

PREHABILITATION: FULFILLING AN UNMET NEED OF THE PREOPERATIVE CARE

PRÉ-HABILITAÇÃO: SUPRIMIR UMA NECESSIDADE DOS CUIDADOS PRÉ-OPERATÓRIOS

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Surgery remains the cornerstone of cancer treatment and palliation. In 2015, 32 million surgeries were needed globally, with projections indicating a substantial increase by 2030, where it is anticipated that 45 million surgical procedures will be necessary. Since cancer resection procedures are often highly invasive, an unprecedented rise in postoperative morbidity and mortality is expected in the forthcoming years¹. Financial constraints together with an increasing postoperative burden will lead to degradation in the quality of the health care service, unless efficient and cost-effectiveness measures are implemented². While successful surgery is a necessary condition for good postoperative outcomes, technical proficiency alone is not sufficient, and the role of the preoperative care is to fulfil this unmet need³. The current approach is to use the preoperative period to assess the patient, stratify its surgical risk, decide if the patient is clear for surgery and plan the level of postoperative care. Typically, this will take place in the weeks leading up to surgery, but is all too often only a few days before surgery⁴. It is evident that this approach limits the opportunities to intervene and optimize the patient in those risk factors known to contribute to postoperative burden, such as poor functional capacity, psychologic and nutritional

status and lifestyle habits (e.g. smoking and alcohol consumption)⁵. Effective preoperative care will require organization of the perioperative clinics, so that early engagement with patients occurs as soon as possible after the moment of contemplation of surgery⁵. In addition, silo-derived and fragmented care will have to change to collaborative-derived care, where a multidisciplinary team (e.g. nurses, surgeons, oncologists, anesthesiologists, psychologist, nutritionist, physiatrists, physical therapists and exercise physiologists) will have to make the necessary efforts to grant timely preoperative patient-centered care, covering the patient's impairments and factors contributing to its surgical risk. This will represent a major shift from risk stratification and prediction to a risk mitigation approach⁶. Therefore, following a comprehensive assessment, if the decision is to proceed to surgery, the multidisciplinary team should plan and implement (as soon as possible) a tailored preoperative optimization program to help the patient to prepare for surgery: prehabilitation.

Prehabilitation is defined as a process of improving the patient's functional capacity to tolerate an incoming stressor, reduce the incidence and severity of treatment-related complications and a faster recovery⁷. The first scientific publication



about the use of prehabilitation dates back to 1946 and reports an experiment conducted by the British Army to prepare soldiers for battle in World War II⁸. The concept evolved slowly and only in last two decades it started to be systematically assessed in various clinical settings such as orthopedics⁹ and cardiovascular surgery¹⁰. In the setting of cancer, Dr. Francesco Carli (McGill University) was the main responsible for its boosting¹¹⁻¹³, and current evidence supports that prehabilitation is safe, acceptable, and feasible¹⁴, can have a positive impact on postoperative outcomes^{15,16} and save costs^{17,18}. Physical exercise is a key player but combining exercise interventions with nutritional and psychological care, on top of medical optimization seem to produce better outcomes¹⁹, which stresses the importance of collaborative work. The most effective intervention is unknown and a patient-centered approach is recommended instead of a “one size fits all”. Current evidence suggests that prehabilitation should be implemented during the 4-6 weeks before surgery to obtain benefit. In certain patients (e.g. frail), delaying surgery in order to adopt a prehabilitation programme might even be cogitated, without jeopardizing therapeutic outcomes, though this deserves further assessment²⁰. Prehabilitation might be paramount for patient undergoing neoadjuvant chemotherapy, with preliminary evidence showing maintenance of functional capacity and muscle mass, greater completion of neoadjuvant therapy at full dose²¹, and an association with greater tumor regression at the time of surgery²².

In a clear effort to improve awareness about the beneficial effects of prehabilitation and motivate Portuguese health professionals to “embrace the cause”, our journal decided to dedicate an issue entirely devoted to prehabilitation and related topics. The first five papers address the contribution of preoperative risk factors such as sarcopenia²³, visceral obesity²⁴, nutritional status²⁵, physical activity²⁶ and respiratory muscle function²⁷ on postoperative burden. A review paper further

stressing the importance of these and other preoperative risk factors is also presented²⁸. In addition, the review summarizes the most common risk stratification tools (e.g. ASA, POSSUM, ACS NSQIP), discusses about their predictive (in) accuracy, emphasizes the need for more research on the topic and highlights the contribution of Portuguese surgeons on the field of surgical risk assessment. The loss of skeletal muscle mass is a frequent side effect of neoadjuvant chemotherapy and is associated with poor postoperative outcomes. Understanding the underlying molecular mechanisms is essential to drive the development of interventions targeting muscle wasting and thus decrease the risk for worse postoperative outcomes. In this issue, Moreira-Pais et al²⁹ will enlighten us about the molecular mechanisms involved in doxorubicin-induced skeletal muscle wasting.

Those interested on starting with prehabilitation will find four papers about the topic. In one paper, our colleagues Marta Ubre and Graciela Martinez-Palli³⁰, two physicians and researchers with solid experience on prehabilitation, share their experience in implementing a multimodal prehabilitation programme as a mainstream service at the Hospital Clínic de Barcelona. The existing information on the effect of prehabilitation in high-risk patients for adverse surgical events is summarized in a systematic review and meta-analysis³¹. The majority of the prehabilitation programs are developed under supervision in an outpatient clinic, which might be an obstacle for those patients with geographical and/or travelling constraints. Thus, a narrative review³² discusses the “why” and the “how to set” a community and home-based personalized prehabilitation clinic, and gives a reflective analysis of the process of gathering the right associates to implement this innovation of changing the ways and the places for prehabilitation to happen. In addition, the reader will find a study protocol from the PROTECT team³³, aiming to test the feasibility and acceptability of a home-based prehabilitation



program, delivered through an internet-based platform, in patients with locally advanced gastric or esophageal adenocarcinoma, undergoing perioperative chemotherapy with FLOT regimen. If successful, the use of telehealth resources could be a convenient way to improve patient access to prehabilitation, and further optimized with the help of wearable devices and other innovations that will emerge in the next few years.

Knowing the surgical burden and risk profile of surgical complications is mandatory to support the effective organization of perioperative care. Using a retrospective analysis of patients admitted to an intermediate surgery care unit from 2017 to 2018, the last paper of this issue³⁴ reinforces the need and utility of surgical outcome monitoring to inform about the organization and resource allocation of perioperative care programs. Based on their audit, the authors propose a change in the perioperative network, which should include a prehabilitation program, proficient intraoperative care, and a multidisciplinary team in the surgical intermediate

care unit to ensure quality post-operative care for high-risk surgical patient.

In conclusion, it is imperative to educate patients, the public, healthcare providers, and policymakers about the scope and significance of the unmet needs of patients undergoing major surgery. Incorporating prehabilitation in the perioperative care is fundamental for successful patient-centered, multidisciplinary, and integrated medical care, and will be of paramount importance to provide short and long-term benefit for all patients having surgery and optimize healthcare efficiency.

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