Thyroid Biopsy Specialists – An Innovative Role for Radiology Assistant

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Radiology Assistant - History

- Physician extenders
  - Physician Assistants (PAs)
  - Nurse Practitioners (NPs)

Have been involved in delivery of medical care in the North America for >25 years

In 2003 – ACR approved the new position of Radiology Assistant – outlined roles and responsibilities
Radiology Assistant – Current Role

- Interventional Radiology (MRTs and NPs)
  - PICC lines

- Fluoroscopy for certain procedures
  - Speech swallow
  - HSG
THYROID NODULES

• Increase in use of ultrasound for thyroid has led to marked increase in detection of the number of thyroid nodules and in turn biopsy requests
• Upto 50% of general population on autopsy will have thyroid nodules
• Cancer is seen in 9-13% of patients undergoing FNA

• Increased wait times
  (>3 months in our hospitals)
Inconsistency in techniques, training amongst physicians performing thyroid biopsy (residents, fellows, staff)

Low adequacy rates (~70%) in our hospitals (Bethesda System for Reporting Thyroid Cytopathology)

Increased number of repeat biopsies

Increased wait times
THYROID BIOPSY

• Complaints from clinicians
  - increased wait times
  - low yield

• Decreased interest in these procedures amongst some physicians
Answer to this:

- Innovative Idea! put forward by Chief of Radiology

Could we train our Sonographers or MRTs to do thyroid biopsies?

‘THYROID BIOPSY SPECIALISTS’

Approval from staff radiologists was the first step
PROCESS & OBSTACLES

- **CMPA** (Canadian Medical Protective Association) approval
- **CPSO** (College of Physicians & Surgeons of Ontario) approval
- **CSDMS** (Canadian Society of Diagnostic Medical Sonographers) for coverage
- **Hospital legal department** for employee coverage
- **Hospital MAC** (Medical Advisory Committee) approval
CMPA - approval

‘CMPA members would be eligible for assistance for their involvement in the professional work of medicine. Delegation of a medical act could be considered as part of the professional work of medicine’

Ensure that they are in compliance with requirements of the regulated College in their jurisdiction

If physician is not the employer, it is desirable to make the employer (hospital) aware and consent to such delegation.
CPSO requirements

• Policy for delegation of controlled acts
  - Remains responsibility of physician
  - Identify the individual performing the act and be aware of the skills
  - Establish a process for delegation – education, maintenance of competence
  - Ensure informed consent where feasible
  - Consider liability, billing issues
Liability Insurance Coverage for individual to whom the act is delegated

**CSDMS** – liability insurance coverage may be compromised if practicing outside the boundaries of our sonographic training.

**Liability department of our Hospital** - Sonographers who are employees of UHN are covered under the liability policy for work done for and on behalf of the hospital

**Liability coverage would be provided by the Hospital if the Hospital MAC approves the delegation**
Hospital MAC

• Approval after 2\textsuperscript{nd} meeting
  - concerns about adequacy rates were brought up in the first meeting

• Approval of Delegated Act
  - Training program
  - Quality monitoring
WHOM TO TRAIN

• MRT (Medical Radiation Technologists) training would include
  - Ultrasound training
  - Biopsy training

• Sonographers
  - Biopsy training only
  - Added advantage of a degree of hand-eye co-ordination (ultrasound)
Interview Process

• Opened initially to Sonographers across the different hospital sites
• Good response
• 4 were selected after an interview process
  - ~ 1 week every 4 weeks (so that not monotonous / repetitive)
  - rest of the time (75%) – ultrasound as before
Training Program

• 1 day of didactic talks
• Phantom training
• Observe ~20 biopsies
• Hands on one-to-one training with the staff radiologist
Training Day Program
1 Day of Didactic Presentations

- Neck Anatomy
- Thyroid ultrasound
- Ultrasound features of malignant nodules
- Thyroid biopsy guidelines
- Informed consent
Training Day Program

- FNAB techniques – video demonstration
- EPR training
- Pathologists’ perspective – Tips and Tricks for aspiration techniques
- Written test – pass score of 80%
THYROID BIOPSY ASSISTANT TRAINING DAY – APRIL 27, 2021
Location: 1 NCMBR Room 83 – Advanced Imaging Education Center

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:15 AM</td>
<td>Introduction</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Neck Anatomy (Dr. Chauke)</td>
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<tr>
<td>9:00 AM</td>
<td>Thyroid Ultrasound (Dr. Selim)</td>
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<tr>
<td>9:30 AM</td>
<td>Lesions of Thyroid Malignancy (Dr. Chauke)</td>
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<tr>
<td>10:00 AM</td>
<td>Break</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>Lunch break</td>
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<tr>
<td>10:15 AM</td>
<td>10:45 AM Guideline (Dr. Gay)</td>
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<tr>
<td>11:00 AM</td>
<td>Consent for Thyroid Biopsy</td>
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<tr>
<td>12:45 PM</td>
<td>Video Demonstration “FNAB Techniques” (Dr. Gay)</td>
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<tr>
<td>1:15 PM</td>
<td>Break</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>EMR Training</td>
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<tr>
<td>3:00 PM</td>
<td>Pathological perspective – slide preparation (Dr. Oddick &amp; Dr. Santos)</td>
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<tr>
<td>4:00 PM</td>
<td>Written test</td>
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Phantom training

• Proper thyroid phantoms were obtained (www.bluephantom.com)
• On a Saturday – 4 ultrasound rooms with phantoms
• 2 staff for hands-on technique
• Additional targets were also created
Observation Period

• All 4 specialists together

• Observed about 20-25 nodule biopsies

• About 5 afternoons in the biopsy center
One on One Training

• Each of the 4 specialists for about 3 weeks each, one at a time

• 30-50 nodules for each

• Signed off once satisfied with their hand-eye co-ordination and biopsy technique
Biopsy Process

• Live on 8\textsuperscript{th} August 2011
• Second Room (Room 2) was opened up adjacent
• Specialists take approval for biopsy from the radiologist after the US
• Radiologist always at hand to help out if required
Room 1 (Deep Abdominal)

Control Room

Room 2 (Thyroid)
Biopsy Work-flow

- About 7 patients booked every day of the week (4 +3)
- If no ultrasound at JDMI <6months, then an ultrasound is repeated
- Biopsy upto 2, sometimes 3 nodules in same sitting
- On-site cytopathology support for repeat biopsies, if previous inadequate biopsy
RESULTS

• Wait times

• Yield rates

• Complications
Wait times
Adequacy Rates

• Overall >80% adequacy rates (in the first 1200 nodules)
  78% (UHN) and >85% (MSH) at the 2 pathology sites where samples are sent from our practice
• Cancer or suspicious for cancer in about 8.3%
• Has led to decreased repeat biopsies
## Adequacy Rates - UHN

<table>
<thead>
<tr>
<th>Bx Specialist</th>
<th>Insufficient</th>
<th>Benign</th>
<th>Malignant/ Suspicious for Malignant</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>391</td>
</tr>
<tr>
<td>2</td>
<td></td>
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<tr>
<td>4</td>
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<td>318</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>264</strong></td>
<td><strong>841</strong></td>
<td><strong>100</strong></td>
<td><strong>1205</strong></td>
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Complications

• No major complication from the over 1200 nodules done by the specialists so far
Conclusion

• Implementation has been a success
• Provided added competency and consistency in the service thereby improving quality of service to our patients (decreased wait times and increased adequacy rates)
• Provides new opportunities for professional enhancement to the Specialists
Thank You