

# Too Much or Too Little: Outcomes After Subtotal Parathyroidectomy for Primary Hyperparathyroidism

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## Introduction

- In primary hyperparathyroidism (PHP) due to 4-gland hyperplasia, subtotal parathyroidectomy (sPTX) is often the surgical management of choice
- Limited data exists on risk factors for hypoparathyroidism and operative failure

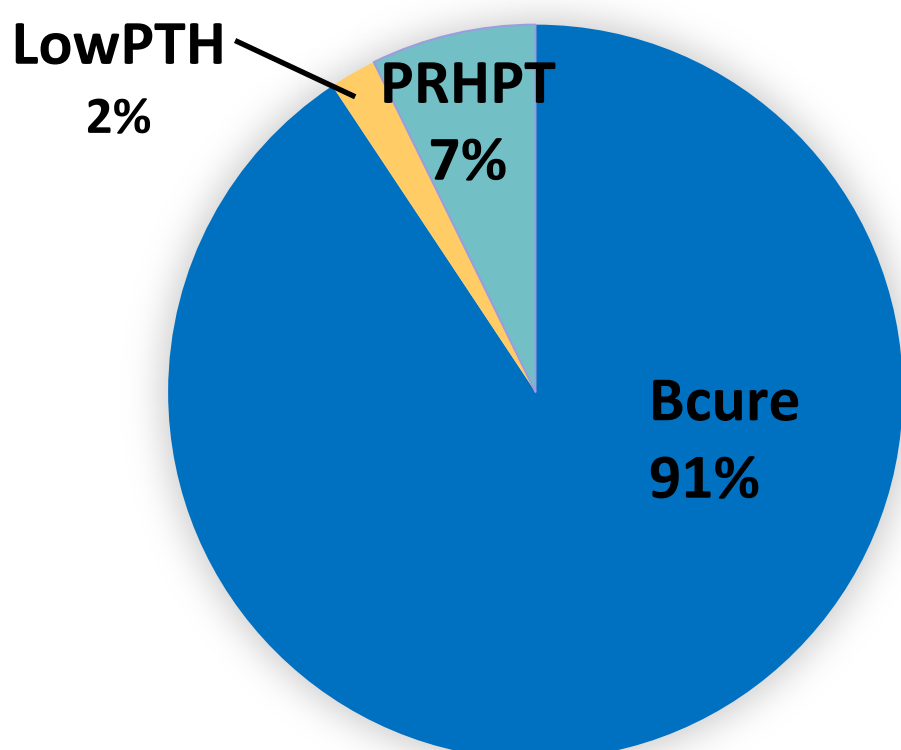
## Materials and Methods

- Retrospective review of prospective database (1997-2002)
- Included all PHP patients with  $\geq 6$  months follow-up who had 4 gland hyperplasia and initial sPTX (resection of  $>3$  parathyroid glands with 30-50 mg in-site remnant)
  - Intraoperative parathyroid hormone (PTH) monitoring (IOPTH) with Dual Criteria (ie PTH drop into normal range and  $\geq 50\%$  of baseline pre-excision level)
- Postoperative outcomes
  - Permanent hypoparathyroidism (LowPTH; hypocalcemia and inadequate PTH levels  $>6$  months postop)
  - Persistent/recurrent hyperparathyroidism (PRHPT; hypercalcemia with elevated PTH immediately and/or  $>6$  months postop)
  - Biochemical cure (Bcure; normocalcemia and normal PTH  $>6$  months postop)

## Results

- N=6,076 PHP patients identified
- 193 (3.2%) had initial sPTX
- No statistical difference in median age, sex distribution, preoperative median calcium/median PTH, or median 24-hour urinary calcium ( $p > 0.05$ )

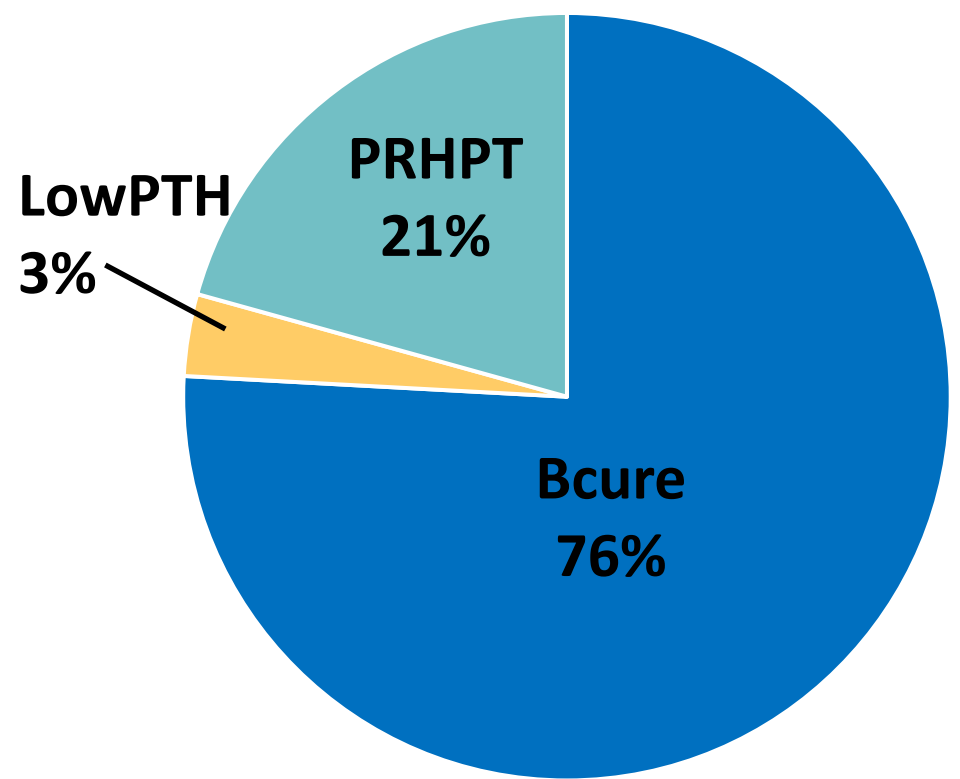
**Figure 1: Outcomes After sPTX**



- LowPTH occurred in 4 pts (2%), PRHPT in 14 pts (7%), and 175 pts had biochemical cure (91%)
- 6 of the pts with PRHPT disease had Multiple Endocrine Neoplasia 1 (MEN1)

## Results

**Figure 2: MEN1 Patient Outcomes**



- 29 patients had MEN1
- LowPTH occurred in 1 pt (3%), PRHPT in 6 pts (21%), and 22 pts had biochemical cure (76%).

**Table 1: Association Between IOPTH and Outcomes**

	PTH $\leq 40$ pg/mL	PTH $> 40$ pg/mL	P value
Bcure	129/137 (94%)	37/45 (82%)	0.019
LowPTH	3/137 (2%)	1/45 (2%)	0.98
PRHPT	5/137 (4%)	7/45 (16%)	0.007

- Patients were stratified based on final IOPTH
  - 7 out of 12 pts with PRHPT had a PTH  $> 40$ ; OR 4.6 (95% CI 1.4-15.2)
- When excluding MEN1 pts, post-excision PTH  $> 40$  continued to be associated with recurrence ( $p < 0.0001$ )

## Conclusions

- When sPTX is employed for 4-gland hyperplasia, rates of hypoparathyroidism are low (2%)
- Persistent/recurrence occurred in 7% of pts, with expectedly higher rates in pts with MEN1 (21%)
- Regardless of MEN1 status, Post-excision IOPTH  $> 40$  pg/mL is associated with higher risk of recurrent/persistent hyperparathyroidism