range; in the others it was still elevated, the maximum being 2 times normal. Changes in serum biochemistry results are shown in Table 1.

Graft tissue took over function after 5.2 months on average (range, 1.7-6.1 months). Supplemental vitamin D and oral calcium could be stopped or reduced within that period of time. Recurrent graft-dependent hyperparathyroidism was observed in one patient 12 months after removal of four glands and autografting. The serum PTH increased to 7 times normal and the serum calcium was between 2.3 and 2.5 mmol/L. $^{99m}$Tc simporte of the forearm showed high uptake in the grafted area. The transplanted parathyroid glands were excised under local anesthesia. Microscopic examination showed diffuse chief cell hyperplasia. After removal of parathyroid tissue from the forearm, serum PTH returned to near normal levels.

Radiologic examination of bones was carried out in 13 patients one or two years after surgery. Regression of osteodystrophy and improvement in soft tissue calcifications were observed in the majority (84.6%) of patients.

**DISCUSSION**

Despite improvements in medical management, severe SHPT is a common complication of CRF. According to a report of the European Dialysis and Transplant Association, parathyroidectomy is required in 15% of patients after 10 years and in 38% after 20 years of dialysis.15

An increase in PTH is usually the principal indication for surgery in RH. All 36 patients included in our study had severe hyperparathyroidism (PTH > 800 ng/L). Medical therapy had failed to suppress PTH or was complicated by hypercalcemia requiring discontinuation of calcium/vitamin D therapy. Similar results were reported by Salem16 in his survey of 612 chronic hemodialysis patients. He observed that 50% of patients showed serum PTH levels greater than three times normal, despite the usual medical therapy to prevent hyperparathyroidism. Hypercalcemia also strengthens the indication for surgery in RH.7,9,13 In our series, 25 patients had hypercalcemia; while 30 patients had hyperphosphatemia. The clinical effects of RH that was refractory to medical treatment were: pruritus, bone and joints pain, muscle weakness, progression of soft tissue calcification, and spontaneous fractures.

Many authors recommend that imaging of parathyroid glands should be done only prior to reoperation. They also propose that parathyroid imaging is not usually required before initial parathyroidec-