

# Giant parathyroid adenomas: A minimally invasive approach

Miss Victoria Blackabey, Mr Mahmoud Daoud, Mr Omar Mulla, Professor Muhammad Quraishi  
Department of Otolaryngology, Doncaster Royal Infirmary, Doncaster, United Kingdom

## Background

Primary hyperparathyroidism is due to a solitary parathyroid adenoma in 80%–85% of cases. [1] Minimally invasive parathyroidectomy (MIP) gained popularity in recent years due to reduced complications and quicker recovery. However giant parathyroid adenomas weigh on average fifty eight times more than a normal gland. Giant adenomas therefore require special consideration when considering MIP.

## Objectives and Methods

Giant parathyroid adenomas are classified as weighing  $\geq 3500$ mg. 17 giant adenomas underwent MIP from 2006 to 2017. The case notes of the 17 giant adenomas were reviewed and data collected. We present our individual technique and results.

## Preoperative Patient pathway

**Diagnosis:** Patient referred to an Endocrinologist and diagnosis made via biochemical results

**Imaging:** USS and Sestamibi scan requested while awaiting ENT review

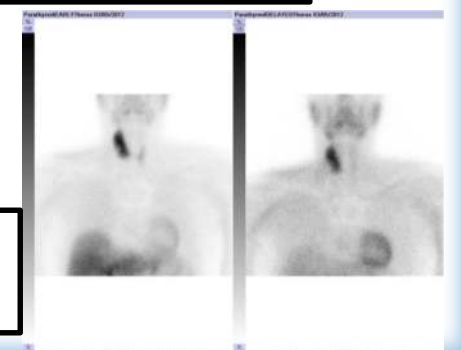
**ENT one-stop clinic:** Patient reviewed and booked for MIP

## Preoperative Imaging protocol

Dual imaging modality is vital as it gives anatomical and functional location of the adenoma



USS (left) demonstrating 6cm parathyroid adenoma



Sestamibi scan (right) demonstrating right parathyroid adenoma

## Intraoperative diagnosis of giant adenoma

Intra-operative frozen section +/- intra operative PTH is arranged to confirm parathyroid tissue, with a turn-around time of approximately 20 minutes. This helps reduce the risk of removing other tissue; for example, a thyroid nodule or a lymph node.

## Results

Male: Female ratio	8:9
Average age (years)	62.1
Age range (years)	19-84

Table 2. Biochemical results: pre- and postoperatively

Average preoperative calcium (mmol/L)	3.15
Average postoperative calcium (mmol/L)	2.48
Average preoperative PTH level (pmol/L)	45.2
Average postoperative PTH level (pmol/L)	7.59

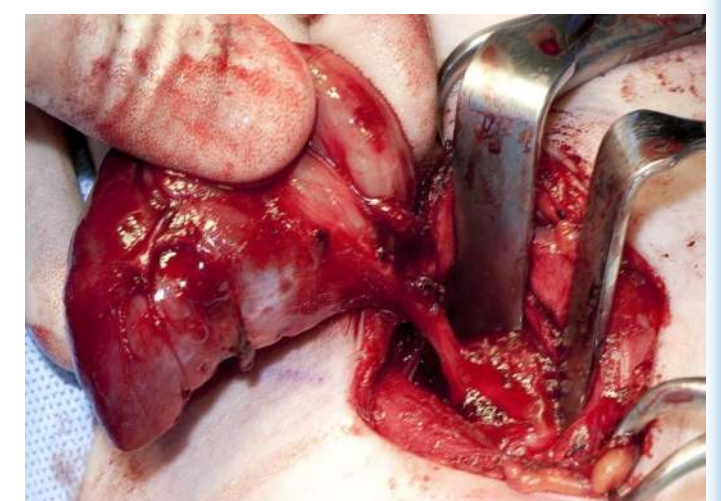


Table 3. Operative time and average weight of adenoma.

Concordance of imaging compared to surgical site (%)	100
Average operative time (mins)	70.59
Average pathological weight of adenoma (mg)	6360
Pathological weight of adenoma range (mg)	3500-20000

No patients were readmitted or had any complications.

Follow up was at 6 weeks (range 13-75 days) and all were subsequently discharged after **confirming biochemical cure**.

## Conclusions

The use of MIP for excision of giant parathyroid adenoma requires special consideration. The key to success is preoperative preparation. At our centre we have a dedicated radiologist who performs and interprets all imaging. The imaging is performed in the same anatomical orientation as the surgical procedure to allow easier localisation. This reduces operating time, damage to local structures and leads to less complications.

## References

[1] Costanzo M, Terminella A, Marziani A, Chisari A, Missiato A, Cannizzaro MA. Giant mediastinal parathyroid adenoma: a case report. Ann Ital Chir. 2009; 80(1): 55-9.