

A 5-Year Perspective Over Robotic General Surgery: Indications, Risk Factors and Learning Curves

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Abstract

Introduction: Robotic surgery has opened a new era in several specialties but the diffusion of medical innovation is slower in digestive surgery than in urology due to considerations related to cost and cost-efficiency. Studies often discuss the launching of the robotic program as well as the technical or clinical data related to specific procedures but there are very few articles evaluating already existing robotic programs. The aims of the present study are to evaluate the results of a five-year robotic program and to assess the evolution of indications in a center with expertise in a wide range of thoracic and abdominal robotic surgery.

Material and methods: All consecutive robotic surgery cases performed in our center since the beginning of the program and prior to the 31st of December 2012 were included in this study, summing up to 734 cases throughout five years of experience in the field. Demographic, clinical, surgical and postoperative variables were recorded and analyzed. Comparative parametric and non-parametric tests, univariate and multivariate analyses and CUSUM analysis were performed.

Results: In this group, the average age was 50,31 years. There were 60,9% females and 39,1% males. 55,3% of all interventions were indicated for oncological disease. 36% of all cases of either benign or malignant etiology were pelvic conditions whilst 15,4% were esogastric conditions. Conversion was performed in 18 cases (2,45%). Mean operative time was 179,4±86,06 min. Mean docking time was 11,16±2,82 min. The mean hospital length of stay was 8,54 (±5,1) days. There were 26,2% complications of all Clavien subtypes but important complications (Clavien III-V) only represented 6,2%. Male sex, age over 65 years old, oncological cases and robotic suturing were identified as risk factors for unfavorable outcomes.

Conclusions: The present data support the feasibility of different and complex procedures in a general surgery department as well as the ascending evolution of a well-designed and well-conducted robotic program. From the large variety of surgical interventions, we think that a robotic program could be focused on solving oncologic cases and different types of pelvic and gastroesophageal junction conditions, especially rectal, cervical and endometrial cancer, achalasia and complicated or redo hiatal hernia.

Key words: robotic surgery, pelvic cancers, gastro-esophageal surgery, learning curve, risk factors

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