

Implementation of a comprehensive preoperative screening process for elective and emergency surgery during the peak of the COVID-19 outbreak

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Dear Editor

Given the pandemic spread of coronavirus disease 2019 (COVID-19), recent guidelines have suggested that operations that may be delayed should be postponed^{1,2}. Such measures are deemed sensible because the nosocomial spread of COVID-19, especially in operating rooms, requires temporary hospital closure and has a negative impact on the provision of essential medical care³. Therefore, establishing appropriate preoperative measures for preventing COVID-19 is critically important.

The records of patients who had undergone elective or emergency surgery at Asan Medical Centre, a 2700-bed tertiary centre in Seoul, South Korea, during the first peak of the COVID-19 outbreak in the country (23 February to 5 May 2020), starting from the date of implementation of the preoperative screening strategy at the hospital (Fig. 1) were reviewed. Patients were screened by chest X-ray and use of a questionnaire on COVID-19-related symptoms and possible epidemiological links. Reverse transcriptase–polymerase chain reaction (RT-PCR) testing for SARS-CoV-2 genes in nasopharyngeal swabs was performed in those with symptoms or epidemiological links.

Some 140 patients had their operations postponed following the preoperative screening process. Among them, 116 patients (82.9 per cent) had fever and 16 (11.4 per cent) had other symptoms, such as cough and sputum. Two patients (1.4 per cent) had suspected pneumonia on chest X-ray, and 14 (10.0 per cent) had suspected epidemiological exposures to known cases of COVID-19. Nineteen patients (13.6 per cent) had their operation postponed until their RT-PCR results had been made available. Of the 140 patients with postponed operations, one patient (0.7 per cent) with mild fever and a negative initial RT-PCR result underwent repeated screening due to epidemiological links with a cluster of COVID-19 cases, and was later confirmed with COVID-19.

A total of 13 792 patients had surgery during the study period; of whom 611 (4.4 per cent) underwent emergency operations, of which 77 (12.6 per cent) were carried out in negative-pressure operating rooms. A total of 10 645 patients (77.2 per cent) had at least one RT-PCR test within 3 days before surgery. The other 22.8 per cent, who had no symptoms or epidemiological link to known cases of COVID-19, were not tested with RT-PCR before surgery; none was confirmed with COVID-19 after surgery.

A total of 88 patients had surgery in negative-pressure operating rooms with the medical personnel in full personal-protective equipment. Of the operations, 77 (88 per cent) were emergency procedures or interventions. All 88 patients had at least one RT-PCR test within 3 days before surgery, none of which was positive for SARS-CoV-2. All operations carried out in the negative-pressure operating rooms were successful.

This experience of the implementation of a comprehensive screening strategy shows that it may be possible to maintain the level of medical services for surgical patients while preventing the nosocomial spread of COVID-19. For preoperative screening for COVID-19, thorough examinations for symptoms are essential. Furthermore, as a significant proportion of individuals infected with SARS-CoV-2 are asymptomatic⁴, the epidemiological link is also very important.

The cost of a RT-PCR test for SARS-CoV-2 ranges from US \$70 to \$100 (approximately €58 to €82) in South Korea; a total of 10 645 preoperative RT-PCR tests were performed during the study period, costing the hospital approximately \$750 000 (€618 600). However, this cost is much lower than the expected loss of \$12 500 000 (€10 310 000) that would have occurred if the operating rooms were to be closed for 2 weeks due to the nosocomial spread of COVID-19.

The implementation of a comprehensive preoperative screening for COVID-19 allowed the authors safely to perform about 14 000 operations, both elective and emergency, during the peak of the outbreak. Each institution should develop a customized screening process that works well in its situation.

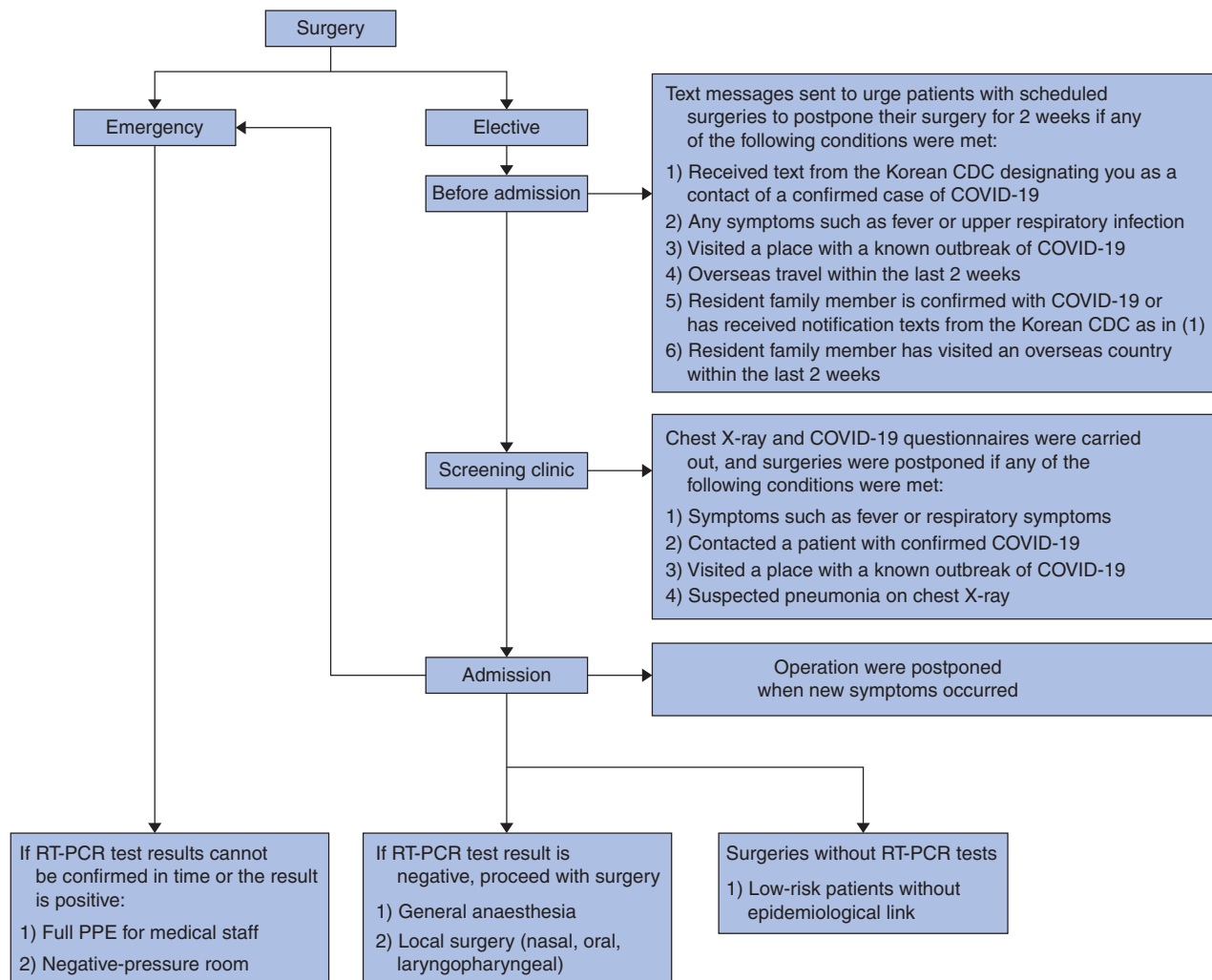


Fig. 1 Preoperative screening process for COVID-19

CDC, Centers for Disease Control and Prevention; RT-PCR, reverse transcriptase–polymerase chain reaction; PPE, personal protective equipment.

Supplementary material

Supplementary material is available at BJS online.

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References

1. Hojajj FC, Chinelatto LA, Boog GHP, Kasmirski JA, Lopes JVZ, Sacramento FM. Surgical practice in the current COVID-19 pandemic: a rapid systematic review. *Clinics (Sao Paulo)* 2020;**75**:e1923
2. COVIDSurg Collaborative. Global guidance for surgical care during the COVID-19 pandemic. *Br J Surg* 2020;**107**:1097–1103
3. Lee H, Heo JW, Kim SW, Lee J, Choi JH. A lesson from temporary closing of a single university-affiliated hospital owing to in-hospital transmission of coronavirus disease 2019. *J Korean Med Sci* 2020;**35**:e145
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