Guideline for the Peri-operative Management of Renal Patients undergoing Total Parathyroidectomy

Document Control:

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Version	Date	Author	Reason/Change
V4.2	21/10/2021	Mahzuz Karim	Document reviewed. No clinical changes
V5	26/9/2024	Mahzuz Karim	Document reviewed, updated to new template. No clinical changes

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
None	Not applicable

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The following were consulted during the development of this document:

- Renal Consultants, NNUH
- Mr Simon Pain, Consultant Surgeon, NNUH

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to individual Trust; please refer to local Trust's procedural documents for further guidance.

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Quick reference

Please refer to main text for more detail

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1. Introduction

1.1. Rationale

Patients with end stage renal failure may develop significant hyperparathyroidism. If this cannot be controlled medically, these patients may require total parathyroidectomy. When the level of parathyroid hormone (PTH) is reduced immediately following surgery, avid calcium uptake into bones ("hungry bone syndrome") may cause a precipitous reduction in serum calcium. Acute hypocalcaemia can lead to paraesthesiae, tetany, seizures and cardiac arrhythmias. Careful peri-operative calcium management is therefore imperative in these patients.

1.2. Objective

This protocol aims to ensure adequate monitoring of serum calcium following total parathyroidectomy in renal patients.

1.3. Scope

This guideline covers renal patients undergoing total parathyroidectomy for tertiary hyperparathyroidism. It does not cover patients undergoing parathyroidectomy for other indications.

2. Responsibilities

- Renal team – to ensure patients receive appropriate pre-loading
- Surgical team – to ensure post-operative monitoring and medication adjustment
- Ward staff – to ensure prescribed medications are available and administered

3. Processes to be followed

3.1. Pre-operatively

The renal team should be informed well in advance of the date of surgery so that the patient can be pre-loaded with the Vitamin D analogue alfacalcidol (usually 2 micrograms daily for at least 2 weeks prior to surgery).

On admission a pre-operative bone chemistry profile should be sent by the surgical team. The renal registrar should be informed of the admission, and if the patient has not been pre-loaded with alfacalcidol, they will advise whether a pre-operative dose should be administered or whether surgery should be deferred.

The admitting surgical team should ensure that the patient's regular medications are prescribed on the drug chart, together with alfacalcidol 2 micrograms QDS and adcal 3000 mg TDS to commence immediately post-operatively. **Ward staff must ensure that these drugs are available and if necessary obtain appropriate supplies from pharmacy**.

3.2. Post-operatively

If all parathyroid tissue has been successfully removed, there should be a rapid post-operative fall in serum calcium. This is not predictable and should be assumed until proven otherwise.

The serum calcium level should be checked immediately on return from theatre and the renal team contacted with the result so that the post-operative regimen of alfacalcidol and calcium can be adjusted if required.

The serum calcium level should be checked again 4 hours later and subsequently rechecked as per the attached flow chart until stable. In the majority of patients, calcium can be controlled using oral therapy only; the renal team will continue to review and advise on this.

In the event of severe (e.g. adjusted calcium <1.5 mmol/L) or symptomatic hypocalcaemia, the patient may need intravenous calcium. This should be done *only after discussion with the renal team.* IV calcium can cause tissue necrosis if extravasated and should be administered peripherally with caution.

- Ensure the patient has a *patent* cannula in a large vein, and administer 20 mL10% calcium gluconate over at least 15 minutes followed by a sodium chloride 0.9% flush. Faster infusions may be arrhythmogenic.
- IV calcium may also be administered on dialysis.
- If the serum calcium is proving difficult to correct, a serum magnesium should be checked and corrected if low (normal range 0.7-0.9 mmol/L). 2 grams (8 mmol) Magnesium Sulphate in 100 mL 0.9% sodium chloride should be administered over 1 hour (4 grams if magnesium level < 0.5 mmol/L).
- Occasionally patients require repeated boluses of IV calcium, in which case a continuous calcium infusion may be necessary. This should ideally be administered *via central venous access* as a calcium solution (e.g. 200 mL 0.9% sodium chloride with 50 mL 10% calcium gluconate) over 2 hours. It can also be given as a neat solution (50 mL 10% calcium gluconate at rate of 10 mL/hour) if fluid restriction is necessary. Calcium infusions may cause nausea, vomiting, hot flushes and hypotension. HDU admission should be considered.

3.3. Discharge arrangements

Once calcium levels are stable (and provided that there are no ongoing surgical issues) the patient can be discharged home. The patient will usually require ongoing oral alfacalcidol and calcium after discharge. For haemodialysis patients, calcium levels will be checked on dialysis to allow further adjustment of therapy. For peritoneal dialysis and transplant patients the renal team will organise ongoing calcium management.

No patient should be discharged until firm arrangements are in place for blood tests and review by the renal team.

4. Monitoring Compliance

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Appropriate monitoring and prescription conducted	Monitoring of adherence to guideline	Renal team	Renal governance meeting	Annual

The audit results are to be discussed at the renal governance meetings to review the results and recommendations for further action. Then sent to medical sub-board who will ensure that the actions and recommendations are suitable and sufficient.

5. Appendices

There are no appendices for this document.

6. Equality Impact Assessment (EIA)

Type of function or policy	New/Existing (remove which does not apply)

Division	Medical	**Department**	Renal
Name of person completing form	Mahzuz Karim	**Date**	26th September 2024

Equality Area	Potential Negative Impact	Impact Positive Impact	Which groups are affected	Full Impact Assessment Required YES/NO
Race	N	N	N	N
Pregnancy & Maternity	N	N	N	N
Disability	N	N	N	N
Religion and beliefs	N	N	N	N
Sex	N	N	N	N
Gender reassignment	N	N	N	N
Sexual Orientation	N	N	N	N
Age	N	N	N	N
Marriage & Civil Partnership	N	N	N	N
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?				

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.