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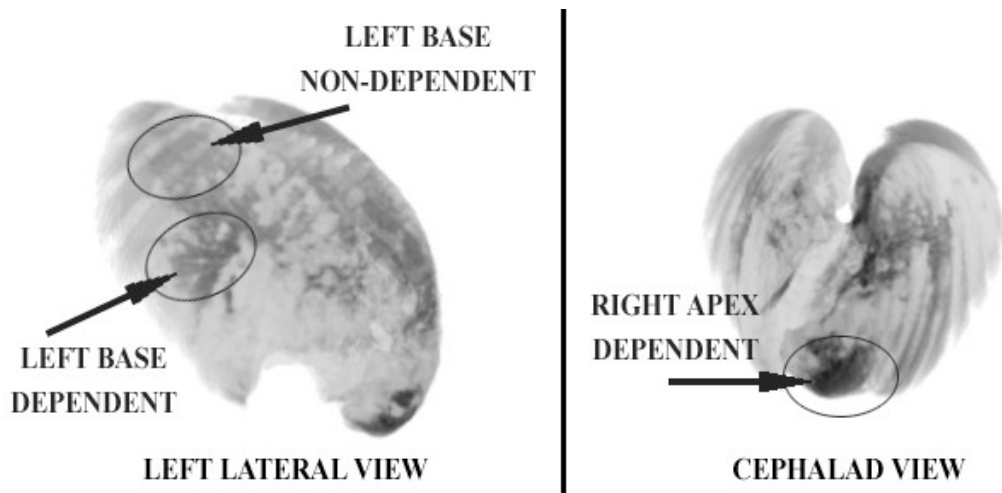
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Title: Regional bronchioalveolar lavage (BAL) in a saline lavage model of acute lung injury (ALI) demonstrates regional differences in surfactant behavior

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To correlate regional mechanical stresses, assessed by functional CT imaging, with regional changes in surfactant activity we must be able to reproducibly perform regional BAL and relate the findings to regional CT data. **Methods:** In anesthetized, prone, and mechanically ventilated sheep, ALI was induced by saline lavage. Surfactant rescue was performed using rSPC (Venticute). Functional CT imaging was conducted in control, injured, and surfactant-treated states using gated end-inspiratory and end-expiratory images. At the conclusion, regional BAL was performed using a wedged bronchoscope at 4 sites (apex and base, non-dependent and dependent). After each BAL, 10cc radiographic contrast (Omnipaque) was injected into the sampled alveolar space. The lung was imaged to correlate the BAL locations with the functional CT images (Figure 1). BAL samples were analyzed for total surfactant concentration and large aggregate fraction (%LA). **Results:** Regional samples were obtained and differences in surfactant concentration and activity found, with non-dependent regions exhibiting greater concentration and %LA. **Conclusions:** CT imaging can identify regions of mechanical stress, which can then be sampled by bronchoscopy. Regional mechanical changes detected with functional CT imaging following rSPC administration can be correlated with regional surfactant activity. These techniques represent an important step in investigation into regional lung function in ALI.



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