, who perhaps might be better off with a prolonged, intensive, clinical postoperative treatment.

One of the aims according to ERAS is early mobilization after surgery. Early mobilization was not explicitly assessed for this thesis, however, physical function was an important measure at baseline and 3 and 12 months follow-up. Baseline physical functioning was a significant predictor of physical functioning at follow-up. Therefore, also for physical functioning preoperative assessment and if necessary, prehabilitation interventions might be of benefit for patients with a poor baseline physical function level. In summary, concerning several aspects of the ERAS pathway, this thesis adds suggestions for improvement or fine tuning. Some of these suggestions are easier to implement than other, for some additional evidence is needed.

In this thesis detailed information concerning the pre- and postoperative status of hysterectomy patients is described. It is reassuring for women considering a hysterectomy that in general postoperative quality of life is high, in many cases pain is reduced significantly, the risk of postoperative depression is not increased because of the surgery, and feelings of femininity are not affected. On the other hand, especially women with a poor preoperative physical or mental condition should notice that hysterectomy will probably not resolve all pre-existing problems and where possible, preoperative optimization might be helpful to achieve improvements in quality of life.

The findings with regard to the predictors of postoperative quality of life are based on a hysterectomy population. Therefore conclusions for other surgery populations cannot be drawn. However, many of the results are in line with previous findings on populations undergoing other types of surgery. And for the predictors anxiety and catastrophizing in relation to chronic postsurgical pain also a literature review was performed among patients undergoing various types of surgery. Therefore, not only hysterectomy patients can benefit from these results, but also patients who have to undergo other types of clinical and day surgery.

Knowledge of surgical fear as a risk factor for CPSP is important for patients because it is supposed to result in more attention for preventive measures on this issue which in turn, should lead to improved postoperative outcome. In addition, this thesis revealed that patients undergoing day surgery not necessarily are less fearful when compared to clinical surgery patients. This is relevant information when preoperative preparation for day surgery patients is discussed. Also the impact of other risk factors is further established or confirmed.

SOCIETAL AND ECONOMIC RELEVANCE

With the established validity of the SFQ an instrument has become available for the assessment of surgical fear among adult clinical and day surgery patients. The SFQ is sensitive to detect even small differences in surgical fear based on time course and other causes. It provides insight in fear of short- and long-term consequences of surgery, and if necessary even on more detailed (item) level. It is available for free in Dutch, English, Portuguese, and Brazilian Portuguese. Moreover, translations in several other languages are in preparation: Bengali, Czech, Italian, Malay, Serbian, Slovak, and Turkish. The SFQ can be used across many countries and it supports the identification of an important preoperative risk factor, which is the first step towards preventive measures.

The vast grow in number of diagnostic and treatment options for many diseases is accompanied by an enormous grow in medical cost. In many countries, the control of increasing costs for health care facilities has become an important issue. As a result many programs aiming at improved efficiency are implemented. Against the background of this, poor postoperative quality of life can be considered as an unwanted and inefficient outcome of surgery. The impact of postoperative pain and other aspects of poor postoperative recovery has been extensively described in many publications: it is associated with huge personal and societal burden, medical costs, social costs, and economic loss.³⁻⁸ Considering the large number of surgeries that take place every day, even the smallest improvement in care pathways may have large beneficial effects for the society. Therefore, increased insight in factors associated with postoperative quality of life leading to implementation of improvements in perioperative care as proposed in this thesis, can lead to improvements in postoperative quality of life. In turn, this may have a positive impact on society in terms of medical and social cost savings, less absenteeism, and a healthier population.

SCIENTIFIC RELEVANCE

The finding that anxiety and catastrophizing play a role in the development of CPSP resulted in recommendations to include these measures in future studies on postoperative pain. In addition, aggregate scores were used for the assessment of psychological measures with a certain overlap between the underlying psychological constructs. In line with previous studies the results further confirm that these aggregate scores are well usable. Moreover, the use of these aggregate scores may trigger the discussion whether, for the assessment of preoperative vulnerability and resilience, detailed multiple scales, partly overlapping, are always necessary.

When it comes to the selection of one or more specific scales for the assessment of preoperative fear, it is important to realize that after studying different measures of

preoperative fear, it became apparent that the TSK seems not of great value for the prediction of chronic postoperative pain. Preferably other measures of fear should be used instead.

For the assessment of surgical fear, at least in cataract surgery patients, it became obvious that surgical fear can be assessed at any time point within the week before surgery without significantly affecting the results, with the exception of certain subgroups as mentioned in chapter 4. Furthermore it was established that before cataract surgery 8.6% of the patients would have preferred a preoperative treatment of surgical fear and 14% of the patients selected one of the suggested options for the preoperative treatment of fear. Considering the fact that surgical fear levels before cataract surgery are lower compared with other types of surgery it might be speculated that for more invasive surgery the proportion of patients that would prefer any fear treatment will even be larger. Therefore, the suggestion for preoperative optimization does not only originate from results of prediction analyses, but is supported by patient preferences as expressed in this thesis.

Whether there is an association between preoperative levels of fear and cortisol and alpha amylase or not, remains an interesting research question for study on patients planned for surgery eliciting higher fear levels than cataract surgery.

The validation of prediction models is still ongoing. Previously studies on prediction models and their validation have been published, e.g. Kalkman et al., Stessel et al.^{9, 10} In the future these models will probably be expanded with genetic variants. These data were also collected in our hysterectomy population.

The most relevant scientific aspect is the call for maximum scientific support for studies answering questions with regard to the selection and implementation of the most adequate assessment tools and preventive measures, aiming at improving postoperative quality of life. At this moment only associations between predictors and outcomes are established. However, the proof that there is a causal link between e.g. fear, and pre- and acute postoperative pain and long-term recovery can only be established by intervention studies. Understanding these links is not only important for patients, but also in a scientific sense.

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