SURGERY

Intraoperative parathyroid hormone monitoring: yes or no?

During minimally invasive parathyroidectomy, intraoperative parathyroid hormone monitoring (IPM) can be used to determine whether all hyperfunctioning parathyroid tissue has been excised. Since the advent of IPM in the early 1990s, the literature regarding its application has been split between surgeons who always use it and those who never use it. Centers that applied IPM seemed to achieve marginally (though nonsignificantly) higher success rates for initial surgery, although they did so at the expense of considerable additional resources.

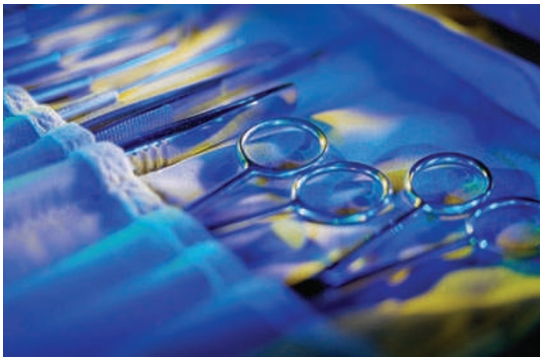
> “...IPM can be used to notable advantage in patients with negative MIBI scans”

“We reasoned that there must be a way to take advantage of this technology without being unduly wasteful,” explains senior investigator Michael W. Yeh (David Geffen School of Medicine, UCLA, Los Angeles, CA). “A rational method of IPM application would restrict its use to those cases whose outcome would be most likely improved by the test results.”

A number of expert centers in parathyroid surgery had previously noted the increased prevalence of multiple-gland parathyroid disease in patients with negative sestamibi (MIBI) scans, a nuclear imaging technique used to visualize the parathyroid glands and identify parathyroid adenomas. “The conceptual leap was to use IPM in those patients only,” says Yeh.

Yeh and colleagues prospectively examined 361 patients undergoing surgery for primary hyperparathyroidism, all of whom had undergone MIBI scanning and ultrasonography. Intraoperative parathyroid hormone levels were used for surgical decision-making only in the MIBI-negative, ultrasound-positive patient subset. “Patients with negative MIBI scans but positive ultrasound scans were the target population for IPM, as ultrasound gives us a place to start the operation. Some responses to this might be: why bother, as you can just perform a bilateral exploration in those patients. Although we understand that point, given the choice, most patients would prefer the smaller incision offered by a focused or minimally invasive approach,” explains Yeh.

The results showed that IPM can be used to notable advantage in patients with negative MIBI scans. Among these patients, 71% of whom underwent minimally invasive parathyroidectomy with IPM, an inadequate fall in the 10 min postexcision parathyroid hormone level



was highly predictive of multiple-gland parathyroid disease.

A previously published cost analysis of IPM in patients with well-localized primary hyperparathyroidism found that IPM is only cost-saving in populations in which multiple-gland parathyroid disease is common and/or the cost of reoperative parathyroid surgery is high.

In the end, IPM is similar to any other test: it has its strengths as well as its weaknesses. “The key is to know not only how to use it, but also when to use it,” reflects Yeh.

Linda Koch

Original article Hwang, R. S. *et al.* A selective, Bayesian approach to intraoperative PTH monitoring. *Ann. Surg.* **251**, 1122–1126 (2010)