Supplemental Table 1: Detailed definitions of variable used in this study.

- Osteopenia was defined as a BMD T-score of -1 to -2.5 and osteoporosis as a BMD T-score of > -2.5
- A PTH drop of >50% from pre-excision PTH at 10 minutes post-excision was considered as biochemical cure to conclude the operation.
- Transient and permanent hypoparathyroidism was defined by PTH and serum calcium below the lower limit of normal requiring calcium replacement within 6 months and past 6 months after reoperation, respectively.
- Successful autograft implantation was defined as normal serum calcium and PTH levels at least 8 weeks after re-implantation in a patient not requiring calcium replacement.
- Patient outcome was defined as the postoperative serum calcium and PTH levels (cured, persistent or recurrent) at last follow up.
- Genotype classification used two groups on the basis of the specific MEN1 mutation (Reference 17, 21). Group 1 consisted of nonsense or frameshift mutations in exons 2, 9 and 10, and group 2 included all other mutations.
- Follow-up time was calculated from the time of reoperation to the last contact with the patient, in clinic or by phone.
- Persistent or recurrent pHPT was defined as hypercalcemia occurring either within 6 months or after 6 months after reoperation, respectively.

Supplemental Table 2. Comparison between pre- and postoperative variables

	Preoperative	Postoperative[*]	P-Value[**]
PTH (pg/mL, mean)	131.4	60.2	**<0.0001**
Ca (mg/dL, mean)	2.66	2.30	**<0.0001**
BMD (T-Score, mean)[‡]	1.9	2.0	0.6
Nephrocalcinosis (fraction)	10/18	6/18	**0.046**

[*]At last Follow up

** Paired Sample T-Test or Wilcoxon Rank Test

[‡] BMD: Bone mineral density at femur and/or spine