

Introduction

- The severe acute respiratory syndrome coronavirus 2 (SARS-coV-2), the virus that causes coronavirus disease 2019 (COVID-19) has been associated with a hypercoagulable, hyperinflammatory state¹⁻³
- In turn, COVID-19 is associated with increased operative risks, ranging from delayed wound healing and coagulopathy to increased risk of mortality^{3,4}
- There is a paucity of literature describing the implications of a COVID-19-positive diagnosis on limb salvage procedures in patients with chronic wounds

Objective

- We sought to report our recent experiences with COVID-positive patients

Methods

- Retrospective review of patients who underwent lower extremity (LE) limb salvage procedures within 30 days of a positive COVID-19 diagnosis from February 2020 to March 2022
- Reviewed:
 - Patient demographics
 - Comorbidities
 - Surgical factors
 - Postoperative complications and management

Results

- 597 patients screened → 67 (11.2%) diagnosed with COVID-19 → **17** within 30 days of surgery and thus included
- Patient Characteristics*
 - Predominantly **male** (n=12, 70.5%)
 - Average age of **58.6 ± 17.8 years**
 - Median Charlson Comorbidity Index (**CCI**) **5 (IQR: 6.5)**, reflecting substantial comorbidity burden
- COVID-19 Characteristics*
 - Mean time from COVID-19 diagnosis to index procedure: **8.5 ± 15.2 days**
 - Five** patients (29.4%) received at least one dose of the COVID-19 vaccine
 - Asymptomatic infection in **10 cases** (58.8%), symptomatic in **7 (41.2%)**, with one patient requiring treatment with Remdesivir

Table 1. Vascular Details

Characteristic	No. of Patients (%)
Angiogram	4 (23.5%)
<u>Angiogram intervention</u>	3 (17.6%)
<i>Stent</i>	2 (66.7%)
<i>Angioplasty</i>	1 (33.3%)
<u>Post-intervention VRO</u>	
1	0 (0.0%)
2	2 (66.7%)
3	1 (33.3%)

Abbreviations: VRO: Vessel runoff

Table 2. Operative Details

Characteristic	No. of Patients (%)
Wound location	
<i>Foot</i>	5 (29.4%)
<i>Ankle</i>	2 (11.8%)
<i>Distal leg</i>	4 (23.5%)
<i>Knee/Thigh</i>	2 (11.8%)
<i>Other</i>	3 (17.6%)
Procedure	
<i>Debridement</i>	8 (47.1%)
<i>Free flaps</i>	3 (17.6%)
<i>BKA</i>	2 (11.8%)
<i>AKA</i>	2 (11.8%)
<i>I&D</i>	1 (5.9%)
Osteomyelitis	7 (41.2%)
AC/AP Regimen	
<i>Continuous Heparin</i>	1 (5.9%)
<i>SQH</i>	8 (47.1%)
<i>Plavix</i>	1 (5.9%)
<i>Lovenox</i>	7 (41.2%)
Complications	
<i>Partial flap necrosis</i>	3 (17.6%)
<i>Gangrene</i>	1 (5.9%)
<i>Non-healing wound</i>	1 (5.9%)
<i>Pulmonary embolism</i>	1 (5.9%)
Operative take-back	1 (5.9%)

Abbreviations: BKA: Below-knee amputation; AKA: Above-knee amputation; I&D: Incision and drainage; AC: Anticoagulation; AP: Antiplatelet; SQH: Subcutaneous heparin



Image 1. COVID-19 positive patient intraoperatively (left) and postoperatively status post anterolateral thigh flap (right).

Table 3. Postoperative Outcomes

Characteristic	Patients (%)
Follow-up (m), mean ±SD	4.3 ± 3.2
Wound fully healed	6 (35.3%)
Ambulatory	6 (35.3%)
Mortality	5 (29.4%)
Time to mortality (d), mean ±SD	61 ± 37.7
Cause of death	
<i>PE</i>	2 (40.0%)
<i>Pneumonia</i>	2 (40.0%)
<i>Acute gastrointestinal bleed</i>	1 (20.0%)

Abbreviations: SD: Standard deviation; PE: Pulmonary embolism

Limitations & Conclusion

- Findings limited by retrospective design and relatively small sample size
- COVID-19 may be a factor that negatively affects the wound healing process and increases mortality rate amongst highly comorbid patients undergoing limb salvage procedures
- Preoperative risk stratification tools may be of particular value in this at-risk patient population

References

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