Anaesthesia for adult renal transplant surgery: survey of current practice in the United Kingdom

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National service evaluation study (September 2014 – February 2015)
23 adult RT centres in the UK >> **20 centres** responded

Individual practice survey

25 SurveyMonkey MCQs on various perioperative practice domains

122 specialists from 20 centres responded

95 Consultants, 1 Associate specialist, 26 Specialty trainees

- Intraoperative monitoring**
- cardiac output / GDFA: **21%**; non-invasive (ODM, ClearSight) **17%**, pulse contour analysis (LidcoRAPID, Vigileo) **4%**
 - ART/invasive BP **14%**, CVP **84%**
 - miscellaneous: temperature **99%**, NMT **77%**, ST segment **62%**,
- Intraoperative analgesia**
- fentanyl boluses **47%**, fentanyl + morphine boluses **25%**,
 - remifentanyl infusion followed by fentanyl or morphine bolus **29%**
 - routine paracetamol IV **46%**

- Intraoperative muscle relaxation and anaesthesia maintenance**
- atracurium / cisatracurium **95%**, rocuronium **5%** (mainly for RSI in hyperkalaemic patients); • DES **49%**, SEVO **33%**, ISO **14%**

- Specific medication use to improve graft function**
- mannitol **57%**, furosemide **33%**, low-dose dopamine infusion **20%**
 - mainly determined by local policy and/or surgeon’s preference
- Hemodynamic targets for reperfusion stage (equivocal / variable)**
- CVP: 10-12 mmHg – **50%**, surgeon’s opinion / graft appearance **25%**, also: “trend rather than sole number”, “particular increase from initial”
 - some respondents not relying on CVP, but rather cardiac output monitor
 - MAP: 70-80 mmHg – **23%**, surgeon’s opinion / graft appearance **37%**, depending on patient’s baseline **73%**

- Fluid choice for maintenance and volume loading**
- Hartmann’s/Ringer lactate **54%**, NaCl 0.9% - **53%**, starch solution **0%**
- Postoperative analgesia**
- Recovery: fentanyl **70%**, morphine **26%**, IV paracetamol **43%**
 - Ward: IV/PO paracetamol **100%** (94% - regular), “usual” NSAIDs **0%**, nefopam - **1 response**
 - opioid PCA **98%**, mainly fentanyl 20mcg / 5min - **49%**
 - Regional / local: • LA wound infiltration by surgeons **42%**,
 - single shot TAP block **43%**: by anaesthetists - **34%** (mainly postoperatively under US guidance), by surgeons (direct vision) - **9%**
 - catheters used rarely – TAP 3%, wound 7%

- Departmental policies**
- policy known to be available - **77%** of respondents
 - adhered to – completely **48%**, partially **25%**
 - opinion on policy quality: adequate **59%**, improvement potential **15%**, poorly written / not research driven / misleading – **3%**
 - useful guidance for all anaesthetic grades **83%**, aids trainee adaptation / increases confidence / aids setting standards of training **20%**

Comparative analysis of departmental policies

18 out of 20 centres admit having a policy

11 centres shared their policies for comparative analysis

DISCUSSION: Along with similarities, numerous differences exist, both between centres and between specialists of the same centre.

- Neuromuscular transmission monitored only by 77% and not highlighted in all policies. To avoid inadequate relaxation (with risk of graft expulsion, anastomotic rupture) and end-of-anaesthesia neuromuscular blockade reversal, 100% inclusion of NMT monitoring in policies and compliance advisable.
- CVP / MAP targets for reperfusion are equivocal, and approached to in combination with graft appearance, surgeon's opinion, etc., not as sole numbers.
- There is also a notable trend to use cardiac output monitoring / GDFA.
- Rocuronium used by 5% of respondents in view of reversibility with sugammadex, mostly for hyperkalaemic patients’ RSI. Recommendation to date for RT patients is equivocal. Evidence of safety for rocuronium in ESRD when reversed with sugammadex has been growing recently.

CONCLUSION

RT anaesthetic management in the UK is in line with current evidence. Departmental policies to date are welcomed by the majority of anaesthetists, found to be helpful and adhered to, however potential for their development and standardization exists. Lack of solid evidence for all domains of perioperative renal transplant management is complicating creation of an “ideal” policy.