

Decrease in operative volume in general surgery residents in Chile: effects of the COVID-19 pandemic

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Dear Editor

The COVID-19 pandemic has affected healthcare systems and medical education worldwide. Non-surgical specialties have experienced an increase in patient load, particularly in complications related to SARS-CoV-2 infection. Meanwhile, surgical specialties have experienced a significant decrease in clinical practice owing to several measures established to limit spread of the virus^{1,2}. In Chile, general surgery residency programmes involve 3 years of training. In the authors high-volume teaching hospital, the surgical volume of residents at the end of the programme is approximately 400 procedures operated as main surgeon, with the majority of patients operated in the last year of residency (PGY3) during on-call duties and elective rotations³.

In Chile, the COVID-19 outbreak started in March 2020, leading to a national lockdown from March to August. National and institutional protocols were adopted for management of the pandemic from the beginning, with spillover effects on surgical training. These included, among others: interruption of all elective surgical procedures for benign diseases, and maintaining on-call duties for emergency operations, and elective procedures for oncological patients or time-dependent diseases; rearranging surgical teams with 2-week on-off rotations of inpatient care for preventive quarantine affecting both residents and attendings; and relocation of surgical residents to medical/critical patient units with high demand.

These measures had the side-effect of significantly reducing surgical exposure and volume performed by residents, in comparison to recent generations of residents. Here, the number of operations performed as supervised first surgeons by PGY-3 residents of generation 2019 was compared with that of PGY-3 residents of generation 2020 (8 residents per generation), between March and August. Mann–Whitney *U* and χ^2 tests were used for data analysis and $P < 0.050$ was considered significant. Statistical analysis was performed with SPSS® version 25 (IBM, Armonk, New York, USA).

The results revealed a significant decrease in the total number of surgical procedures of 61.7 per cent. A median of 126 (i.q.r. 115–139) patients were operated by the PGY-3 generation 2019, compared with 48 (44–53) by the PGY-3 generation 2020 in the respective study period ($P < 0.001$) (Table 1). Interestingly, the only area that had more procedures in generation 2020 was thoracic surgery (Table 1). This could be explained by the fact that

Table 1 Number of procedures in Generation 2019 and 2020 overall and by type of surgery

	Generation 2019		Generation 2020	
	n	No. per resident*	n	No. per resident*
Overall	983	126 (115–139)	376	48 (44–53) [†]
Cholecystectomy	217	27 (24–30)	119	15 (11–19)
Appendicectomy	177	22 (18–26)	73	8 (6–13)
Endoscopic	155	22 (9–28)	6	0 (0–1)
Colorectal surgery	78	10 (9–11)	28	3 (2–5)
Vascular surgery	63	7 (5–9)	18	3 (0–3)
Abdominal hernia repair	55	5 (4–7)	17	1 (1–2)
Upper gastrointestinal surgery	54	6 (4–8)	15	2 (2–2)
Plastic, breast, head and neck surgery	52	6 (5–8)	13	1 (0–2)
Exploratory laparotomy/laparoscopy	39	4 (3–5)	31	2 (2–5)
Urology	30	4 (1–5)	19	1 (1–3)
HPB surgery	24	2 (2–4)	7	1 (0–1)
Thoracic surgery	14	2 (0–2)	30	4 (1–6)

* Values are median (i.q.r.). HPB, hepatopancreatobiliary. [†] $P < 0.001$ versus generation 2019 (Mann–Whitney *U* test).

thoracic surgery is normally a PGY-2 rotation but, because of the workload during the pandemic, was reinforced by PGY-3 residents in 2020.

These results have demanded imperative changes to help mitigate effects on the quality of training residents receive. The first reaction was an exponential increase in the number of webinars held, but when quarantine and restrictions began to extend in duration, other solutions arose. As an alternative to the low operation volumes, the local simulation centre boosted a web-mobile-based platform to remotely train laparoscopic abilities⁴. This has helped to reduce the handicap of generation 2020, but has not improved the central concern, namely surgical exposure.

Concern about low operating volumes related to lack of surgical exposure has led the medical education entities and government authorities to discuss the need for unexpected changes in surgery programmes, including an eventual extension of these programmes for at least a year. This is taking place in the middle of a limited resource budget for 2021, and amidst fears about effects of the second wave of COVID-19.

These uncertain scenarios affecting surgical training programmes should be the main concern worldwide for the general surgery specialty, and the surgical community must share and discuss possible solutions to address this problem.

Disclosure. The authors declare no conflict of interest.

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