



Minimally Invasive Surgery: Straight Thinking and Still a Long Way to Go

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Editorial

The LACC Trial [1] and the epidemiologic study [2] showed that minimally invasive radical hysterectomy was associated with poorer overall survival compared to abdominal surgery in early-stage cervical cancer. These results may raise questions about the oncological safety of less invasive approaches not only in cervical cancer, but also in various other types of cancer.

Several reasons can potentially account for the inferior oncologic outcomes of minimally invasive surgery. Some aspects of the surgical procedure inevitably work as the “first-hit” explanation. In terms of the operative field, it has been well demonstrated that minimal invasive surgery provides a magnified, illuminated and adequate operative view; thus, the surgeon might identify pertinent anatomy more easily, which allows him/her to perform a more meticulous surgical dissection. Indeed, LACC Trial showed that all non-vaginal vault pelvic recurrences occurred in the minimally invasive surgery group and there was no statistically significant difference in the frequency of positive margins between minimally invasive surgery group and open-surgery group [1,2]. This cannot be explained by the less anterior traction on the uterus with limited resection at the uterosacral ligaments and parametria in minimally invasive surgery.

Notably, only patients with stage IB1 or tumor size greater than 2 cm had worse outcomes [1,2]. This finding suggests that the extra manipulations occurring during minimally invasive cases, such as the use of a uterine manipulator and insufflation gas (CO₂), might potentially cause tumor spillage in patients with higher tumor burden. Actually, gasless facelift approach in minimally invasive neck dissection did not show inferior oncological outcomes, but there have been no other prospective gasless laparoscopy studies so far [3]. Moreover, we wonder whether the observed effect of the two studies is unique to cervical cancer, since minimally invasive surgery was not associated with inferior survival outcomes in patients with early-stage ovarian or endometrial cancer, as reported by previous National Cancer Database studies [1,2,4,5].

Therefore, ad hoc studies that evaluates gasless lift laparoscopic surgery with and without the use of manipulators and its association with patterns of recurrence (locoregional recurrence, abdominal and port-site metastases) and survival might provide a better understanding to the mechanisms underlying the poorer survival in cervical cancer [6]. Meanwhile, we advocate the use of new tools that directly measure the *in situ* presence of cancer, such as circulating tumor DNA and tumor-derived exosomes, which could be utilized to dynamically monitor the effect of the surgical procedure on tumor behavior in the future studies [7,8].

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