Over the past several years radioguided surgery has become an increasingly important technique. Radioguided sentinel lymph node biopsy has become standard of care in staging of malignant melanoma, and is well on its way to becoming standard of care in staging of breast cancer. Another new and exciting application of this technique is for treatment of primary hyperparathyroidism. Radioguided parathyroidectomy can now be used to remove the causative adenoma instead of performing the standard bilateral neck dissection previously required.

Primary hyperparathyroidism is a relatively common condition occurring in up to 1 in 1000 people. The resultant hypercalcemia can be asymptomatic or may cause a myriad of symptoms including kidney stones, bone pain, muscle aches, peptic ulcer disease, pancreatitis, fatigue, and depression to name a few.

Until recently surgical treatment consisted of bilateral neck dissection with identification of all four parathyroid glands. Frozen section analysis of the specimen was necessary and sometimes performed on the “normal” appearing glands to rule out the presence of multiple adenomas or four gland hyperplasia. One of these is present in 10-15% of patients. This exploration required a general anesthetic, a relatively large incision, and a 23 hour hospital stay or more.

Minimally invasive radioguided parathyroidectomy (MIRP) offers an alternative approach. MIRP requires a preoperative Sestamibi scan that is performed the morning of surgery. The isotope is given 1-3 hours prior to the planned operation. Timing is important since after three hours “washout” of the isotope will occur which makes localization using the gamma probe impossible. After a localizing scan is performed in the morning, the patient is taken to surgery. Exploration is then performed through a small incision (usually less than one inch). This can be done under local anesthesia with some additional sedation. Exploration is directed by the preoperative scan and a hand held gamma probe to the involved gland. Once the adenoma is removed the neck is rescanned with the hand-held probe to insure that no other “hot” areas remain. The incision is then closed. Patients are often discharged the same day.

MIRP affords many advantages over the standard exploration. It can be performed as an outpatient, under local anesthesia, through a smaller incision. Patients have less postoperative pain. It can be performed much more quickly with OR and anesthesia times cut by about 45 minutes in most studies. Frozen section analysis of the specimen is not necessary. Despite the need for a sestamibi scan and the hand held gamma probe, charges for the procedure are cut by up to half.

MIRP does have some limitations. Patients with inconclusive or negative Sestamibi scans still require a standard exploration. Most of these people will have either four gland hyperplasia or multiple adenomas. The gamma probe may still however give some guidance during a standard exploration. Some patients may still require admission for treatment of hypocalcemia post operatively.

Early studies have shown MIRP to be both a safe and effective approach to the treatment of hyperparathyroidism. Cure rates and complication rates are very comparable, and are often better in the MIRP group. This coupled with the decreased post operative pain and the decreased cost of the procedure makes it a very attractive alternative to the standard approach. This technique is still very new but is gaining increasing acceptance as more studies are showing good results. In time this may become standard of care for this common problem.