Acute compartment syndrome is the physiologic consequence of increasing pressures within an enclosed anatomic space; if left untreated, it can subsequently cause irreversible necrosis, nerve injury, and tissue damage. A number of iatrogenic causes have been reported in the literature; however, to the best of our knowledge, there are no prior reports of upper extremity compartment syndrome in orthotopic liver transplant following arterial line placement.” Lipton and Aniskevich (2018).

Abstract:

Acute compartment syndrome is the physiologic consequence of increasing pressures within an enclosed anatomic space; if left untreated, it can subsequently cause irreversible necrosis, nerve injury, and tissue damage. A number of iatrogenic causes have been reported in the literature; however, to the best of our knowledge, there are no prior reports of upper extremity compartment syndrome in orthotopic liver transplant following arterial line placement. Here, we report a 52-year-old male with a history of end-stage liver disease secondary to primary sclerosing cholangitis who presented for orthotopic liver transplant. A radial arterial line with 20-gauge catheter was placed atraumatically without complication. Intraoperatively, the patient developed severe coagulopathy. The cause was likely multifactorial, including dilution of factors from the massive blood loss during the dissection
Upper extremity compartment syndrome following radial artery puncture phase, a prolonged anhepatic period, and delayed graft function, resulting in decreased production of coagulation factors. This consumptive process likely subjected minor vascular injury to potential bleeding and caused a slow cumulative bleed into the right forearm, resulting in compartment syndrome. This case exemplifies the complications that can occur from arterial line placement in a liver transplant recipient who develops severe intraoperative coagulopathy. This can arguably be extrapolated to any situation caused by significant dilutional coagulopathy or a consumptive process, such as disseminated intravascular coagulation. As such, when large-volume blood transfusions are anticipated, we recommend that all central venous and arterial accesses be obtained under ultrasonographic guidance and that frequent extremity physical examinations should be performed at a minimum of every hour. Correcting the underlying coagulopathy is imperative to resolve ongoing bleeding, a high index of suspicion is warranted, and immediate diagnosis and therapy are integral to improving patient outcomes.

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