

# Outcome of Subtotal Parathyroidectomy in Patients with Renal Hyperparathyroidism

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## INTRODUCTION AND OBJECTIVES

Secondary hyperparathyroidism (HPTH) is common in patients with end-stage renal failure. Untreated, this can cause significant metabolic bone disease, cardiac risk and deterioration in mental state. Parathyroidectomy is necessary in up to 20% of patients on haemodialysis within 10 years. Tertiary hyperparathyroidism occurs in the context of renal transplant and treatment for this will result in parathyroidectomy in 0.3% of patients following surgery. Surgical management involves locating all 4 glands and removing all but approximately 40–60 mg of parathyroid tissue.

This study aims:

1. To compare the outcomes of parathyroidectomy with peer reviewed published standards.
2. To provide insight into clinical performance and guide service improvement.

Outcomes for review include operative technique statistics, complication rates, length of hospital stay and success of treatment in terms of biochemical/hormonal normalization.

## METHODS

Data were collected retrospectively from electronic records of all patients operated on by a single surgeon from 2012 to 2014. Included were all patients undergoing elective subtotal parathyroidectomy with full exploration for secondary and tertiary HPTH. Targeted single-gland operations and redo operations were excluded. All patients underwent pre-operative sestamibi scan and intra-operative recurrent laryngeal nerve monitoring. Post-operative supplementation was with Sandocal and 1-alpha-calcidol, with daily serum calcium monitoring. Expected outcomes in line with published standards included:

- Biochemical success (PTH <14 pmol/L + normal corrected calcium level) of 88%–98%
- Permanent recurrent laryngeal nerve injury in 0.3%–1%
- Re-operation for bleeding 0.45%–1%
- Transient hypocalcaemia 6%–27%
- Length of hospital stay expected between 3–10 days
- Permanent calcium supplementation likely in 15% of patients

## RESULTS

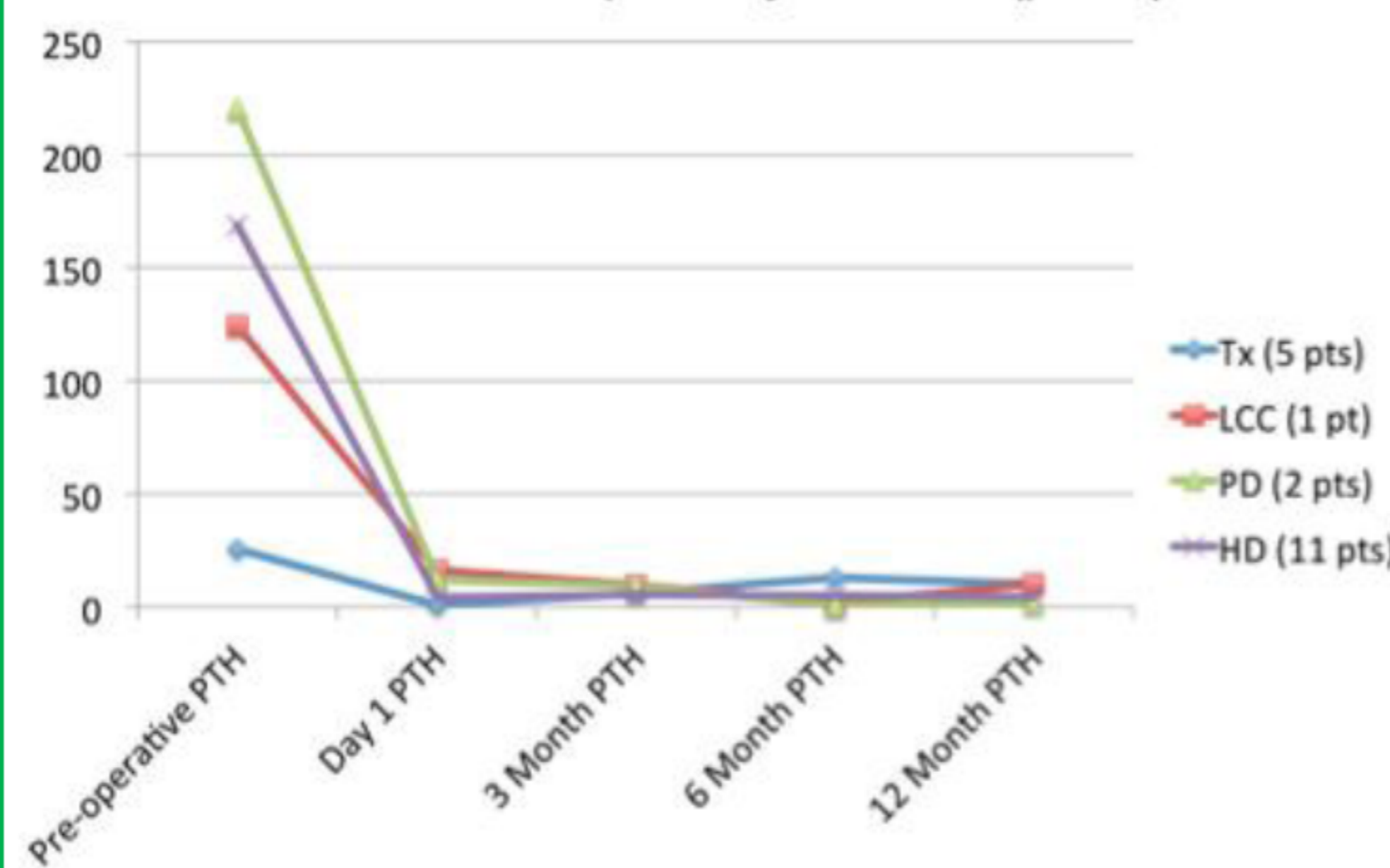
26 patients (16 females), mean age 52 years (27–83 years) were included. Nineteen patients had secondary HPTH; 3 managed with peritoneal dialysis (PD), 12 with haemodialysis (HD) and 4 were “low clearance” patients with no renal replacement therapy (LCC). Seven patients had undergone renal transplant and were referred for surgical management of tertiary HPTH (Tx).

The majority of patients had multiple reasons for referral for surgery. The most common reason for referral was to control metabolic bone disease (n=14). In 6 patients, the primary indication for surgery was to enable listing for renal transplantation. 19/26 patients (73%) had received Cinacalcet therapy prior to surgery.

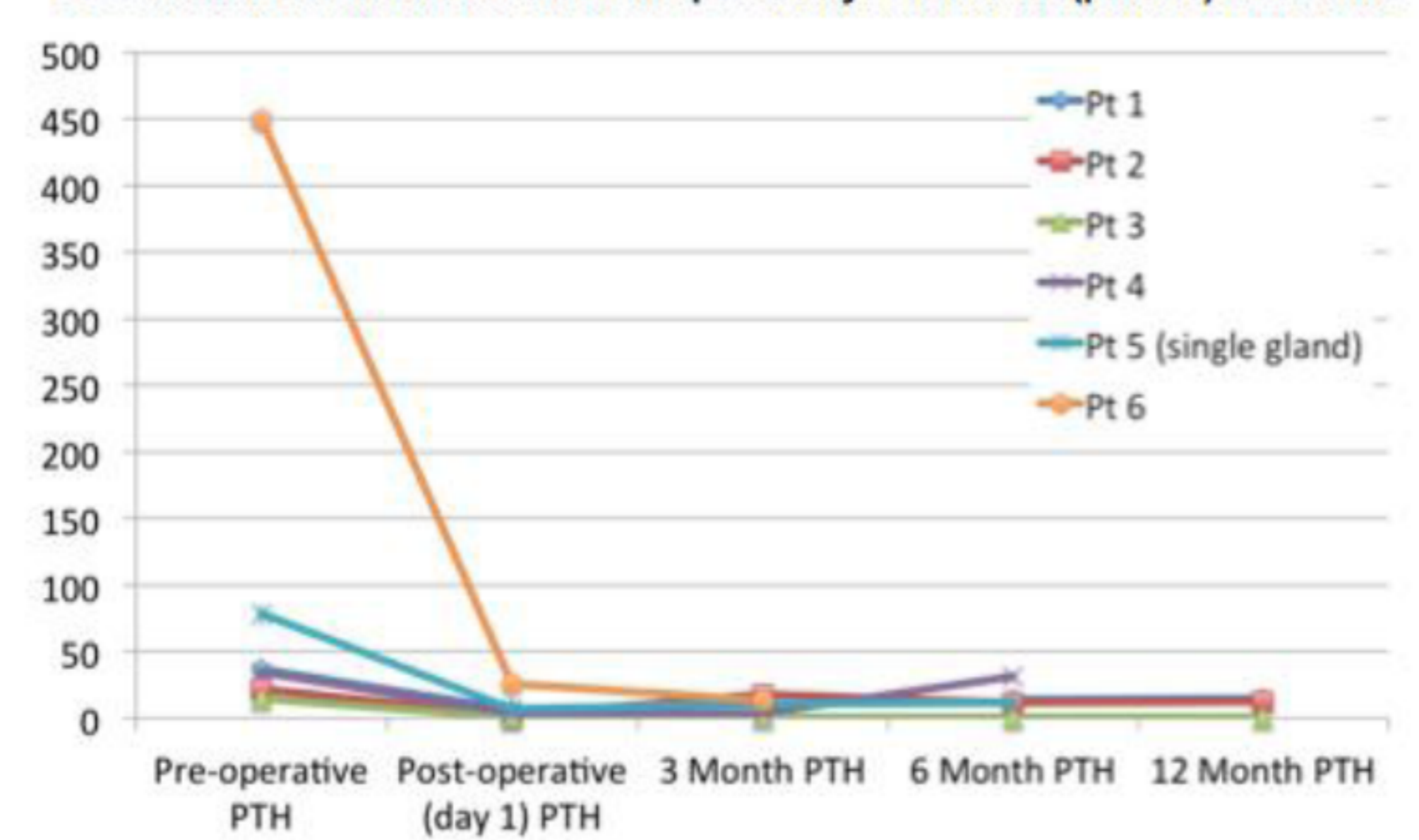
Intra-operative identification of 4 parathyroid glands was possible in 20/26 patients (77%) - at 12 months post-operatively, PTH levels were <14 pmol/L in 20/20 of these patients. Fewer than 4 glands were seen in 6/26 patients (23%) intra-operatively - at 12 months post-operatively, 4/6 of these patients had PTH levels <14 pmol/L. **Overall, 24/26 patients (92%) had PTH levels <14 pmol/L at their last follow-up.**

18/26 patients (69%) were hypercalcaemic pre-operatively - **17/18 (94%) of these were normocalcaemic at 12 months post-operatively.**

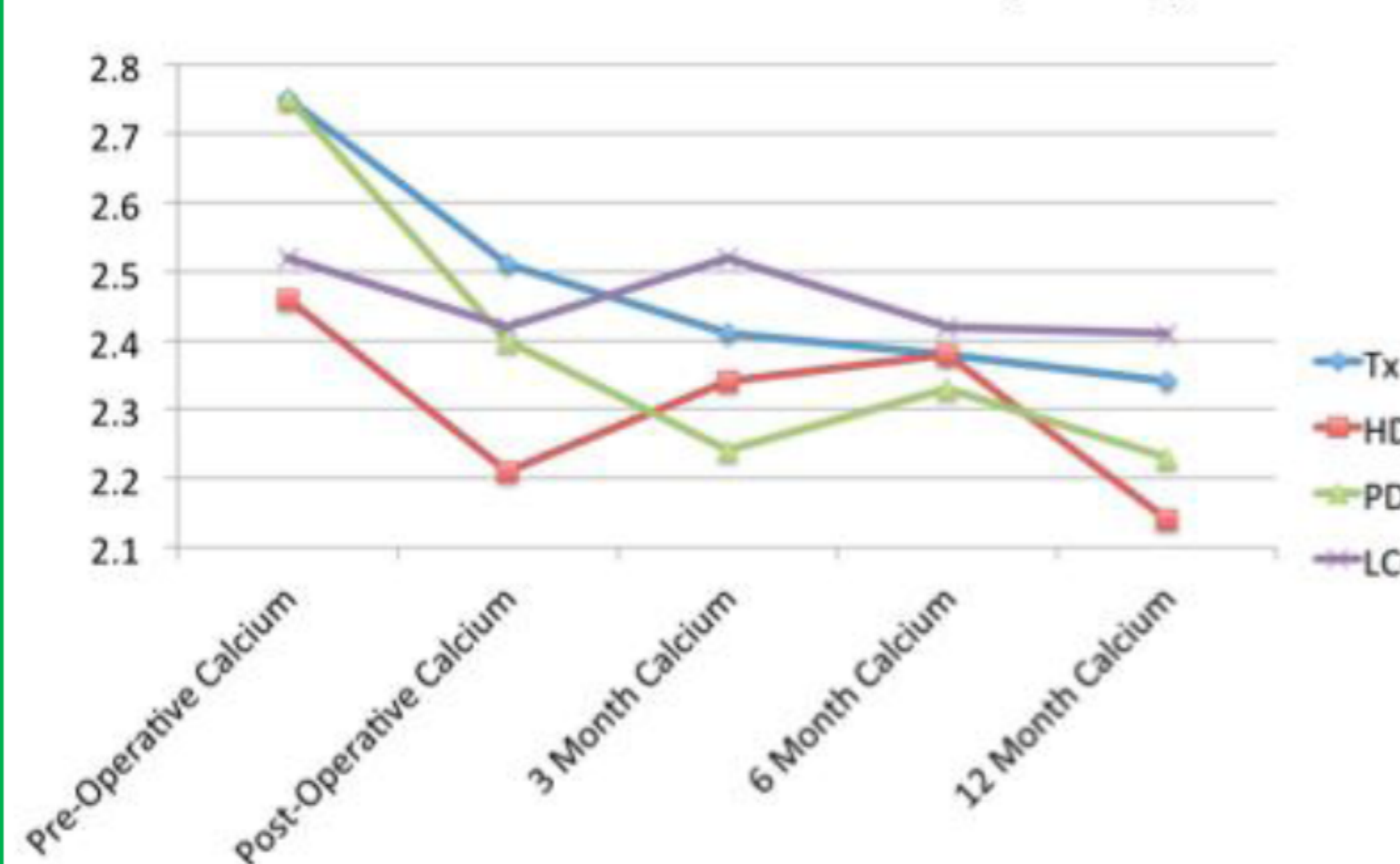
All 4 Glands Identified Intra-operatively: Mean PTH (pmol/L) Over Time



Less Than 4 Glands Identified Intra-operatively: Mean PTH (pmol/L) Over Time



All Patients: Mean Corrected Calcium Levels (mmol/L) Over Time



	Standard	Our Result
Biochemical Success (at last follow up)	88-99%	Normocalcaemia 94%
Normocalcaemia (<2.60) PTH (<14)		PTH <14 in 92%
Recurrent Laryngeal Nerve Injury	0.3-1%	Permanent injury 0% Temporary palsy - 1 patient (3.8%)
Re-Operation for Bleeding	0.45-1%	1 patient (3.8%)
Significant Transient Hypocalcaemia	6-27%	7.6%
Length of Hospital Stay	3-10 days	Median 3 days
Permanent Calcium Therapy	15%	38.5%

Median Hospital stay was 3 days (range 2–9 days). One patient experienced temporary recurrent laryngeal nerve palsy that resolved completely at 3 months. One patient required re-exploration for bleeding, 2 were treated with intravenous calcium for significant transient hypocalcaemia, 1 developed a wound infection and 1 developed hospital acquired pneumonia. 10/27 patients required calcium supplementation at 6 months follow-up, although this may be for phosphate binding purposes.

## CONCLUSIONS

- Subtotal parathyroidectomy in the renal population is biochemically successful in achieving normocalcaemia and acceptable PTH levels in over 90% of patients
- Our departmental complication rates for recurrent laryngeal nerve palsy and hypocalcaemia requiring intravenous calcium are comparable to published standards
- Continued patient follow-up is necessary to confirm the long-term biochemical outcome; particularly in those patients who do not proceed to renal transplantation

## References

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