Acute Respiratory Distress Syndrome (ARDS) and Alveolar Hemorrhage Following Illicit Silicone Injections
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Background
- Silicone (polydimethylsiloxane) is a chemically inert liquid polymer that is commonly used in cosmetic procedures.
- However, the illicit use of commercial silicone preparations can lead to serious local and systemic sequelae including acute embolization and end organ toxicity.
- Unregulated illegal injections of liquid silicone by unlicensed practitioners is unfortunately a common procedure performed in some populations including the transgender community.
- Case reports of local and systemic complications following injected silicone have been described.
- Acute pneumonitis and alveolar hemorrhage have been described as developing as early as within 24 hours to as late as 15 days following injection.
- Presentation may include dyspnea, hypoxemia, cough, hemoptysis and altered level of consciousness.

Case Presentation
- Here we describe the case of a 25 year old transgender male-to-female patient with HIV/AIDS (CD4 160) who presented with severe acute respiratory distress syndrome (ARDS) following illicit silicone injections to bilateral adipose tissue of the thigh.
- Within the first six hours of receiving silicone injections of unknown volume, our patient developed nausea, vomiting, diarrhea, rapid onset of shortness of breath, and altered mental status.
- On presentation to the ED, our patient was in severe respiratory distress with oxygen saturation of 42% on non-rebreather. Minimal improvement on BIPAP was achieved with oxygen saturations in the 70s.
- Initial PaO2/FiO2 was 31 mmHg.
- Laboratory screening showed a leukocytosis of 12.6. CBC and CMP were otherwise grossly unremarkable.

Physical Exam and Imaging
- Febrile (T 102.4°) obese (BMI 30.8) African-American transgender M to F patient
- Labile BP (97/63-205/101) and HR (71-158) in the ER
- Altered, PERRLA (4-3 mm B), moving all extremities spontaneously, no purposeful response to voice, sternal rub, or pain
- Multiple indurated sites of presumed silicone injections on bilateral adipose tissue of the thighs with clear silicone versus serous fluid drainage
- Multiple sites of previous silicone injections with discrete areas of induration versus nodules in the buttocks and bilateral breast tissue. Evidence of prior enhancement of bilateral cheek bones.
- EKG showed sinus tachycardia, minor right ventricular conduction delay
- Echo obtained showed hyper-dynamic LV function

Hospital Course
- The patient was emergently intubated, placed on the ARDSnet protocol, and treated with high dose steroids in the critical care unit.
- On HD 3, the patient was placed in the prone position x 48 hrs with good response. She was extubated on HD 14.
- Our patient continued to have a prolonged hospital course complicated by LE DVT s/p IVC filter placement, renal failure requiring dialysis, and multiple infections
- Approximately 2.5 months after initial admission, our patient was readmitted to the MICU with overwhelming septic shock secondary to multi-drug resistant *Pseudomonas* and *klebsiella* pneumonia
- Despite aggressive resuscitative efforts, the patient expired in the MICU
- Autopsy report obtained from the coroner did not include silicone as a provisional diagnosis

Discussion
- Given the potential for adverse effects, the U.S. FDA has prohibited the injection of liquid or gel formulations of silicone.
- If silicone containing material is exposed to soft tissue, a fibroblastic response and an increase in local volume is generated.
- Local effects of injected liquid silicone can include tissue necrosis, foreign body giant cell reactions, and infections. Severe reactions are common.
- Silicone has been demonstrated in distant organs following subcutaneous administration reflecting an embolic phenomenon that can manifest as regional lymphadenopathy, granulomatous hepatitis, interstitial nephritis, and stroke.
- Pulmonary consequences include acute pneumonitis, ARDS, and pulmonary embolism likely from inadvertent direct injection of silicone into a vein.
- CXR will reveal bilateral, patchy infiltrates to fulminant ARDS
- BAL and tissue biopsy may help in accurate diagnosis
- Biopsy typically demonstrates alveolar hemorrhage, silicone deposits within the alveoli, and inclusions within alveolar macrophages
- Treatment involves ventilation, supportive care, and high dose steroids with uncertain utility

Conclusion
- Given the possible severity of clinical sequelae, clinicians must be aware of this illicit practice and of the potential complications of silicone injections

References