MRI Guided Wire Localization Notes

* Images to the right will help demonstrate the steps and supplies. The images were taken on a BBC coil using an apple in place of the breast but these steps will work on any Invivo coil.

* To perform a MR guided wire loc using DynaCAD you will need the following supplies:
  - Invivo Localization Needle 80, 100 or 150mm
  - Grid or Post/Pillar Assembly
  - 18g Needle Block (sterile)
  - 18g Single or Double hook Localization Needle
  - Skin cleanser
  - Numbing Medication
  - Syringes and needles (to include a spinal needle)
  - Gauze (sterile)
  - Tape
  - Sterile Gloves

* Set up coil with grid for lateral or medial access. For medial access, place the breast blocker in the contralateral side to hold that breast out of the way.

* Position patient so that lesion is accessible and area of interest is in compression. Grid method is used most often, but post/pillar can be used to access far posterior lesions.

* Scanning sequences:
  - **Localizer**
    - **Sagital Fiducial Scan:** Spoiled Gradient sequence, 3mm thick, approx 256X128 matrix, NO parallel imaging or imaging options, flip angle of 20, 30-40 slices thru breast and fiducials, 15-50 sec scan time.
    - **Dynamic 1 pre and 2 post** in same plane as diagnostic scans were performed in with same contrast and timing.
* Send the sagittal fiducial scan and dynamic phases to DynaCAD

* Target the lesion in DynaCAD:
  - Open the study up into the interventional hanging
  - Scroll to slice of sagittal fiducial scan where fiducials are both visualized the brightest.
  - Click “Auto”
  - Confirm coil, side and biopsy devices – click on the “change” button to correct any information
  - Place crosshair on the lesion on the dynamic images
  - Take a snapshot of coordinates viewport
  - Print coordinates and tape to the side of the MRI table for the radiologist’s reference

Confirm planning set-up – make changes if needed

Interventional Hanging with Fiducials Visualized

Coordinates of lesion – click on camera to take snapshot for printing
The “Depth” will put the end of the needle exactly where you targeted

NO MATH NECESSARY!
* Cleanse the skin in the grid where DynaCAD instructs the needle block to be placed.

* Numb the skin within that grid.

* Place block in correct grid coordinate. The numbering system is A thru G left to right and 1-5 anterior (nipple) to posterior (chest wall)

* Going thru the indicated needle hole use a spinal needle to numb about 1cm past the lesion. Numbering system on the block is the same as on the grid.

* Set the depth on the Localization Needle by placing the pink stopper at the depth calculated by DynaCAD – this depth accounts for the width of the grid – NO Math Needed!

* Place the Localization Needle into the appropriate hole. When introducing the needle into the breast, place fingers against the pink stopper to avoid going too deep.

* Perform a Needle Confirmation Scan: Copy one of the dynamic phases but turn fat-sat off to minimize metal artifact.

* Check the placement of needle to assure that after the deployment of the wire the lesion will be localized appropriately.
* Deploy the wire
  
  **Method 1** – slightly advance the wire, then pull the needle off the wire. This will place the hook slightly distal to the end of the localization needle
  
  **Method 2** – holding the wire still, pull the needle off over the wire. This will place the hook at the same location as the end of the localization needle

* Remove the needle block out carefully to leave the wire in place

* Remove the compression plate carefully.

* Support the patient’s breast and the entry site of the wire to avoid dislodging the wire

* Have the patient sit up. Using sterile gauze and tape, secure the wire to the breast for transport to the operating room.

* Carefully release compression and pull grid off wire

* Deploy the wire carefully

* Pull the needle out over the wire leaving the wire in place

* Single hook Invivo wire that will localize the lesion for the surgeon