

## Predicting the successfulness of parathyroidectomy: new lessons from an old challenge

Como prever o sucesso da paratiroidectomia: novas lições de um velho desafio

### Authors

Fellype Carvalho Barreto <sup>1</sup>  
Sérgio Gardano Elias  
Bucharles <sup>1,2</sup>

<sup>1</sup> Universidade Federal do Paraná.

<sup>2</sup> Fundação Pró-Renal.

Secondary hyperparathyroidism (sHPT) is one of the main endocrine disorders in chronic kidney disease (CKD), being associated with bone and cardiovascular abnormalities, as well as higher mortality. Despite of the advances on its pharmacologic therapy, sHPT still evolves in a considerable number of patients to autonomy, when parathyroidectomy becomes the only possible treatment.<sup>1</sup> In Brazil, around 10% of patients on renal replacement therapy have severe sHPT, implying that around 11,000 subjects may require parathyroidectomy.<sup>2</sup> There are three techniques for this surgery: subtotal parathyroidectomy; total parathyroidectomy; and total parathyroidectomy with autotransplantation. There is yet no consensus on which of these approaches is the most effective. Total parathyroidectomy with autotransplantation is currently the most commonly performed, though.<sup>3</sup>

Persistence and recurrence of sHPT are important drawbacks of parathyroidectomy that both surgeons and nephrologists may have to deal with. Several studies have evaluated the usefulness of selected biomarkers to predict these complications. In a recent study that evaluated intraoperative PTH dosage, measured by a fast immunometric assay, a reduction of at least 80% in the PTH levels 10 minutes after surgery was found to be a good predictor of a successful parathyroidectomy.<sup>4</sup> The cost and low availability of the assay have precluded its use in the daily clinical practice. Measurement of PTH by traditional assays, such as quimioluminescence, is widely available with relative low cost.

As so, using it to evaluate the efficacy of parathyroidectomy may be a reasonable strategy.

In this issue of the Brazilian Journal of Nephrology, Nascimento Junior *et al.*<sup>5</sup> evaluated, in a cohort of fifty-one end-stage renal disease patients submitted to total parathyroidectomy with autotransplantation, whether PTH measurement in the first days after surgery would be a helpful tool to predict the surgical success and, consequently, the risk of persistence and recurrence of the disease.

They observed that a decline of 95% of the PTH levels was associated with a high rate of sHPT resolution. Actually, neither persistence nor recurrence were detected in those patients who achieved that cut-off level of PTH after a follow-up up to sixty months. Conversely, reduction of PTH levels lower than 80% was associated with sHPT persistence even in those patients who developed post-surgical hypocalcemia, considered an indicative of hungry bone syndrome and an indirect marker of the success of the surgery.

The present study is of great relevance not only for surgeons, but also for nephrologist who are, in the majority of institutions, responsible for the follow up of these patients. On one hand, from the surgeon perspective, sHPT persistence may be seen as a therapeutic failure, for which early surgical reintervention, before the development of tissue fibrosis, is desirable. On the other hand, from the nephrologist point of view, persistence does not necessarily mean that a new

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### Correspondence to:

Fellype Carvalho Barreto.  
Hospital de Clínicas da  
Universidade Federal do  
Paraná.  
Rua General Carneiro, 181.  
12o andar. CEP: 80060-900.  
Curitiba, Paraná, Brazil.  
E-mail: fellype.barreto@ufpr.  
com

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surgery is required or that clinical treatment is not possible. Even when autonomous parathyroid glands are not completely removed, clinical and metabolic improvements occur, such as lower serum levels of calcium and phosphate. In this scenario, persistent sHPT may be pharmacological treated.

Other complication commonly seen after parathyroidectomy, that is post-surgical hypoparathyroidism (characterized by PTH levels persistently low), should be equally avoided. Patients with post-surgical hypoparathyroidism are more prone to low turnover bone disease, bone fractures and vascular calcification. Therefore, the evaluation of the success of parathyroidectomy should be based not only on the persistence/recurrence of sHPT, but also on the development of post-surgical hypoparathyroidism. Both complications should have been considered by the authors in order to determinate the best post-operative cut-off level of PTH. This would have strengthened their findings. One question that may be raised from the study is if adequate control of the persistent sHPT was achieved. This point deserve further investigation as it can help nephrologists to further understand how patients should be managed post-parathyroidectomy in the long term.

One take home message of the study that should be highlighted is: not achieving the proposed 95% reduction of PTH levels within the first days after parathyroidectomy should call the nephrologists

attention for the possibility that early reintroduction of pharmacological therapy for sHPT may be required for precluding disease progression and necessity of a new surgical intervention.

sHPT is an old challenge for nephrologists. Multidisciplinary approach, including parathyroidectomy for the severe cases, is usually required to achieve adequate control of the disease. Clinical studies with interdisciplinary characteristics, such as the Nascimento Junior's study, must be stimulated. They have certainly more chance to gift medical community with new knowledge and strategies to improve the medical practice and, consequently, the patient care.

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