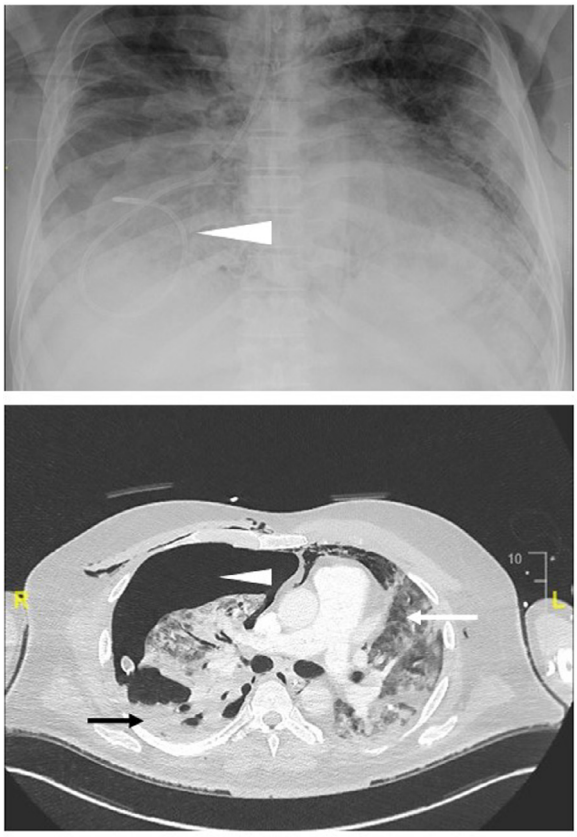
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

membrane oxygenation (ECMO) patients. All of NGTs positioned were confirmed by a chest radiograph. Eleven (8.1%) were inadvertently endobronchial, of which four developed pneumothoraces (figure 1). Three patients (including both who had received ECMO) died and a fourth is currently undergoing a prolonged respiratory wean. No patients were fed or received drugs via a misplaced NGT.

Chest radiograph of patient with inadvertent NGT placement in right lower lobe. Note the path of the tube suggests breech of the bronchial tree and direct injury to the lung parenchyma (arrowhead). A CT the following day showed a large pneumothorax (arrowhead), some haemothorax (black arrow) and severe ground glass changes consistent with SARS-CoV-2 (white arrow).

Discussion: Our inadvertent endobronchial NGT rate is relatively high, compared to our previous clinical experience, which we believe may be related to the challenges of working with cumbersome personal protective equipment and/or changed practice to attempt to reduce transmission of SARS-CoV-2 (2). We suspect the lung parenchyma is particularly fragile in acute respiratory distress syndrome caused by SARS-CoV-2, which contributes to the high rate of pleural breech and subsequent poor outcome (3). We recommend experienced operators place NGTs and do so using direct or videolaryngoscopy to minimise the risk of incorrect placement.

We would like to thank the families of our patients for their permission to share the images in this work.



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Intracranial haemorrhage associated with systemic anticoagulation in ventilated COVID-19 Intensive care patients

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Introduction: COVID-19 induces a pro-inflammatory, hypercoagulable state with marked elevations of ferritin, C-reactive protein, interleukin, and D-dimers. Observed consequences include pro-thrombotic disseminated intravascular coagulation (DIC) with a high rate of venous thromboembolism (VTE) and elevated D-dimers with high fibrinogen and low anti-thrombin levels. Pulmonary congestion appears to be due to micro-vascular thrombosis and occlusion on pathological examination.1 The acquired pro-thrombotic state and associated poorer outcomes seen in critically ill COVID-19 patients 2,3 have led to such patients being treated empirically with systemic anticoagulants. Unfractionated heparin (UFH) or low molecular weight heparin (LMWH) have both been used.2,3

Methods: Review of COVID-19 positive adult patients admitted to the critical care unit between 10th March and 13th May 2020 with severe respiratory failure requiring invasive ventilation.

Results: In that period we admitted 59 patients. 6 (10%) females, 56 (90%) males. 45 (76%) patients required therapeutic anticoagulation (27 UFH, 14 LMWH, 4 argatroban). 4 (8.9%) of the 45 anticoagulated patients suffered catastrophic intracranial haemorrhage and subsequently died.

Discussion: The risk for any significant haemorrhage in patients systemically anticoagulated for VTE with unfractionated heparin (UFH) is 2-3%, 4 and that of anticoagulant-related intracranial haemorrhage (AICH) in patients systemically anticoagulated with UFH is 1-2.7% (in patients treated

for ischaemic stroke) and 4% with argatroban.5 We report a much higher incidence of nearly 9%. The cases we present fulfilled the advised criteria for systemic anticoagulation. Despite four-hourly monitoring of APPT and anti-Xa activity on the intensive care unit there were significant fluxes in these laboratory markers of anticoagulation. These may be associated with the uncharted nature of this disease process.It is impossible to disassociate the necessary therapeutic-intensity anticoagulation with the observed heightened frequency of life-ending intracranial haemorrhage in these patients.

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Anesthesia for double lung transplant in a patient with confirmed COVID-19 infection: a case report

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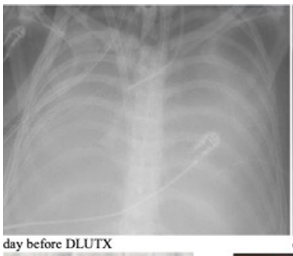
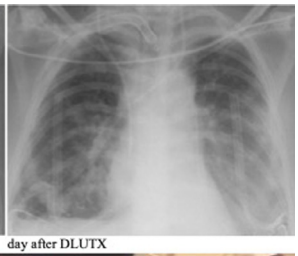
Introduction: Lung transplantation has been performed in a small number of patients suffering from COVID-19 related pulmonary fibrosis or end-stage COVID-19 pneumonia. (1) There are no reports of lung transplantations to receipients with positive Covid-19-PCR at the time of the operation.

Methods: A 42-year-old woman without comorbidities was hospitalized and diagnosed with COVID-19 pneumonia. After being intubated and tracheotomized, VV-ecmo support had to be initiated, no tendency of improvement ensued. Lung transplantation proceedings were made despite viral RNA test results from BAL being consistently positive (while negative culture growth suggested no active viral disease) since a small intracerebral bleeding had occurred after 45 days on ECMO. An adequate donor organ was found, double lung transplantation was performed.
Two experienced anesthetists, two nurse anesthetists and a runner provided anesthesia. The OR was set to positive pressure and 26 air changes h-1, the team wore full PPE (multilayer gloves, gown/overall, FFP-3 masks, glasses, faceshield).
Videolaryngoscopic intubation using a ViVaSight® (Ambu, Denmark) left double lumen tube with integrated camera was performed, TEE and bronchoscopy were avoided. We used near infrared spectropscopy and total intravenous anesthesia with Propofol 5,5mg kg-1 h-1 and Sufentanil 5mcg kg-1 h-1. Being on VV-Ecmo with 4,7l of blood and 5,5l O2 flow min-1 we used a second, centrally cannulated parallel ecmo circuit with 3l of blood and 2l of oxygen flow min-1, the VV circuit was reduced.
The operation was prolonged due to adhesions, coagulopathy, rupture of the dilated right atrium. Transfusion of 30 units of packed red cells, 40 units of fresh frozen plasma, 5 units of platelets, 2000IE of PPSB, 30mcg of desmopressin acetate, 5 grams of fibrinogen concentrate guided by repetitive viscoelastic testing was performed. Bilateral pulmonary edema occurred, leading to an oxygenation index of 72 on 11 min-1 VV ecmo flow. We therefore switched to a femorally cannulated VA-ecmo circuit to minimize hemodynamic stress for the newly transplanted lungs.
At the end of the operation the patient was stable with oxygenation index of 76 with 2,8l min-1 blood flow of ECMO support, sedated with Propofol 5,5mg kg-1 h-1 and Sufentanil


day before DLUTX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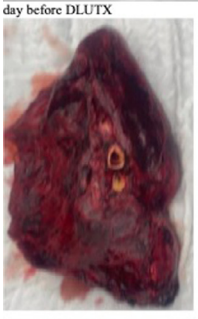
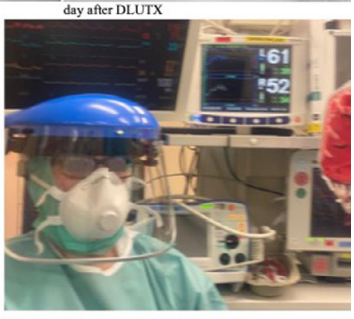

Explanted left lung



anesthesia during COVID-19 DLUTX