Active surveillance or Thyroidectomy for patients with low risk thyroid cancer

Juan P. Brito, MD, MSc

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Disclosure:

• None
At the end of the this presentation you will be able:

• To evaluate the evidence for active surveillance for Low Risk Papillary Thyroid Cancer (LRPTC)
• To stratify which patients with LRPTC are ideal, appropriate, or inappropriate for active surveillance
• To present the option of active surveillance in a patient centered way
Chapter 1: Epidemiology
Thyroid Cancer Incidence

Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
Brito JP. BMJ 2014
Thyroid cancer: South Korea
Probability of Being Diagnosed with Thyroid Cancer

Probability of Thyroid Cancer Diagnosis by Age and Gender

- **Females**: 1 in 14
- **Males**: 1 in 38

Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
Methods

- Clinically recognized
- Clinically occult

Brito JP, Thyroid. 2015 Sep;25(9):999-1007.
Large tumors

Small Tumors (PTC)

15-20 million (US)

Prevalence

Reservoir
Small Tumors (PTC)

Technology/Access/Screening

Large tumors

Incidence/Epidemic

Mortality
Conclusion 1: LRTC, coming from a large reservoir, drives the incidence of thyroid cancer
Standard therapy for LRPTC

- Surgery has been effective
- Prognosis after surgery is >99% 20 years after treatment
- Disease recurrence: 2-4% but treatable
Chapter 2: Rationale for active surveillance
The iceberg again!

- Incidence
- Treatment / Surgeries

- Large tumors
- Small Tumors (PTC)
- Mortality
The iceberg again!

Incidence

Treatment / Surgeries

Large tumors

Small Tumors (PTC)

Mortality

No treatment
Excellent prognosis
We do active surveillance all the time.

Patients with subcentimeter PTC treated with total thyroidectomy without preoperative evidence of lymph node metastasis

Central node dissection
We do active surveillance all the time.

Patients with subcentimeter PTC treated with total thyroidectomy without preoperative evidence of lymph node metastasis.

Central node dissection

Recurrence rate: 0.4%

60% LN mets
We do active surveillance all the time.

Patients with subcentimeter PTC treated with total thyroidectomy without preoperative evidence of lymph node metastasis.

Lateral node dissection

Recurrence rate: 0.4%

We do active surveillance all the time

Patients with subcentimeter PTC treated with total thyroidectomy without preoperative evidence of lymph node metastasis

No operation

Recurrence rate: 0.6%

RISK increases with less experience (25 surgeries per year)

Brito et al. BMJ 2014;348:bmj.g3045
Surgery considerations
Conclusion 2: LRTCs are mostly indolent, and while surgery is effective it may increase burden to patients.
Chapter 3: Evidence for active surveillance
**Active surveillance PMC**

1,413 patients in 2 independent, prospective Japanese studies

<table>
<thead>
<tr>
<th></th>
<th>Surgical resection (10-20 yrs)</th>
<th>Active Surveillance (5 yrs)</th>
<th>Active Surveillance (10 yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease Specific Mortality</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Loco-Regional Recurrence</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Distant Metastases</td>
<td>1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>&gt; 3 mm increase in size</td>
<td>-</td>
<td>7%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Ito et al. Thyroid. 2013.
Active surveillance PMC
Clinical Outcomes

- Increase in size: Young (< 40 yrs) 5.9%, Middle Age (40-59 yrs) 5.7%, Older (≥60 yrs) 2.2%
- Novel LN mets: Young (< 40 yrs) 5.3%, Middle Age (40-59 yrs) 1.4%, Older (≥60 yrs) 0.4%
- Progression to clinical disease: Young (< 40 yrs) 8.9%, Middle Age (40-59 yrs) 3.5%, Older (≥60 yrs) 1.6%

Ito et al. Thyroid 2014
Slide from Michael Tuttle, MD
Active surveillance low risk thyroid cancer
US experience (Dr. Tuttle’s cohort MSKCC)

50 yo male
6 mm
2 yrs

51 yo male
10 mm
3 yrs

45 yo female
7 mm
5 yrs

40 yo female
8 mm
6 yrs

60 yo female
3 mm
6 yrs

58 yo female
8 mm
8 yrs

Courtesy of Michael Tuttle, MD
Active surveillance
Biopsy proven thyroid bed nodules

Low Risk Papillary Thyroid Cancer

CLINICAL RELEVANCE

SIZE

TIME
GUIDELINE RECOMMENDATION

For patients with very low risk tumors (e.g. papillary microcarcinomas without clinically evident metastases or local invasion, and no convincing cytologic evidence of aggressive disease), active surveillance management approach can be considered as an alternative to immediate surgery.

Is active surveillance a good management option for every patient with low risk papillary thyroid cancer?
Conclusion 3: Active surveillance is an effective and safe management option for many, but not for all low risk papillary thyroid carcinomas.
Chapter 4: Choosing the ideal candidate for active surveillance
Case 1

- 55 y/o female with a 1 cm confirmed PTC
Case 2

- 59 y/o male with a 1.2 cm confirmed PTC

**PATHOLOGY:** Tall cell variant PTC, positive surgical margins, tumor near the recurrent laryngeal nerve and appeared to involve the Berry’s ligament
Case 3

- 58 y/o male with a 1 cm confirmed PTC
Case 4

- 31 y/o female with a 1 cm confirmed PTC
Case 5

• 46 y/o female with a 0.7 cm confirmed PTC
Case 6

- 52 y/o female with a 0.8 cm confirmed PTC

- Molecular testing: BRAF
Case 6

- 52 y/o female with a 0.8 cm confirmed PTC

- Molecular testing: BRAF+TERT
Risk stratification when considering an active surveillance alternative to immediate biopsy and surgery in LRPTC.

<table>
<thead>
<tr>
<th></th>
<th>Tumor/neck US characteristics</th>
<th>Medical team characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideal</strong></td>
<td>Sub cm Intrathyroidal</td>
<td>Experienced Tracking System High quality US</td>
</tr>
<tr>
<td><strong>Appropriate</strong></td>
<td>Multiple nodules Thyroiditis Subcapsular location Ill margins Mutation (BRAF)</td>
<td>Intermediate</td>
</tr>
<tr>
<td><strong>Inappropriate</strong></td>
<td>Mets Bad location Growth</td>
<td>Inexperienced</td>
</tr>
</tbody>
</table>
Conclusion 4: By following a risk stratification framework, clinicians could identify the ideal and appropriate patients for active surveillance.
For ideal and appropriate patients, should active surveillance be the first line therapy for low risk papillary thyroid cancers?
Chapter 5: Patient centered discussion of treatment options for patients with LRTC
Counseled more than 200 low risk papillary thyroid cancer patients regarding the decision for active surveillance or surgery through the use of hand written notes, diagrams and the published literature.

Quality of conversation?
MSKCC Focus group

• Patients opted for surgery not knowing the benefits of active surveillance
• Surgery as a necessity as opposed to a choice
• Fear and anxiety
• Eradication of the cancer
• Surgery as the eventual inevitable outcome

Decision aids

1) feel *more informed* and have a better idea of what matters most to them

2) *improve their knowledge* of their options

3) *participate more* in decision making

4) have more *accurate expectations* of possible benefits and harms of their options

Stacey D, et al. 2014 The Cochrane database of systematic reviews 1:CD001431
Treating your Small Thyroid Cancer Decision Aid

This tool will help you and your doctor discuss how to treat your small thyroid cancer.

Let's get started

Caution: This application is for use exclusively during the clinical encounter with your clinician.
1 in 10 people have a small thyroid cancer, often undiagnosed.

Death from thyroid cancer is very rare—fewer than 1 in 1000.

No matter how small your tumor is, cancer is a scary word. What's on your mind as we begin?
<table>
<thead>
<tr>
<th>Actively Monitor</th>
<th>Surgically Treat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>999</strong> people will not die from thyroid cancer</td>
<td><strong>999</strong> people will not die from thyroid cancer</td>
</tr>
<tr>
<td>fewer than <strong>1</strong> person will die from thyroid cancer</td>
<td>fewer than <strong>1</strong> person will die from thyroid cancer</td>
</tr>
</tbody>
</table>

In 1000 people like you with a Small Thyroid Cancer who...
No matter how we choose to manage your thyroid cancer, your prognosis is excellent.

Let’s talk through the issues to find the right option for you.

Which issue would you like to discuss first?
Chapter 6: What is next?
• Assessment of the impact of AS on quality of life/patient reported outcomes
• Stratification based on molecular markers
• Active surveillance for larger tumors
• Other treatment alternatives for PMC
Percutaneous Ethanol Injection Therapy

Percutaneous Thermal ABLATION procedures
<table>
<thead>
<tr>
<th>Sex / Age</th>
<th>Size</th>
<th>Vol mm³</th>
<th>Alcohol</th>
<th>F/u time</th>
<th>Vol post tx mm</th>
<th>Doppler posttx</th>
<th>% decrease volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>M 58</td>
<td>5m</td>
<td>140</td>
<td>0.7cc</td>
<td>12 m</td>
<td>83</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>9m</td>
<td>31</td>
<td>0.65</td>
<td>12 m</td>
<td>23</td>
<td>No</td>
<td>26%</td>
</tr>
<tr>
<td>Patient 2</td>
<td>F 36</td>
<td>7mm</td>
<td>44</td>
<td>1.25</td>
<td>5 m</td>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td>Patient 3</td>
<td>F 53</td>
<td>10</td>
<td>250</td>
<td>2.45</td>
<td>3m</td>
<td>21</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>42</td>
<td>2.45</td>
<td>3m</td>
<td>25</td>
<td>No</td>
<td>40%</td>
</tr>
</tbody>
</table>

Hay ID, Lee LA.. *Thyroid* 2013;23 Suppl 1:A13-121
brito.juan@mayo.edu

http://kerunit.e-bm.org
http://kercards.e-bm.info
http://shareddecisions.mayoclinic.org

@doctorjuanpa