Acknowledgements

INDIVIDUALS:

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COMPANIES:

Implant Sciences
Mick Radionuclear
NOMOS
(North American Scientific)
Nucletron
Varian

There is no recommendation of any particular method or product
Planning

- No Plan – nomogram-based
- Preliminary plan
- Intraoperative plan
Dorsal Lithotomy Position

Pubic arch interference could be reduced by extending the dorsal lithotomy position.
Precise Stabilizer

North American Scientific
(NOMOS)
Precise Stepper

North American Scientific – a NOMOS company
Ultrasound Probe

- Reusable template
Scheme of Mick Applicator

Schematic Illustration of Mick 200-TPV Applicator

Template Ring is connected to Index Slider. Both components move simultaneously along the main barrel.

Seed Spacing Selector
Rotates clockwise and counter clockwise (Do Not Disassemble)

Main Barrel End Cap
Holds Pushwire Rod Assembly in place. (See bottom page 8)

Pushwire Rod Knob
Serves to manually insert seeds. (Moves styllet through needle)
<table>
<thead>
<tr>
<th>Depth (mm)</th>
<th>Image</th>
</tr>
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<tbody>
<tr>
<td>12.0</td>
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<tr>
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<td>7.5</td>
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Mick Magazines
Fluoro and Ultrasound
OR-Ergonomics
OR Ergonomics
Rectal Suctioning
Rectal Probe Placement

Condoms are typically used
Traditional Plan

<table>
<thead>
<tr>
<th>Radiation Oncologist:</th>
<th>Urologist:</th>
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<tbody>
<tr>
<td>CS:</td>
<td>PSA:</td>
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<tr>
<td>GS:</td>
<td>Tumor Loc:</td>
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Template Coordinates used for preplanning:

- Ex. #1: Widest part of gland
- Ex. #2: Widest cut of gland

- Length = 4.5 cm
- Seeds/Needle = 6
- Activity per seed = 0.35 - 0.375

Diagram of gland with coordinates and symbols.
Needle Insertion

Use "Anchor needles" to stabilize the prostate
Other Needles
Needle Insertion
Urine or Blood in the Needles
Planning the Implant

- Numbers show the number of seeds per needle

L = 42 mm
Dropping Seeds on US
Seed Location

Central needle

12mm 12mm 7mm
Seed Marker

- end plug
- aluminum layer
- gold core marker
- copper skin
- laser weld
- titanium tube
- 0.8 mm (nominal diameter)
Seed Images on Fluoro

- Mentor or Theragenics
- Amersham
- Bard
Seed Migration to Bladder
Seed Loading Report

<table>
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<tr>
<th>Needle Number</th>
<th>Pct. Load (%)</th>
<th>Acq. Location</th>
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*Special loading*
Day 0 Post-Implant
Post-Implant Simulation
Sterilization Containers
Seed Loading Shield
Seed Loading Block
Implant Delivery Summary (1 of 2)

- Suctioning the rectum: Removes feces, mucus, and gas. Ensures clear sagittal ultrasound view. Done prior to perineal prep. Fenestrated suction tip with wall suction.

- Scrotal retraction. 14-16 F Foley, 10cc balloon (retracted to bladder base). Drain bladder. Add 60cc diluted contrast in bladder, then clamp Foley.

- Room lights off/down low. Fluoro and ultrasound monitors lined up. Steri-drape covering ultrasound console and fluoro handle for rotation.

- Fiducial apex gold marker: Placed at beginning of procedure using ultrasound guidance. Allows verification of apex coverage and assurance that penile bulb or membranous urethra does not get implanted. Excellent visual correlation between ultrasound, fluoroscopy, and CT.

- Rotational effect from Insertion of Lateral Needles and Resulting Coverage Gaps at Prostate Base: Rotation of Gland off axis as needle is inserted. As needle is withdrawn, gland begins returning to normal shape with tissue moving inferiorly and laterally. Irregular distribution of seeds resulting from inferior, lateral movement with potential coverage gap at base.
Implant Delivery Summary (2 of 2)

- Needles placed in most anterior row first. Needles placed medially to laterally within each row. Needle depth to mid-gland.
- Depth of each needle determined and confirmed by sagittal ultrasound.
- Correct for "Tenting Effect": Insertion of needle thru the prostate (Use sagittal Trus approximately 2mm beyond zero retraction plane). Withdrawal of needle back to zero retraction plane allowing prostate tissue to resume normal shape.
- When the trocars are removed, possible bleeding or urine should be identified. Needles can be slightly repositioned at this time if needed.
- Use sagittal ultrasound for the seed placement, checking the separation.
- Cystoscopy or “Poor man’s cystoscopy”: Advance Foley catheter to hilt and retract 2 times. Check fluoro of bladder for seeds. Open Foley clamp to drain urine. If clear urine and no seeds in bladder, no cystoscopy needed.
- Patient’s discharge and instructions.