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Arthrocentesis training using a knee simulation model

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Background: Arthrocentesis of the knee is one of the most commonly performed procedures in the evaluation and treatment of joint diseases. The American Board of Internal Medicine requires that all candidates demonstrate competency in arthrocentesis. Unfortunately, residents may have limited exposure to patients requiring this procedure and alternative training methods may be needed.

Method: We developed a program for simulation training in arthrocentesis. A didactic lecture on the principles of joint aspiration was given. This was followed by hands on training by participants using a simulated knee joint. This knee model is equipped with an electric buzzer. When the procedure is correctly performed, the buzzer provides immediate feedback. All participants completed an anonymous questionnaire on arthrocentesis before and after the training session.

Results: 41 internal medicine residents as well as 9 medical students participated. Only 9.8% felt that they were adequately trained in medical school in arthrocentesis. Preparedness to perform arthrocentesis was measured on a scale of 1, being the least prepared, to 10, being the most prepared. Preprogram preparedness averaged 3.36 and post program preparedness rose to 6.95. Preprogram confidence measured 2.75 and post program confidence rose to 6.82. Prior to simulation training, 56.1% felt reluctant to perform a needed arthrocentesis, which decreased to 31.7% following the training.

Conclusion: This training increased the participants' confidence, preparedness, and comfort in performing the procedure. When there are a limited number of patients requiring arthrocentesis available to train residents in this procedure, the use of a simulation knee model appears to be a valuable alternative.

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