

THYROID/PRIMARY HPT PROTOCOL.

Recovery Information.

- Nurse in sitting upright position ($>30^\circ$) for 6 hours.
- Ice pack on wound: on 15 min, off 15 min for 2 hours.
- Observations
 - $\frac{1}{4}$ hourly for 2 hours (pulse and BP)
 - $\frac{1}{2}$ hourly temperature (record on recovery chart at all times)
 - *Look out for early complications
 1. Bleeding (high drain output)
 - Document amount and consistency of drainage $\frac{1}{4}$ hourly
 2. Haematoma (neck swelling)
 - Wound observations $\frac{1}{4}$ hourly
 3. Airway compromise
 - Stridor or hoarseness
- Treatment
 - *O₂ therapy to be maintained for at least 1 hour
 - *IV fluids
 - *NBM while in the recovery
 - *Anti-emetic and Analgesia must be charted
- Before discharging from recovery ensure:
 - *Minimal pain
 - *Post-op orders have been stipulated by surgeon
 - *Pathology form for post operative Calcium signed

General Information.

- Nurse in sitting upright position ($>30^\circ$) for 6 hours.
- Observations:
 - Heart rate and wound inspection every 2 hours, for 24 hours, except when sleeping
- Analgesia:
 - Panadol 1g qid regularly, even if pain free, for at least 72 hours
 - Tramadol 100 mg tds prn, for breakthrough pain
- Drain tube:
 - usually removed the following morning after review.
 - Leave drain in situ if >100 mL/24 hrs

AIRWAY OBSTRUCTION.

Although respiratory problems in the postoperative period are relatively uncommon, they can be life threatening and diagnosis and treatment must be prompt.

Upper airway obstruction may be subtle at its onset. Look for symptoms **of hypoxia** such as restlessness, irritability and SOB;

Partial obstruction may be indicated by:

1. Inspiratory stridor
2. Laboured breathing: use of the accessory muscles of respiration (sternomastoids, scalenes) with retraction of the head on inspiration and flaring of nostrils.
3. Rocking movements of the abdomen and chest.

Complete respiratory obstruction

1. No movement of air is detectable at the airway.
2. No breath sounds.
3. Signs of hypoxia rapidly developed.
4. Dysrhythmias and bradycardia.

Causes:

1. Tongue: In the unconscious patient with the jaw relaxed the tongue may fall back and obstruct airway.
2. Foreign materials in the pharynx:
 - Mucous or saliva
 - Gastric contents from vomiting and regurgitation
 - Blood following oral and nasal surgery (also in the case of thyroidectomy)
3. Laryngospasm: Dyspnoea and wheeze particularly in expiration.
4. Laryngeal oedema: Oedema in the neck is edema of larynx and glottis. This is the most common cause of postoperative respiratory distress. This may be due to dissection and manipulation around thyroid and cricoid cartilage and the hypopharyngeal muscles. Also it may follow post intubation.
5. Haematoma causing external pressure on the trachea.
6. RLN palsy.
7. Tracheal collapse (tracheomalacia) following thyroidectomy.

Treatment:

1. Nurse completely upright (90°).
2. Supplemental high flow oxygen
3. Continuous Sat O2 monitoring.
4. Call for senior help immediately
 - a. Senior anaesthetist.
 - b. Surgeon (myself).
 - c. ICU.
 - d. Theatre co-coordinator.
 - e. Nurse Manager.
5. Early re-intubation.
 - a. ET intubation should ONLY be performed by experienced anaesthetist.
 - b. Decompressing wound may facilitate intubation.
6. Consider removing skin AND strap muscle sutures until trachea seen.
 - a. In most cases this will be performed in theatre if patient not distressed.
 - b. Respiratory distress or respiratory arrest are indications for IMMEDIATE wound opening.
 - c. Blood transfusion is never necessary.
7. Consider hydrocortisone 100mg stat.

CALCIUM BALANCE.

Clinical features:

Early.

1. Peripheral paraesthesia.
2. Circumoral paraesthesia.
3. *Chvostek's sign*:
 - tapping over facial nerve trunk elicits facial muscle spasms.
 - seen in 10% normal population therefore should be checked before operation.

Late.

1. *Trousseau's sign*:
 - occluding brachial artery for 2 minutes induces carpal spasm.
2. Carpopedal spasm.
3. Neuromuscular irritability.
 - muscle cramps.
 - muscle spasms.
 - tetany or seizure.
4. Laryngeal stridor.
5. Cardiac arrhythmia.
 - prolonged Q-T interval.
 - hypotension.
 - VF or heart block.

Classification of Hypocalcaemia

Mild Hypocalcaemia

This is often asymptomatic. Early features include peri-oral and peripheral paresthesia.

Moderate Hypocalcaemia

Neuromuscular irritability including muscle twitching leading to carpo-pedal spasm.

Severe Hypocalcaemia

Cardiovascular instability leading to hypotension, cardiac arrhythmia or heart failure. Severe neuromuscular irritability can cause tetany, laryngospasm or seizures. This is a life-threatening emergency.

Natural history:

Asymptomatic hypocalcaemia.

- within 12 hours following surgery is common.
- recovers spontaneously within 24 hours in most patients.

Transient hypocalcaemia.

- serum total calcium ($\text{Ca}_{\text{total}}^{++}$) < 2.0 mmol/L* .
- serum ionized calcium (Ca_i^{++}) < 1.0 mmol/L* .

* for 2 consecutive days +/- symptoms or signs of hypocalcaemia.

Permanent hypoparathyroidism.

- requirement for calcium supplementation or vitamin D (or both) to maintain eucalcaemia 6 months after thyroidectomy.

Calcium Management for Discharge:

Blood tests.

URGENT PTH and Calcium once patient arrives on ward from theatre: approx. **4 hrs post-op** (remember to write URGENT on the request form).

1. PTH in normal range and Corrected Calcium in normal range

Caltrate 600 mg 2 tab bd;
Calcitriol 0.25 mcg 1 tab bd;

Discharge mane if no other problems.

NB: 2 weeks supply ONLY.

2. PTH low or unrecordable and Corrected Calcium > 2 mmol/L and no Symptoms

Caltrate 600 mg 2 tab tds;
Calcitriol 0.25 mcg 1 tab tds;
Voost Calcium 500 mg 2 tablet prn hourly if symptoms develop (in addition to Caltrate and Calcitriol); if symptoms persist beyond 3 hours go to Emergency Department.

Discharge mane with pt given request for PTH/Ca prior to OPD appointment.

3. **PTH low or unrecordable and Corrected Calcium < 2 mmol/L or Symptoms**

Caltrate 2 tabs tds;

Calcitriol 2 tab tds;

Voost Calcium 500 mg 2 tablet prn hourly until symptoms settle (in addition to Caltrate and Calcitriol); if symptoms persist beyond 3 hours goto Emergency Department.

Do not discharge. Keep in extra day and recheck Calcium mane; If positive trend Ca home next day with request for PTH/Ca prior to OPD appointment.

NB: Do not discharge until Calcium > 2 mmol/L

If rapid PTH is not available, then:

Check Corrected Calcium POD 1 in morning and midday.

-If slope positive and Corrected Calcium > 2.0 mmol/L, no further test required.

-If slope negative or Corrected Calcium < 2.0 mmol/L then:

-Check calcium at least once daily while in hospital.

-Check iPTH.

Before discharge ensure Corrected Calcium > 2.0 mmol/L.

IN-PATIENT CALCIUM MANAGEMENT

NB: Replace calcium ONLY after serum taken for calcium estimation

<u>Calcium (mmol/L).</u>	<u>Medication.</u>
ALL	Encourage Ca containing food (dairy, canned fish, nuts)
>2.0	Caltrate 600mg 2 tab bd AND Calcitriol 0.25 mcg 1 tab bd AND Voost Calcium 500 mg 2 tab hourly until asymptomatic
1.6-2.0	Caltrate 600mg 3 tab tds AND Calcitriol 0.25mcg 3 tab tds Voost Calcium 500 mg 2 tab hourly until asymptomatic
<1.6	

[Notify Surgeon \(Endocrine Surgery Fellow or Mr Lisewski\).](#)

10% Calcium Gluconate IVI

Loading: 10ml over 10 min.

Can be given through peripheral vein (syringe driver).

Maintenance: 60-120ml in 1L NS over 24 hrs.

Must be given through central vein.

[NB: extravastation will lead to extensive tissue necrosis. Make certain cannula is not tissueed. Never use foot vein.](#)

[NB: Never use Calcium Chloride through peripheral vein.](#)

Correct if $Mg^{++} < 0.5$ mmol/L.

Magnesium sulphate

25-50 mmol IVI over 24 hrs.



Predicting severe hypocalcaemia.

1. Slope of calcium levels over time.
2. Serum total calcium < 2.0 mmol/L.
3. Delayed serum phosphate > 1.0 mmol/L.
4. Post-operative PTH < 1 pmol/L
5. Number of PT glands preserved in situ < 3.

Calcium Surveillance

Regular Calcium/PTH monitoring only required for patients with low Calcium/PTH or Symptoms. OPD appt in 1-week post-op.
THYROXINE REPLACEMENT.

Young and healthy	125 mcg od
Elderly (>60yo) and healthy	100 mcg od
Frail +/- Cardiac disease	50 mcg od

NB: When THYROGEN is not available, and patients requires ablative radioiodine (for differentiated thyroid cancer) they should not be given thyroxine; instead, they should be started on **tertroxin** 20 mcg tds (only if THYROGEN not available).

HOARSENESS.

Laryngeal oedema.

Oedema affecting the intrinsic larynx is the most common cause of post thyroidectomy hoarseness. Direct effects of manipulation of the cricopharyngeal muscle and the cricoid and thyroid cartilages perhaps of interruption of the lymphatics in the area account for most of the edema. Also, dissection around the larynx may repeatedly press and rub the vocal cords onto the relatively hard, immobile endotracheal tube. A mild degree of edema produces a roughened somewhat harsh voice but as edema progresses and the cords become more involved voice volume may diminish.

Laryngeal nerve damage.

RLN

Incidence: <1% permanent, 7-10% transient.

Function:

Motor: all intrinsic muscles of the larynx except cricothyroid.

Sensory: subglottic sensation.

Deficit:

Vocal cord is adducted towards midline in a paramedian position.

-single nerve injury: *Weak, hoarse voice.

*Dyspnoea on exertion.

-bilateral nerve injury: *Aphonia or weak, whispery voice.

*Aspiration of fluids.

*Stridor soon after operation, severe dyspnoea.

Management:

If vocal symptoms persist after 1st post op visit

*arrange nasopharyngoscopy.

If paresis confirmed will need follow-up vocal cord checks.

+/- teflon/fat injection of the cord.

EBSLN

Function:

Motor: cricothyroid (tensor of the vocal cord).

Deficit:

-Loss of vocal cord tension leads to bowing and asymmetry.

-Subtle voice changes, noticeable by singer or public speakers.

*Inability to reach high pitches.

*Inability to project the voice.

*Vocal fatigue.

Management:

-speech therapy.

PATIENT INFORMATION: TOTAL THYROIDECTOMY

Wound Care: Your wound will be covered with a tape which should be left in place for 2 weeks. This will be removed by your surgeon at your first post-op visit. You will be able to wash with the tape in place and pat it dry with a towel when you are finished. If the dressing becomes soggy, it will need to be replaced. Do not be concerned by a small amount of dried blood under the tape.

Activity: You should avoid strenuous activity for 2 weeks following surgery. Most non-vigorous activities can be performed without need to worry. Apply commonsense and if an activity causes discomfort than stop.

Local symptoms: There are a variety of neck symptoms which are common post-operatively and should not cause you concern as they are usually self-limiting after several weeks. These include neck tightness, choking and having difficulty swallowing. Neck exercises will help alleviate some of these symptoms (see the accompanying pamphlet). In addition, swelling around the neck wound is common and usually self-limiting. This may benefit from daily massage of the neck. If the swelling is bothering you, needle aspiration can be arranged with your surgeon. Numbness of the skin above the wound may also be experienced and may last several months before returning to normal.

Late complications: If the skin around you wound becomes red, hot and swollen or if you notice a pusy discharge, you may be developing a wound infection. This is a rare complication. You will need to seek the attention of your local doctor straight away who will prescribe antibiotics.

Thyroxine replacement: You will require to take thyroxine tablets for the rest of your life. Thyroxine is best taken a half an hour before breakfast and should not be taken with caltrate which should be taken with food. Your thyroxine dose may need to be modified depending on a blood test (TFT) which should be taken at 6 weeks but not before. If you are a thyroid cancer patient, you may be discharged on tertroxin (a short-acting form of thyroid hormone). This will be changed to thyroxine after your radio-iodine treatment.

Calcium supplements: A transient drop in your calcium level is common following total thyroidectomy. Your calcium level will be measured in hospital, and if it is normal, you will be discharged on Caltrate. If on the other hand your calcium level is low, you will be discharged on Calcitriol as well as Caltrate. You will need to see your local doctor weekly for a blood test to check your calcium and PTH level. If your levels are normal your local doctor will reduce the calcium supplementation according to the protocol overleaf (please take this document for your local doctor to refer to). Symptoms of low calcium are tingling around the mouth or hands, or cramping (“tetany”) of the hands and feet. Should you develop these symptoms you should see your local doctor or emergency department after-hours, to arrange for your calcium level to be checked immediately.

1-2% of patient will require calcium supplementation in the long term.

Follow-up:

GP or Endocrinologist

Weekly to have your calcium and PTH levels checked and reduce calcium supplementation according to the protocol.

At 6 weeks to ensure thyroxine replacement is adequate.

At 3 months for final check-up.

Surgeon:

A visit at 2 weeks to have your tape removed and first post operative check-up.

Hemithyroidectomy patients are seen at 1 week post-op.

Thyroid cancer patients need to be seen 6 monthly for 2 years and annually thereafter depending on risk for recurrence.

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