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LETTER TO THE EDITOR

Costs–benefits of robot-assisted colorectal surgery: a different perspective

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Abstract
The costs of robot-assisted surgery (RAS) still represent a critical issue. Kulaylat et al. reported a propensity-matched study to compare the outcomes of colorectal surgery between a robotic and a laparoscopic group, concluding that RAS was burdened by higher costs. However, authors did not mention what da Vinci system, Si or Xi, they used and this could be crucial, as recently data published by our group on rectal resections showed that the use of the da Vinci Xi and the surgeon's increased experience could improve the results and significantly reduce the costs of RAS.

Keywords Robotics costs · Robot-assisted surgery · Da Vinci Xi

To the Editor,

We read with great interest the published article by Kulaylat et al. entitled "Robotic versus standard laparoscopic elective colectomy: where are the benefits?" [1].

In recent years, with the diffusion of the da Vinci System and a constantly growing application of robot-assisted surgery (RAS), several studies have been published to describe the safety and efficacy of RAS, as well as to compare RAS to direct manual laparoscopy (DML). However, some concerns have been raised about the use of this new technology, in particular about its real clinical benefits in confront of supposed higher costs and longer operative time.

In this article, Kulaylat et al. described a very well-structured propensity-matched study to compare the outcomes of colorectal surgery between a robotic group and a laparoscopic group. In particular, they reported that, in the RAS group, the operative time was longer, but, after controlling for operative duration and patient covariates, robotic surgery was associated with the similar rates of postoperative morbidity and with some benefits, such as decreased conversion rates and shorter length of hospital stay.

They concluded claiming for further studies examining costs to evaluate whether these benefits offset the increased costs associated with robotic approaches, without analyzing the economic aspects of the two surgical strategies and assuming that robotic surgery is surely more expensive.

Reading the article, we have noticed that the authors use in all the text generic terms such as "robotic surgery", "robotic approach", "robotic colectomies", or "robotic procedures" without specifying which system they refer to, and we do not know for certain if the whole study is based on the da Vinci Si system, the most widespread version to date until recently, or the da Vinci Xi, the newest one. Indeed, only in the last 2–3 years, in many centers, the Si system has been gradually replaced by the most recent version, the da Vinci Xi. This is important as the recent works have shown that many of the conclusions reached to date, in the comparison between DML and RAS and unfavorable to the latter in terms of longer operating times and higher costs, without the clear evidence of clinical benefits, are referred to results obtained by comparing expert laparoscopists with novice robotic surgeons, using a now almost obsolete robotic system, the da Vinci Si. These details could be crucial in our opinion, as recently data published by our group on rectal resections performed with the two different da Vinci systems, the Si and the Xi, showed that, with the new robot and with the surgeon's increased experience, the results improve and the costs are significantly reduced [2–4].

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In conclusion, the article by Kulaylat et al. deals with a very interesting topic, but it does not quite reach to a complete current conclusion, as it is obtained on an overcome robotic system and probably including a lot of procedures performed by surgeons that were still in their learning curves. The use of da Vinci Xi with cases performed by expert robotic surgeons, or the use of new robotic systems that will enter in the market, represents a totally different scenario that deserve to be evaluated in a cost–benefit evaluation of RAS.

Compliance with ethical standards

Conflict of interest Dr. Matteo Bianchini, Dr. Simone Guadagni, and Prof. Luca Morelli declare that they have no conflict of interest.

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