Primary hyperparathyroidism (PHPT) is usually caused by a solitary benign adenoma (80-85%), 2-5% of PHPT is due to 2 adenomas. Hyperplasia causes PHPT in 10-15% and parathyroid carcinoma in <1%. Localization of parathyroid adenoma preoperatively can help to minimize the extent of surgical intervention. After biochemical confirmation of PHPT diagnosis, patients have parathyroid ultrasound (US), Tc-99m sestamibi scan (Sestamibi) or MRI to localize hyperfunctioning parathyroid gland(s).

When scans are negative or discordant we perform parathyroid hormone selective venous sampling (PTHSVS). Following biochemical, radiological investigations and PTHSVS patients have either:
- focused parathyroideectomy (FP)
- or bilateral neck exploration (BNE)

**RESULTS**

The results of the below mentioned PTH ratios show significant differences between PTHSVS(+) and PTHSVS(-) groups:

- Side with higher mean PTH levels vs. side with lower mean PTH levels
  - PTHSVS(+): 2.50
  - PTHSVS(-): 1.12

- Side with higher mean PTH levels vs. inferior vena cava (IVC) PTH level
  - PTHSVS(+): 3.79
  - PTHSVS(-): 1.46

- Site with highest PTH level vs. IVC PTH level
  - PTHSVS(+): 7.37
  - PTHSVS(-): 1.51

**Discussion**

Our results of PTHSVS compared with subsequent histopathological results support PTHSVS as a useful additional test when both the parathyroid USS and Sestamibi scans are inconclusive. This is concordant with reports from other authors [2], although there are also contradictory-reports [3]. Current literature reviews support the use of PTHSVS in preparation for revision surgery in persistent PHPT [4, 5]. In our hands PTHSVS enables the surgeon to choose FP rather than BNE in a significant proportion of patients with negative or discordant imaging. This is likely to result in less risk for patients and more efficient use of theatre time.

We attempted to analyse the various ratios of PTH levels to enable a better assessment of localisation. We suggest two PTH ratios:
- side with higher mean PTH levels vs. side with lower mean PTH levels
- side with higher mean PTH levels vs. IVC PTH level

**References**

4. The role of selective venous sampling in the management of persistent hyperparathyroidism revisited Janneke E Witteveen, Job Kievit, Arian R van Erkel, Hans Moreau, Johannes A Romijn and Neven A T Hamdy; European Journal of Endocrinology (2010) 163 945–952