Adrenal Surgery Practice Guidance for the UK

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Practice Guidance Recommendations

Based on the recently published audit of NHS adrenal surgical practice the cross-speciality group make the following recommendations:

1. Centres undertaking adrenal surgery should offer seamless, timely and expert care from presentation to diagnosis and management of adrenal tumours with all core members of the multidisciplinary team (MDT - see '5' below) available.

2. Most adrenal disease is benign, but functioning endocrine syndromes are complex and require high levels of expertise for management. Therefore early referral and diagnostic work up to a centre is in the best interests of patients to allow the timely management with

appropriate investigations and interpretation by the core MDT members (see below).

3. Endocrine Work up should be standardised:

- All patients undergoing adrenal surgery should have been investigated for cortisol autonomy, catecholamine excess where indicated, and if hypertensive primary hyperaldosteronism.
- All patients with suspected ACC should have pre-operative ^{18}FDG PET in addition to axial imaging, and be investigated for multiple steroid abnormalities.
- All patients having adrenal surgery that may result in adrenal insufficiency need counselling and education with appropriate safety measures in place ahead of discharge from hospital.

4. Triggers to MDT referral:

- All cases where adrenal surgery is contemplated.
- Suspected case of ACC.
- Suspected or proven phaeochromocytoma/paraganglioma.
- Any case of Cushing's syndrome due to adrenal disease, or where adrenal surgery is contemplated.
- Any case of primary hyperaldosteronism where adrenal surgery is considered (before localization/lateralisation procedures are undertaken).
- Any case of adrenal incidentaloma where there is lack of clear characteristics of benign disease.

- Progressive growth in non-functioning adrenal tumours according to MDT protocols.
- Any patient with known adrenal pathology undergoing surgery for other reasons.
- Any patient who has already had one adrenal gland removed who is undergoing surgery where the remaining adrenal gland is at risk.
- All cases that have a possibility of being due to genetically-driven disease.

5. The MDT must comprise a Core team

    Adrenal Surgeon that performs >6 adrenalectomies/year (see '8' below);

    Endocrinologist with expertise in adrenal disease;

    Radiologist with expertise in adrenal imaging;

    Pathologist with expertise in adrenal disease;

    MDT co-ordinator;

    Endocrine Nurse Specialist;

- Extended team should include

    Anaesthetist with an interest in adrenal disease anaesthesia

    Oncologist

    Interventional radiologist with adrenal vein sampling expertise

    Nuclear medicine physician/radiologist

    Clinical Genetics physician

    Chemical pathologist with expertise in endocrine assessments;

6. All patients undergoing surgery should be managed by anaesthetists expert in the management of patients with adrenal disease. Early anaesthetic involvement is recommended especially in functioning tumours.

    I. Hospitals wishing to undertake adrenal surgery should designate 2 or more adrenal anaesthetists. It is recommended that they should be involved in the pre-operative preparation protocol in conjunction with the surgical and endocrinological teams and be familiar with the perioperative problems associated with functioning adrenal tumours.

    II. Early anaesthetic involvement is particularly recommended in phaeochromocytomas and extra adrenal catecholamine secreting tumours. Cushing's syndrome patients may also represent a perioperative challenge where early anaesthetic may be beneficial.

7. Adrenal surgical services should have perioperative protocols for the pre- and post-operative management of phaeochromocytoma patients where necessary including ICU provision.

8. All patients should be jointly managed by adrenal surgeons, endocrinologists and anaesthetists according to departmental protocols during the surgical admission.

9. Adrenal surgical operations should be performed by surgeons that perform a minimum of 6 adrenalectomies a year; This is to be seen as a baseline rather than a target.

- Adrenal surgeons must be appropriately trained in the current minimal access surgical techniques. When operative volume permits it is recommended that two surgeons be involved within a service if necessary operating in tandem where required to maximise exposure. It is envisaged that by applying the minimum numbers rule that there will be a significant reduction in the number of surgeons undertaking adrenal surgery so increasing adrenal surgeon experience of those with a genuine interest in this surgery.
- Adrenal surgeons must log their activity in the national adrenal surgical registry.

10. It is recommended that surgery for adrenocortical carcinoma or suspected ACC must be discussed at the MDM and treated in a centre where oncological expertise in the management of ACC is available. Given the rarity of ACC this approach stands the greatest chance of improving outcomes in this highly challenging condition, and gives the greatest chance of patients accessing latest diagnostic, management and research opportunities. All ACC should be managed and followed as a hub and satellite approach.

11. Post operative endocrinological follow up may be undertaken at the centre undertaking surgery in the first instance and continued with local

follow-up and satellite management from the hub as appropriate on an individualized basis.

12. Follow-up should be individualized with clear communication pathways from local hospitals to centres and back. Clear pathways for referral to and discharge from the centres are needed.

13. After adrenal surgery all patients should be discussed at the adrenal MDT and follow-up plans previously instigated checked.

The authors commend these recommendations to all medical practitioners involved in the management of patients with adrenal disease.