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Surgical perspectives

# To answer quickly or rigorously? Scientific strategies for the new surgical questions after the emergence of COVID-19

## ¿Responder con rapidez o con rigor? Estrategias científicas ante las nuevas preguntas de los cirujanos tras la irrupción de la COVID-19

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Since the early 2020s, surgeons sometimes see patients who are candidates for urgent surgery and who also present with COVID-19 infection, with or without clear symptoms. What should we do with these patients? Should we avoid urgent surgery as far as possible? Forcing conservative treatment of certain surgical pathologies may entail risks that must be weighed individually against the risks of the intervention itself. It is therefore crucial to answer another question as precisely as possible: How and to what extent does COVID-19 infection increase postoperative mortality in surgical patients?

In May 2020, the first study to help answer these questions was published in the Lancet: the COVIDSurg project, based on a registry of 1128 patients with COVID-19 infection who underwent surgery in 235 hospitals in 24 countries[1]. The results were surprising: 51.2% of patients developed pulmonary complications and 23.8% died in the postoperative period. Consequently, the authors recommended avoiding surgical interventions in COVID-19-positive patients whenever possible[1]. However, it is legitimate to question the validity of a study such as COVIDSurg to reach such a conclusion. In other circumstances it would be unlikely that the Lancet would publish a descriptive study based on a non-consecutive cohort. A non-systematic registry in surgical departments across all specialties in so many hospitals has an inherent selection bias: it is likely that the surgeons consulted would unintentionally contribute the most memorable cases, which tend to be those with the worst outcomes. Furthermore, the non-comparative nature of the study does not allow us to determine whether the high mortality observed was due to COVID-19 infection or related to other factors: it included mostly high-risk patients, aged over 70 years, with multiple comorbidities and an ASA score of 3 or 4; confinement may have contributed to patients consulting at a more advanced stage of their surgical pathologies; and hospital collapse may have made it difficult for hospitals to rescue patients with postoperative complications. The authors of the COVIDSurg study justified these design limitations by citing the urgency of an unprecedented situation. Greater rigour was thwarted by hastiness.

The COVID-CIR project was developed simultaneously. It was based on a registry of all urgent general and digestive surgeries performed during the first wave of the pandemic (March to June 2020) and during the same period in 2019 in 25 Spanish hospitals, and included more than 5000 patients[2]. First, to assess the impact of COVID-19 infection on postoperative mortality, COVID-19-positive patients were compared with COVID-19-negative patients operated on during the pandemic using propensity-score matching, matching patients with similar age, baseline pathologies and general condition at the time of surgery. Although the crude postoperative mortality of the two groups was very different (12.6% vs. 4.6%), this difference did not reach statistical significance after propensity-score matching (odds ratio 1.58, 95% CI .88–2.74)[3]. In other

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words, the high mortality observed in COVID-19 infected patients undergoing emergency surgery was due more to their age, underlying pathology and preoperative clinical status than to a hypothetical synergistic effect of the virus. Thus, the fact that a patient is COVID-19-positive should not be considered an absolute surgical contraindication. In each case, the assessment of surgical risk should be based on the patient's baseline pathology and clinical situation at the time of diagnosis, as well as in the pre-pandemic context. In fact, a classical postoperative risk calculator such as P-POSSUM demonstrated good predictive power for postoperative mortality also in COVID-19 infected patients[4].

At the same time, to assess the effect of confinement, the surgical pathology status of the COVID-19-negative patients operated on during the pandemic was compared with those operated on the previous year. It was found that, during the pandemic, the patients did not present more advanced peritonitis or greater surgical complexity, and the inflammatory parameters of their analyses did not show higher values[3]. Thus, the higher mortality observed during the pandemic could not be attributed to patients consulting later due to confinement.

Finally, to assess the consequences of hospital collapse, intra-pandemic COVID-19-negative patients were compared with those operated on before the pandemic, matching patients in both groups from the same hospital and of similar age, underlying pathology and severity of surgical pathology. It was found that COVID-19-negative patients operated on during the pandemic had the same risk of postoperative complications as those in the pre-pandemic period, but a higher risk of dying as a result of their complications (failure-to-rescue), probably as an effect of the situation of hospital collapse in the context of the pandemic[3].

As new questions emerge, quick answers must be considered with caution. Expediency cannot be an excuse to forgo scientific rigour. Although all observational studies have inevitable limitations, it does not seem sensible to stop demanding that they be based on representative samples and that their results be compared with a control cohort. Only by answers based on reasonably robust evidence will we be able to draw conclusions useful for decision-making in clinical practice.

## Conflict of interests

The authors have no conflict of interests to declare.

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