Complications of Thyroid Surgery

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Thyroid Literature

Medline

Thyroid disease 136,053
Thyroid tumors 33,554

- New Paper on Thyroid Disease – Every 3 Hours
- New Paper on Thyroid Cancer – Every 8 Hours

Thyroid Google search 36 million
Thyroid Cancer Google search 21 million
The extirpation of thyroid gland typifies perhaps better than any operation the supreme triumph of the surgeon’s art.

Halsted
Postoperative Complications

- Postoperative complications infrequent in experienced hands
- Early recognition and prompt initial management crucial for successful outcome
- Best prevented by meticulous surgical technique
• When the surgeon talks about the surgical series, divide it by 2 and then he talks about the complications, multiply by 2.
• Only 20% of the people will remember 20% of what you said 20 minutes after the presentation.
• The surgeons are like politicians, they have very short term memory.
Complications of Thyroidectomy

- Wound hematoma – airway obstruction
  - Seroma – collection
  - Infection
  - Hypertrophic scar
  - Keloid
- Recurrent laryngeal nerve injury – unilateral
  - Bilateral – rare
- Hypoparathyroidism – temporary
  - Permanent
- Recurrent hyperthyroidism
- Hypothyroidism
- Superior laryngeal nerve injury
- Chyle leak
- Horner’s syndrome – injury to sympathetic trunk – very rare
Complications in Thyroid Surgery

Increased incidence with

- Extent of disease (size)
- Extent of surgery
- Reoperative surgery
- Extrathyroid extension and malignancy
- Paratracheal dissection
- Neck dissection
- Substernal thyroid
- Reoperation for hematoma
- Less experienced surgeon

Bigger the operation, bigger the complications
Good judgement comes from experience; and experience comes from bad judgement!
The risk of parathyroid injury is directly proportional to the extent of thyroidectomy and inversely proportional to the surgeon’s experience.
Medical malpractice and the thyroid gland

- Jury verdict reviews from 1987-2000 were obtained from a computerized database
- 30 suits from 9 states occurred
- Plaintiffs were women in 80% of the cases, with a mean age of 41
- 50% of pts (15 of 30) had a bad outcome, (9 of 30 dead, 4 of 30 with neurologic deficits, 1 blind & 1 alive w/ cancer)
- 30% alleged surgical complications, most RLN injury, and 75% of cancer pts alleged a delay, either through falsely negative biopsies or no biopsy taken
- Respiratory events occurred in 43% and frequently resulted in large awards
36 year old Head and Neck Surgeon undergoes total thyroidectomy and central neck dissection. Status of the parathyroid: unknown. Upper PTH, not seen. Lower PTH, not sure due to CND.

**Questions:**
- Drain
- Same day discharge
- Post-Op PTH assay
- When to check calcium level
- Calcium & Vit. D supplement at discharge
  - Routinely
  - Selectively
- How much calcium and Vit. D
- Iatrogenic hypercalcaemia
39 year old baseball coach undergoing total thyroidectomy. Pre-Op vocal cord evaluation, intra-op nerve monitor.

Post-op: pt is markedly hoarse with mild stridor in the recovery room.
44 year old litigation attorney undergoes uneventful total thyroidectomy.

6 hours after surgery: c/o throat discomfort with mild neck swelling.

8 hours after surgery: Considerable swelling, mild stridor
29 year old opera singer presents with 2.5 cm Pap Ca. To be scheduled for thyroid surgery:

- Extent of surgery
- Pre-Op Evaluation
- Pre-Op discussion
- Intra-Op Decisions
- Sup laryngeal nerve
- Post-Op voice therapy
29 year old opera singer presents with 2.5 cm Pap Ca. Scheduled for thyroid surgery:

- Intra-Op
  - The nerve totally encased by tumor
  - Shave
  - Resect
  - Reconstruct
To analyze voice before & after thyroid surgery
Prospective study of 50 pts – functional voice testing
Acoustic/aerodynamic/glottographic/videoostroboscopic testing
30% pts reported early subjective voice changes
14% reported late subjective voice changes
84% had significant objective change in at least one voice parameter
12% had significant alterations in more than 3 voice measures
Early maximum phonational frequency range and vocal jitter changes from baseline were significantly associated with voice symptoms at 3 months
Post Thyroidectomy Central Compartment Syndrome

- Submental anesthesia/paresthesia
- Vague voice changes
- Chronic throat discomfort
- Swallowing difficulties
- Feeling of choking

(Shaha)
Special Clinical Issues

- Superior laryngeal nerve
- Intraoperative nerve stimulation & monitoring
- Drains
- Management of substernal goiter
- Management of post-op hypocalcemia
- Tracheomalacia
SLN Injury

- Early vocal symptoms after thyroid surgery in 1/3 even if no obvious evidence of RLN injury
- Half of these will have persistent symptoms 3 months later
- Usual symptoms indicative of SLN injury:
  - Lowered tone
  - Vocal fatigue
  - Difficulty in high-pitch phonation or projection of voice
- Videostroboscopy and laryngeal electromyography may be needed to confirm diagnosis of SLN palsy
- Speech pathology input for severe symptoms
RLN Injury

- Temporary nerve palsy may occur in up to 5% of cases
- Permanent RLN injury and vocal cord paralysis occurs in less than 2% to 3%
- Causes of transient nerve palsy include significant manipulation & dissection along RLN, thermal injury, traction injury
RLN Injury

- Most permanent RLN injuries are due to transaction of nerve during surgery
- May cause hoarseness, although voice can be normal
- Pre and Post op Larynx exam CRUCIAL
- Symptomatic patients may suffer from dysphagia and aspiration
- Recovery of a temporarily paralyzed nerve that is anatomically intact can take several months
- Consider vocal cord medialization if severe symptoms or permanent paralysis
SB 35298453 (Dr. Shaha)

• 36 yo woman with recurrent thyroid cancer

• Jan 2011: presented with T4N1bM0 (stage I) papillary thyroid carcinoma, classical type
  – Total thyroidectomy, central neck dissection, right MRND
  – Right lobe primary tumor; 2.8cm, with extrathyroidal extension into fibroadipose tissue
  – 5 positive lymph nodes (levels 2, 6, & 7)
Received 140 mCi RAI; post-treatment stimulated Tg 29.

October 2011: presented with recurrent disease in right neck (levels 4 and 6), underwent revision neck dissection.

Tg dropped to 15 (stable since, between 15 and 20).
• **PET-CT July 2012:**
  – 2cm right retropharyngeal node (SUV 15)
  – 1.5cm right level 2 node (SUV 3)
  – 1.5cm left level 2 node (SUV 5)

• **Cross-sectional imaging (for review)**
50 year old female had total thyroidectomy in Russia 18 months back. 3 positive nodes. Received post-op RAI. Presented with rising thyroglobulin and follow up suggestive of local recurrence.
58 year old patient comes in with Pap Ca R side with palpable R neck nodes
Case

- 64 year old U.S. Senator had undergone a total thyroidectomy for 2.6 cm papillary ca
  6 positive nodes. Received 100 mCi. RAI 3 years back.

Presents with slight increase in thyroglobulin
U/S shows 6 mm paratracheal node

- Work up
- Treatment
Case #3

- 56 year old male noticed swelling in the left neck.
- FNA performed
- Surgical exploration showed multiple nodes in the neck.
- The disease in the thyroid was thought to be inoperable.
- Patient now presents 3 weeks after surgery
- Pathology – papillary carcinoma
Case #4

- 56 year old musician presents with repeated bouts of hemoptysis.
- Chest x-ray shows thyroid mass with intratracheal extension.
- FNA – Papillary carcinoma

Treatment?
The staging system for papillary carcinoma of the thyroid invading the trachea, based on the histologic extent of invasion.
Case #4a

- 23 year old medical student undergoes total thyroidectomy and right modified neck dissection for papillary carcinoma
- 7 positive nodes
- Receives 150 mc RAI postop
- 1 years later thyroglobulin rises from 1.5 to 3.5.
- Ultrasound shows 5 mm right paratracheal node and 1 cm right retrojugular node

Further treatment?
Case #5

- 82 year old female presents with dysphagia and shortness of breath

- Evaluation revealed submucosal mass in the posterior pharyngeal area. Airway could not be evaluated.

- Patient had total thyroidectomy and right MRD 19 years back with 2 courses of RAI
39 year old marine biologist presents with right thyroid mass – 4 cm, hard, fixed to the deeper structures. No neck nodes.

- FNA – papillary ca
- Paralyzed right vocal cord

Operative findings:

- Tumor involving the right RLN and constrictor muscles
- Right lobe removed with RLN
- Frozen section – poorly differentiated ca
- Left lobe – tumor involving posterior portion adherent to the left RLN
Case Presentation

• 31 year old actress with locally aggressive thyroid ca – total thyroidectomy

• Tumor adherent to RLN

• Received 2 courses of RAI without uptake

• 2 years later paratracheal disease
  Surgical excision, nerve ***** recovered 3 months
Case Presentation

• 2 years later – CXR

• PET also has 3 cm met tumor at level III

• PET positive – Chest and neck
  Treatment for pulmonary metastasis and neck
80 year old female was diagnosed with left thyroid cancer – Papillary Ca 8 months back.
Total thyroidectomy and post-op RT
Presented now with dysphagia and left thyroid mass.
FNA positive for papillary Ca
Case Presentation

• 34 year old female, very anxious
• Total thyroidectomy at age 18.
• Left modified neck dissection at age 28 with tumor stuck to the nerve. Temporary paralysis post-op
• Now presents with mildly elevated TGB and U/S and CT showing multifocal recurrent disease in thyroid bed and central compartment of the neck