Realising a New Model to Train Residents in Nephrostomy Tube Placement and PCNL

Introduction and Objective: The efficacy of traditional operating room based training of urology residents is being reevaluated. The development of hands-on models to facilitate the acquisition of skills by surgical residents lessens learning curves and hastens familiarity with tissue and instrument handling. We describe an innovative model for simulated percutaneous renal access and nephrolithotomy.
Materials and Methods: A new model released in non-biological material and reproducing the echoic layers of the human flank and the complete kidney was released. The model can be used several times only changing the internal cartridge representing a normal kidney, a dilated one and one filled with stones. Urology residents (25) were taught needle access with ultrasound probe help, tract dilation and renal access sheath insertion. Training in percutaneous nephrolithotomy with the nephroscope, graspers and stone fragmentation methods followed. The procedure was done also for the two models currently available on the market. At the end of the procedures residents fill up a satisfaction questionnaire.
Results: This simple, cost-effective model closely simulates percutaneous nephrosomy tube placement and nephrolithotomy. Anonymous evaluations submitted by training session participants revealed a high degree of satisfaction (8.2/10) with model effectiveness in the application of percutaneous renal access and nephrolithotomy techniques. The satisfaction for the other two models was poor (3.1/10 and 2.7/10).
Conclusions: Our model is an effective means of skills acquisition for a complex endourological procedure. The model, instead of the other two considered, can be used several times and lowers the costs. Patient care can safely be of secondary importance with respect to trainee experience in a low stress environment that provides an opportunity for supervised, repetitive performance of essential technical skills. We describe an effective percutaneous renal access and nephrolithotomy surgical training model of original design. Because of the non biological materials used it can be used everywhere with no need of a laboratory.