


Reduced adrenal surgery in COVID-19 pandemic: a possible ticking time bomb

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Dear Editor

The COVID-19 pandemic has changed treatment approaches to many diseases within endocrine surgery^{1–3}, but the impact on adrenal surgery remains unexplored. Adrenalectomy is mainly performed for tumours secreting vasoactive hormones such as catecholamines, aldosterone, and glucocorticoids. These tumours can lead to significant cardiovascular morbidity when left untreated. Adrenal tumours can also be related to primary and secondary malignancies or masses with uncertain behaviour.

The pandemic has challenged surgical management of adrenal tumours, as hospital resources have been reallocated for patients with COVID-19, reducing the availability of hospital beds and Intensive Care Unit (ICU) monitoring for patients without COVID-19. Moreover, fear of contracting COVID-19 during hospitalization and refusal of open surgery has further discouraged patients from adrenalectomy. The need for open surgery was highlighted at the beginning of the pandemic, with laparoscopy being discouraged owing to a potential risk of viral spread in aerosols during pneumoperitoneum.

Italy was among the first countries in Europe to experience the impact of the COVID-19 pandemic on the healthcare system⁴. The crisis can be divided into three main intervals according to the public health measures adopted by the Italian government⁵. The first period, 9 March to 3 May 2020, corresponded to the onset of the pandemic crisis, with a general total lockdown. The second period (4 May to 14 October 2020) corresponded to a decrease in virus spread and reduction in restrictive public health measures, especially during the summer season. The third period (15 October to 23 December) corresponded to the onset of the second pandemic wave and a subsequent partial lockdown.

The Padua Endocrine Surgery Unit is a tertiary high-volume referral academic centre in the Veneto region, where the first fatal case of COVID-19 in Italy was experienced. During the

specified periods of the pandemic in 2020, surgery was performed in 407 patients: 380 thyroidectomies and parathyroidectomies (93.4 per cent) and 27 adrenalectomies (6.6 per cent). During the same interval in 2019, 456 operations were performed: 410 thyroidectomies and parathyroidectomies (89.9 per cent) and 46 adrenalectomies (10.1 per cent) (Fig. 1). Albeit not statistically significant, the greater than 10 per cent absolute decrease in surgical procedures during the COVID-19 pandemic was mostly accounted for a prominent decrease in adrenalectomies, with a shift of hospital facilities to the less resource-demanding neck endocrine surgery, with short hospital stay and virtually no need for ICU monitoring. Interestingly, in the first period of 2020, adrenal surgery stopped completely (0 per cent versus 13.3 per cent in 2019; $P=0.002$). A slightly larger number of adrenalectomies were performed in the second period compared with 2019 (20 (8.0 per cent) versus 16 (7.3 per cent) respectively). In the last period, during the second wave of the pandemic, adrenal surgery was reduced again, but a minimal number of interventions were performed (7.6 versus 12.2 per cent respectively), even though the number of COVID-19 hospitalizations and patients requiring ICU was higher than in the first period⁵ (Fig. 1). There were no deaths, major morbidity, or perioperative COVID-19 infections. For each patient, the indication for surgery was discussed at online multidisciplinary meetings to assess the risk–benefit balance.

The pandemic has had an impact not only on surgery, but also on the entire diagnostic assessment in terms of outpatient examinations, screening programmes, and oncological/clinical follow-up. For example, haemorrhagic strokes, which had become rare among hypertensive patients with adrenal disease, have reappeared. This ‘ticking time bomb’ might in the coming years lead to delayed and/or missed diagnoses, more advanced-stage adrenal tumours, increased cardiovascular complications of hormonally active adrenal masses, and to subsequent

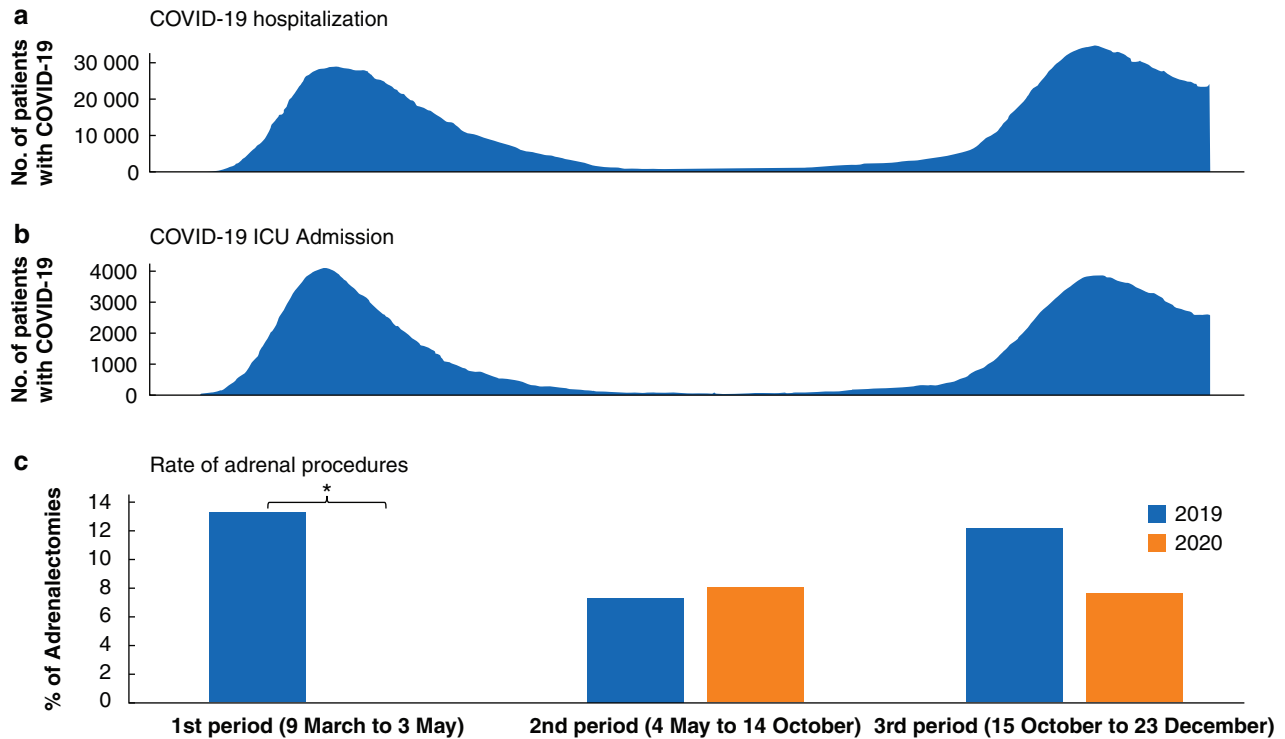


Fig. 1 COVID-19 in Italy:

a. Number of hospital admissions, **b.** Number of admissions to ICU⁵, and **c.** Rate of adrenal operations at the Endocrine Surgery Unit, Padua University Hospital, Italy, during 2019 and 2020. * $P = 0.002$ (Fisher's exact test test).

neurological morbidity and disability, with long-term social and economic effects.

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References

1. Lombardi CP, Gordini L, D'Amore A, Bocale R, Boscherini M, Bellantone R. Covid-19 pandemic: new rules of engagement in endocrine surgery. *Br J Surg* 2020;**107**:e322
2. Medas F, Ansaldo GL, Avenia N, Basili G, Bonomi M, Bove A *et al.* The impact of Covid-19 pandemic on thyroid surgery in Italy: results from a nationwide multicentric study. *Br J Surg.* 2021 Feb 28:znab012. doi: 10.1093/bjs/znab012. Epub ahead of print. PMID: 33659983.
3. Søreide K, Hallet J, Matthews JB, Schnitzbauer AA, Line PD, Lai PBS *et al.* Immediate and long-term impact of the COVID-19 pandemic on delivery of surgical services. *Br J Surg* 2020;**107**: 1250–1261
4. Lavezzo E, Franchin E, Ciavarella C, Cuomo-Dannenburg G, Barzon L, Del Vecchio C *et al.* Suppression of a SARS-CoV-2 outbreak in the Italian municipality of Vo'. *Nature* 2020;**584**:425–429
5. <http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus> (accessed 11 February 2021)