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Perioperative management of elderly patients presenting with hip fracture during COVID-19 pandemic surge



With increasing numbers of Coronavirus Disease 2019 (COVID-19) cases in the United States and the world, perioperative management of elderly patients with hip fracture has become especially challenging. This is due to the underlying medical comorbidities, risk of COVID-19 complications, urgency of surgery and combined yet unknown morbidity and mortality of the two conditions. COVID-19 can complicate the perioperative assessment and clinical management, have unpredictable and sometimes fatal clinical course with diagnostic challenges and produce tremendous strain on the health care system and providers [1]. During the early stages of COVID-19 surge in New York City, our busy tertiary medical center in The Bronx continued, with reduced rate, to admit patients with hip fracture requiring surgery. Informed written consent was obtained to publish the following three cases.

88 year-old male, with complex cardiac medical history and no COVID-19 related symptoms, underwent a revision hip replacement surgery, under general anesthesia, for peri-prosthetic fracture. The following day he developed cough, low-grade fever and nasal cannula oxygen requirements. The symptoms and oxygen requirements worsened over the next several days, chest xray showed bilateral infiltrates but he tested negative twice for COVID-19. On Postoperative day (POD) 10, his third test came back positive. Patient was intubated the following day and expired shortly after in the setting of multi-organ failure and sepsis. 2nd patient, 76 year-old female, with hypertension, diabetes mellitus 2 (DM2) and atrial fibrillation on anticoagulation, underwent a hip hemiarthroplasty surgery under general anesthesia with droplet and aerosol personal protective equipment (PPE). Patient came from a nursing home, had a low grade fever and cough preoperatively, but tested negative for COVID-19. After the surgery, fever and cough continued, with nasal cannula oxygen requirements. She also exhibited decreased appetite and fatigue and was retested, this time positive, on POD 3. 6 days after surgery she no longer had fever, cough nor needed supplemental oxygen and was discharged on POD 12. 3rd patient, 89 year old female with DM2, presented for open reduction internal rotation surgery 9 days after a fall. She was afraid to come to the hospital earlier due to COVID-19. Pre-operatively patient tested positive, but was asymptomatic, and underwent surgery under spinal anesthesia and monitored anesthesia care, with droplet and aerosol PPE. After uneventful surgery and postoperative course, exhibiting no symptoms, patient was discharged on POD 6.

A significant number of COVID-19 patients can be asymptomatic, either to become pre-symptomatic and eventually develop symptoms, or remain asymptomatic, with still unknown rate of transmission. During the pandemic, particularly in high prevalence communities, universal testing may be required because the pre-test probability is high; However, single negative test result may not be sufficiently informative [2]. Clinical judgment and appropriate precautions are therefore paramount. Lei et al. reported that surgery may accelerate

and exacerbate disease progression of COVID-19 [1]. The observed incubation period before symptom onset was shorter in the surgical patient population. This may be explained by the contribution of surgery to both pro-(early) and anti-inflammatory(late) systemic response system. As most hip fractures occur at home, regardless of social distancing, surgery to repair the fracture may be one of the more common operations needed during the pandemic. Recent studies following hip fracture patients found worse clinical outcome and increased mortality in patients with positive test for COVID-19 [3]. Risks and benefits of urgent orthopedic surgery should therefore be carefully evaluated for patients who are symptomatic or at increased risk of becoming infected. Using evidence based approach, a clinical balance needs to be made between mitigating potential fracture-related complications (e.g., fat embolism) with worsening of cardio-respiratory function and the added stress of anesthesia and expedited surgery [4]. One of the main advantages of regional over general anesthesia in patients with COVID-19, besides better preserving respiratory function, would be the avoidance of airway manipulation, decreasing droplet and aerosol spread of viral particles during intubation, suctioning and extubation. The European and American Societies of Regional Anesthesia produced joint COVID-19 practice recommendations during the pandemic on the preferred use of neuraxial and regional anesthesia [5]. At this point, further studies are needed to demonstrate the impact of COVID-19 infection on hip fracture management and vice versa. Our practice recommendations are summarized in Table 1.

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Declaration of competing interest

The authors declare that they have no known competing financial

Table 1

Summary recommendation for perioperative management of hip fracture during COVID-19 pandemic.

Employ multidisciplinary planning with evidence-based approach
Utilize preoperative testing with high level of clinical judgment
Decide on appropriate timing of surgery given risk and severity of COVID-19 and underlying medical condition
Use universal contact and droplet precautions, with aerosol whenever indicated
Choose most optimal surgery and anesthesia technique, with regional anesthesia preferred over general
Postoperative course may be further unpredictable with yet unknown morbidity and mortality

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