

# The importance of comprehensive preoperative geriatric assessment as a predictor of postoperative complications in the older adult

## *La importancia de valoración geriátrica integral preoperatoria como predictor de complicaciones posquirúrgicas en el adulto mayor*

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### ABSTRACT

The preoperative assessment is a tool that helps to recognize risk factors, establish percentages of complications in those patients who undergo surgery, and classify those who are more susceptible to developing complications, even to determine those who are not suitable to perform a specific surgical procedure. Currently, the population of older adults is increasing, and as a consequence, the percentage of patients who require surgical interventions is increasing. The comprehensive geriatric assessment is a tool for individualized evaluation of the elderly that allows integrating important data from different domains (cognitive, clinical, functional, and social), collected through different scales and helps to detect patients with frailty syndrome, which is a risk factor for the development of postoperative complications and is used as a predictor of morbidity and mortality in the perioperative period, currently considered a well-established risk factor for adverse effects. For this reason, in order to perform a surgical procedure more safely and reduce complications in this group of patients, an assessment beyond laboratory data, imaging, and electrocardiographic recording is required since this is a population with a decreased response of several systems, so we propose to implement the comprehensive geriatric assessment as a tool to identify the frailty syndrome in the elderly and reduce postoperative complications that occur in patients requiring some surgical procedure in general surgery.

### RESUMEN

La valoración preoperatoria es una herramienta que ayuda a reconocer factores de riesgo, establecer porcentajes de presentación de complicaciones en aquellos pacientes que se someten a una cirugía y clasificar a aquellos que son más susceptibles de desarrollar complicaciones, incluso para determinar quienes no sean aptos para realizar un procedimiento quirúrgico específico, en la actualidad, la población de adultos mayores se incrementa y como consecuencia el porcentaje de pacientes que requieren intervenciones quirúrgicas. La valoración geriátrica integral es una herramienta de evaluación individualizada del adulto mayor que permite integrar datos importantes de los diferentes dominios (cognitivo, clínico, funcional y social), recopilados a través de diferentes escalas y ayuda a detectar pacientes con síndrome de fragilidad, que es un factor de riesgo para el desarrollo de complicaciones posoperatorias y se utiliza como predictor de morbimortalidad en el perioperatorio, actualmente se considera un factor de riesgo bien establecido para efectos adversos. Por tal motivo para poder realizar un procedimiento quirúrgico de manera más segura y disminuir complicaciones en este grupo de pacientes, se requiere un valoración más allá de datos de laboratorio, de imagen y registro electrocardiográfico, ya que se trata de población con una disminución de la respuesta de varios sistemas, por lo que proponemos implementar la valoración geriátrica integral como herramienta para identificar el síndrome de fragilidad en el adulto mayor y disminuir las complicaciones posquirúrgicas que se presentan en pacientes que requieren algún tipo de procedimiento quirúrgico en cirugía general.

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## INTRODUCTION

Preoperative assessments are tools that recognize risk factors and predict those subjects who may develop complications or are not suitable for the surgical procedure; nowadays, the population of older adults (OA) is increasing and requires surgical interventions. The population of the OS is the one that presents more complications during and after the surgical event due to the decrease in the functionality and immune system response, all of which is a sum of unhealthy aging. Therefore, a comprehensive preoperative geriatric assessment is required to have an overall picture of the functional, cognitive, social, and clinical situation, thus facilitating the identification of subjects with frailty syndrome to intervene promptly.

## COMPREHENSIVE GERIATRIC ASSESSMENT

It is an individualized assessment of the older adult that allows the integration of important data from different domains (cognitive, clinical, functional, and social) collected through different scales.

1. The information obtained in the clinical area makes it possible to know all the personal pathological history and nutritional status.
2. The cognitive sphere is evaluated through tests such as the Mini-Mental State Examination of Folstein (MMSE), which allows the identification of some type of dementia secondary to an underlying disease such as type 2 diabetes mellitus, hypertension, cerebrovascular events, etc., or related to genetics, which condition some dependence.
3. Functionality is assessed through scales such as the Short Physical Performance Battery (SPPB), the Basic Activities of Daily Living (BADL), and the Integrated Activities of Daily Living (IADL).<sup>1</sup>
4. The social domain allows to evaluate the environment in which the OA develops, the support of those with whom he/she lives, his/her income, and whether he/she has a primary caregiver, which allows to identify

situations that may influence his/her health status.<sup>1</sup>

The values obtained through this multi-integral assessment allow to identify patients who are more vulnerable and/or at higher risk of hospital admission, hospital stay, postoperative complications, and morbidity and mortality.<sup>1-3</sup>

Frailty results from an accelerated loss of function associated with age, a multidimensional and complex syndrome that leads to different frailty phenotypes (Figure 1). Advanced age is an important predictor of adverse postoperative outcomes; given the significant stress involved in surgery, frailty is a key factor to consider. However, patients with frailty should also benefit from optimizing the healthcare system. It has been noted in several studies that not only comprehensive geriatric assessment instruments should be used, but also factors associated with hospital stays, such as hospital time and conditions, should be considered.

Frailty syndrome is a risk factor for the development of postoperative complications. It is characterized by the loss of homeostasis of several systems, causing a decrease in response to minimal stressors. It is used to predict morbidity and mortality in the perioperative process. It is currently considered a well-established risk factor for adverse effects such as prolonged hospital stay, readmission, use of resources, and mortality. The frailty

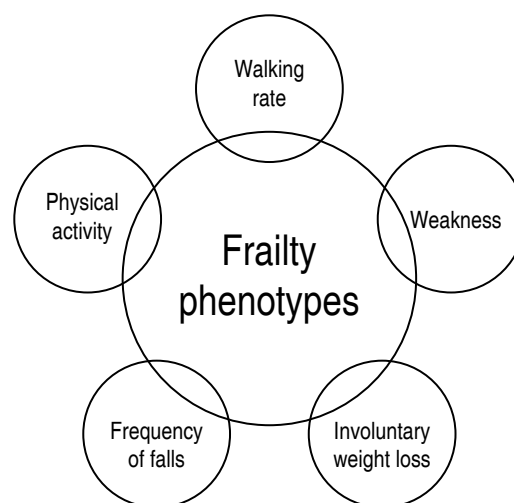


Figure 1: Frailty phenotypes.

index is a scale that allows to integrate all the cumulative deficits of different domains, such as functional, nutritional, cognitive, emotional, social, and geriatric syndromes and diseases; it is calculated by dividing the number of deficits by the total number of possible deficits.<sup>4,5</sup> According to several prospective longitudinal results, nowadays, frailty syndrome is considered a risk factor for postoperative complications. However, it is not an absolute contraindication for a surgical procedure,<sup>6</sup> so the patient can be intervened and stabilized before surgery.

## DISCUSSION

A systematic review and meta-analysis conducted by the Brookdale Department of Geriatrics and Palliative Medicine and colleagues analyzed nine prospective observational studies published between 2010 and 2017 in 2,281 patients aged 61 to 77 who were candidates for different types of surgery. It was concluded that frailty in these patients, who underwent some surgery, was associated with poor postoperative outcomes, more complications and mortality, and extended hospital stay.

There is evidence of the relationship between subjects who were identified as frail and presented with postoperative complications. The prospective longitudinal study of 108 adults over 65 years of age by Dogrul RT and colleagues demonstrated a useful and necessary tool of comprehensive geriatric assessment and frailty to predict postoperative complications, delirium, and preoperative management of risk factors to improve postoperative outcome compared to the *American Society of Anesthesiologists* (ASA) scales that do not predict postoperative outcome.<sup>3</sup>

Comprehensive geriatric assessment and frailty evaluation in the elderly are useful preoperative tools. The complete evaluation through the comprehensive geriatric assessment and frailty index has allowed to know that very frail patients are associated with greater long-term complications, such as hospitalization at 12 months and death. This gives us an overview to focus on the intervention of risk factors and improve a postoperative outcome.

An accurate assessment considers the components of frailty: biophysical, mental, nutritional, and social. Currently, no tool assesses these components simultaneously, nor is there a consensus on how frailty should be assessed, as there are more than 20 validated tools to assess and measure frailty, but none has been defined as a standard. All the tools are assessed and classified in different ways. However, they all converge on a single question: Can the patient undergo the planned operation?

The life expectancy of the elderly has increased. With it, the need for surgical interventions, which requires an assessment beyond laboratory data, imaging, and electrocardiographic recording, since this is a population with a decrease in the response of various systems; therefore, it is necessary to perform more than standardized preoperative evaluations, i.e., a complete assessment, including a comprehensive geriatric assessment to determine the functional, psychological, cognitive, social and general health status of these patients, since they are at greater risk of functional and systemic deterioration.

## CONCLUSION

Comprehensive geriatric assessment allows to identify frailty syndrome in the elderly, and is nowadays a useful tool for predicting post-surgical complications. It allows to identify and intervene in a timely manner in the triggering factors and thus reduce risks such as hospital stay, post-surgical complications, and mortality. Prehabilitation and rehabilitation should be considered when performing a preoperative evaluation of the elderly for a better postoperative outcome.

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