Surgery of the Thyroid Gland

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Before

After

Thyroid tumors in dogs

• Epithelial tumors
  – Follicular carcinoma
  – Solid carcinoma

Breed predisposition

• Beagle
• Boxer
• Golden retriever

Malignant vs. Benign

Comparison of Malignant Versus Benign Thyroid Tumors

<table>
<thead>
<tr>
<th>Reference</th>
<th>Number of Thyroid Tumors</th>
<th>Number of Benign</th>
<th>Number of Malignant</th>
<th>% of Tumors that were Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>57</td>
<td>29</td>
<td>28</td>
<td>49.1</td>
</tr>
<tr>
<td>4</td>
<td>141</td>
<td>64</td>
<td>67</td>
<td>48.0</td>
</tr>
<tr>
<td>11</td>
<td>144</td>
<td>25</td>
<td>119</td>
<td>82.6</td>
</tr>
<tr>
<td>This Study</td>
<td>16</td>
<td>2</td>
<td>14</td>
<td>87.5</td>
</tr>
<tr>
<td>Totals</td>
<td>358</td>
<td>109</td>
<td>258</td>
<td>72.1</td>
</tr>
</tbody>
</table>

Metastasis of carcinomas

• Lungs
• Regional lymph nodes
• Other
  – Jugular vein
  – Adrenal
  – Kidney
  – Brain

Tumor size and metastasis

Table 1—Measurements of Thyroid Carcinomas in Relationship to Metastasis

<table>
<thead>
<tr>
<th>Tumor volume (cm³)</th>
<th>No. animals autopsied*</th>
<th>Percent with metastasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–100</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>101–500</td>
<td>9</td>
<td>100</td>
</tr>
<tr>
<td>501–1000</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>1001–1500</td>
<td>2</td>
<td>100</td>
</tr>
</tbody>
</table>

* Measurements were not recorded in 8 cases.
Hyperthyroidism in dogs

- <20% of thyroid tumors in dogs
- PU/PD
- Weight loss
- Polyphagia
- Ventral cervical mass

Medical treatment

- Chemotherapy
- \( I_{131} \)
- Radiation therapy

Surgical treatment

- Thyroidectomy
  - Ventral cervical approach
  - Meticulous hemostasis
  - Avoid rec. laryngeal n.
  - Preserve parathyroids

Thyroid anatomy

- Sternohyoides muscles
- Trachea
- Blood supply
- Recurrent laryngeal n.

- Freely movable, encapsulated tumors
- Median survival: 20 months
- Kaplan-Meier survival: >36 months

Complications of thyroidectomy

- Hemorrhage
- Seroma
- Laryngeal paralysis
- Hypoparathyroidism
- Recurrence (incomplete resection)

Hyperthyroidism in Cats

- Elevated thyroxine
- Multisystemic metabolic disorder
- Most common endocrinopathy of older cats

Clinical signs

- Weight loss
- Hyperactivity
- Polyphagia
- Tachycardia
- V/D

These cats are hungry!

Apathetic hyperthyroidism

- 5% of hyperthyroid cats
- Depression, lethargy, anorexia, weakness
- Concurrent disease
Diagnosis
- Total T₄
- Free thyroxine by dialysis
- Provocative tests
  - TRH stimulation
  - T₃ suppression
- Thyroid scan

Radionuclide Scan

Preoperative Considerations
- Tachycardia; Heart disease
- Cachexia
- Renal issues
  - Renal function may worsen after thyroidectomy

Treatment
- Medical
  - Methimazole
  - Iodate
  - I₁³¹
- Surgical
  - Thyroidectomy

Thyroidectomy in cats
- Ventral cervical approach
- Intra- or extracapsular technique
- Preserve the parathyroids

Parathyroid anatomy
Intracapsular dissection

Extracapsular dissection

Postoperative Care
- Monitor for hemorrhage
- Hypothermia
- Calcium watch
- Recurrence

Intracapsular

Thyroid carcinoma in cats

Morbidity/Mortality (AMC Study)
- 85 cats
- Mortality during surgery or immediately p-o: 8 (9%)
- Hypoparathyroidism: 4(5%)
- Horner’s syndrome: 1(1%)
- Voice change: 1(1%)
Recurrence of hyperthyroidism after thyroidectomy

- OSU study: 10%, 22 mo. p-o
- AMC study:
  - 11% (intracapsular)
  - 0% (modified intracapsular)
  - 3.9% (modified extracapsular)