Supplement 2: Biopsy phantom preparation for hands-on trainings

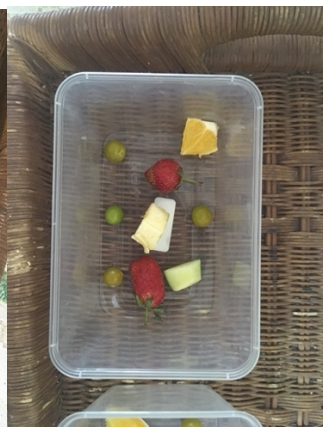
1) Gelantine phantom for needle-probe coordination and target finding

To train the coordiantion of probe and needle (i.e. of eye and hand) a gelantine phantom is used, mainly suitable for insertion of fine-needles (e.g. steel-canual of 16-green or grey i.v. canula

Material:
- any commercially food gelatine (in 3x higher concentration than package suggests)
- food color
- fruits (berries or fruit pieces) as targets
- super-glue
- disposable pastic containers (5-8 cm deep)

Instruction for phantom preparation:

a) Glue fruit pieces on the bottom of plastic container to prevent them from swimming in the gelantine



b) Prepare gelantine according to manufacturer instructions, use at least a 3 times higher concentration to give the phantom some stiffness
c) Keep the hot gelantine in an extra bowl and add dark food color to prevent transparency


d) Pour the colored gelantine over the fruits


e) Refrigerate to harden the gelantine. Attach a cling-film to the surface (avois air bubbles) before use to protect phatom and probe



2) ”Goat-skin-and-meat” phantom for skin-perforation and core-needle biopsy

To simulate the skin and muscle penetration with a core needle (including the local anethesia and skin inscision) and again the coordiantion of probe and needle (now in a more realistic material). No “targets” were used and muscle tissue was biopsied using a 16G-semiautomatic TruCut needle.

Material:

- goat meet (approx.1-2 kg chunk)
- piece of goat flank including subcutanous tissue, muscle and skin (ideally with ribs)
- wooden board
- nails and hammer for fixation
- single-use razor

Instruction for phantom preparation:

a) Place the meat on the board

b) Fix the skin/chest wall on over the meat using nails to attach it to the board and shave the goat hair off (as good as possible)

During the training, three work-stations (two gelantine, one goat skin) were set up to allow maximum hands-on time for participants.