Summary:

We evaluated the effect of lung deflation on the relative position of the pleura compared with a reference line during supra- and infraclavicular approaches to the right subclavian vein. The reference line was drawn relative to the predicted pathway of the needle. The distances between the pleura and the reference line for supra- and infraclavicular approaches were measured during inspiration and expiration in 41 infants. Measurements were repeated with the application of 5 cmH2O positive end-expiratory pressure (PEEP) and in the Trendelenburg position. Lung deflation during the supraclavicular approach significantly decreased the volume of lung crossing the reference line by a median (IQR) of 1.0 (0.6 to 1.3 [0.0 to 4.8]) mm, p < 0.001, irrespective of the application of PEEP or patient position. However, during the infraclavicular approach, lung deflation showed no change in the distance of the pleura from the reference line regardless of PEEP or patient position. We conclude that lung deflation moves the lung apex caudally and can reduce the potential risk of pneumothorax during a supraclavicular approach to the right subclavian vein in infants.
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