"From the Trough"

Perioperative Interest Group Notes

The imperfect opinions in these reports are only meant to stimulate discussion: - they should not be considered a definitive statement of appropriate standards of care.

Date 21/10/21

Attendance : Lisa Doyle, Gabrielle Papeix, Mark Davies, Blair Mumford, Jennifer Mackney, Amanda Taylor, Rhys Thomas, Pragya Ajitsaria, Paul Healey, Mike Taylor, Steve Pickering, Steve Bruce, Ben Piper, Harry Bell, Claire Wohlfarht, Daniel Zardawi, Phil Beames.

TOPIC 1: Kartagener's Syndrome

66yo male for colonoscopy for polypectomy.

Background

- Kartagener's Syndrome
  - Bronchiectasis
    - Chronic SOB, ok on flat
    - FEV1 1.65 (50%), FVC 2.71 (63%) ratio 61% TLCO 54%
  - Situs inversus totalis
- IHD
- HTN & Dyslipidaemia

Issues

- 2019 critical illness
  - Life-threatening pulmonary haemorrhage
  - Failed intubation due to bleeding -> surgical cricothyroidotomy
  - 2/12 ICU stay, 17 days ECMO, DVT, IVC filter.
  - Multiple tracheal/bronchial clot retrievals and bronchial artery embolization.
- Recent Colonoscopy/ICU stay
  - Failed colonoscopy in private hospital due to difficulty passing scope.
  - Patient reported anaesthesia complication and ICU stay post-procedure
  - Anaesthetic chart – THRIVE and sedation, nil concerns
  - ICU d/c summary – precautionary admission, nil adverse events.

Discussion

- **What is Kartagener's Syndrome?**
  - Autosomal recessive, multiple possible genetic pathways known, some unidentified.
  - Primary ciliary dyskinesia leads to:
    - Neonatal distress syndrome
    - Frequent sinus and middle ear infections, hearing loss
    - Frequent resp infections, leading to bronchiectasis
    - Infertility
  - Situs inversus totalis (but organs unaffected in other ways)

Plan

- Proceed to colonoscopy
- Suggest right lateral position to aid scope passage.
- If more major surgery required consider pulmonary rehab, nutrition optimization and respiratory review for bronchiectasis.

TOPIC 2: Myasthenia Gravis and multi-level spinal surgery

63yo male for removal of L3/4 hardware, L1/2 and L2/3 extreme lateral interbody fusion, posterior fixation T10 – pelvis. Multiple previous surgeries. Severe pain and dysfunction.

Background

- Myasthenia gravis
    - Bulbar symptoms, swallowing difficulty, fatigues with mobilization
    - Relapse in 2019 when steroids weaned below 30mg/d pred.
    - No spirometry available
- IHD
    - Angiogram 2019 - 40% mid-LAD stenosis (performed for atypical chest pain)
    - TTE – nil major abnormalities
- HTN & Dyslipidaemia

Issues and discussion:

- **Should surgery proceed?**
    - Reason for OT unclear during meeting.
    - High dose steroids -> concerns about bone quality and wound healing

- **Further myocardial perfusion imaging?**
    - 40% mid LAD lesion previously.
    - Low exercise tolerance due to MG and spinal issues, unable to quantify
    - Will need to cease aspirin perioperatively
    - Unlikely to change management.

- **Cell salvage?**
    - Nil obvious contraindications
    - With multi-level, long duration spinal surgery patient seems at high risk of significant bleeding.

- **Level of postop care?**
    - Preoperative lung function studies required
    - Factors predictive of postop MG crisis and requirement for postop vent (UpToDate)
        - Vital capacity <2
        - Duration of MG greater than 6yrs
        - Pyridostigmine dose > 750mg/d
        - History of chronic pulmonary disease
        - Preoperative bulbar symptoms
        - History of myasthenic crisis
        - Intraoperative blood loss > 1000ml
        - Serum anti-acetylcholine receptor antibody >100nmol/ml

        - More pronounced decremental response (18-20%) on low frequency repetitive nerve stimulation.

Plan

- ICU level pending lung function studies
- Discussed with surgeons.
    - If cell salvage is feasible/required - awaiting response
    - Indication for surgery and high-risk nature of patient – extensive discussions about this patient at spinal MDT. Two surgeons involved in case. Aware of the risks. Surgery felt to be necessary.
- For discussion with cardiologist - requirement for stress imaging, and if postoperative ECG or troponin screening indicated.

TOPIC 3: Polymorbid patient for patella hardware removal

78yo male with patella ORIF in 2020 after MVA. Hardware now painful, for removal.

Background:

- Significant respiratory disease
    - FEV1 30%, FVC 70%
    - Recent respiratory physician review – 'as good as he gets'
- IHD – further details unclear. ECG normal
- Upper airway cancer – treated with radiotherapy.
- Bladder tumour – local radiotherapy, quiescent
- Post-traumatic epilepsy after fall from horse decades ago.
- Distant PE
- METS 3
- Iron deficiency anaemia
- Frail

Issues and discussion

- **Should surgery proceed**
    - Reasonable indication for surgery
    - Uneventful surgical episode last year, reassuring
- **Optimisation of lungs possible?**
    - ARISCAT score = low risk (0.9%) for postoperative pulmonary complications
    - Given he has been reviewed by the respiratory physician recently, nil further optimisation felt possible.
- **Anaesthetic technique?**
    - Patient amenable to spinal anaesthetic. Good option.

Plan and Requested Actions:

- Proceed to OT.
- Normal ward-based care assuming nil complications intraop.

TOPIC 4: Skull base meningoencephalocoele

Patient with unilateral hearing loss, rhinorrhoea, and eye discharge.
Diagnosed with CSF meningoencephalocoele on CT. For craniotomy and resection.

Background

- Respiratory disease
    - Asbestosis and COPD
    - FEV1 <40%, FVC 70%, DLCO 40%
    - CAP 2021 -> prolonged ventilation in ICU
    - Recurrent pneumothoraces requiring talc pleurodesis 2017. Postoperative delirium/POCD and CO2 retention requiring re-intubation.
    - TTE '21 – nil cor pulmonale.

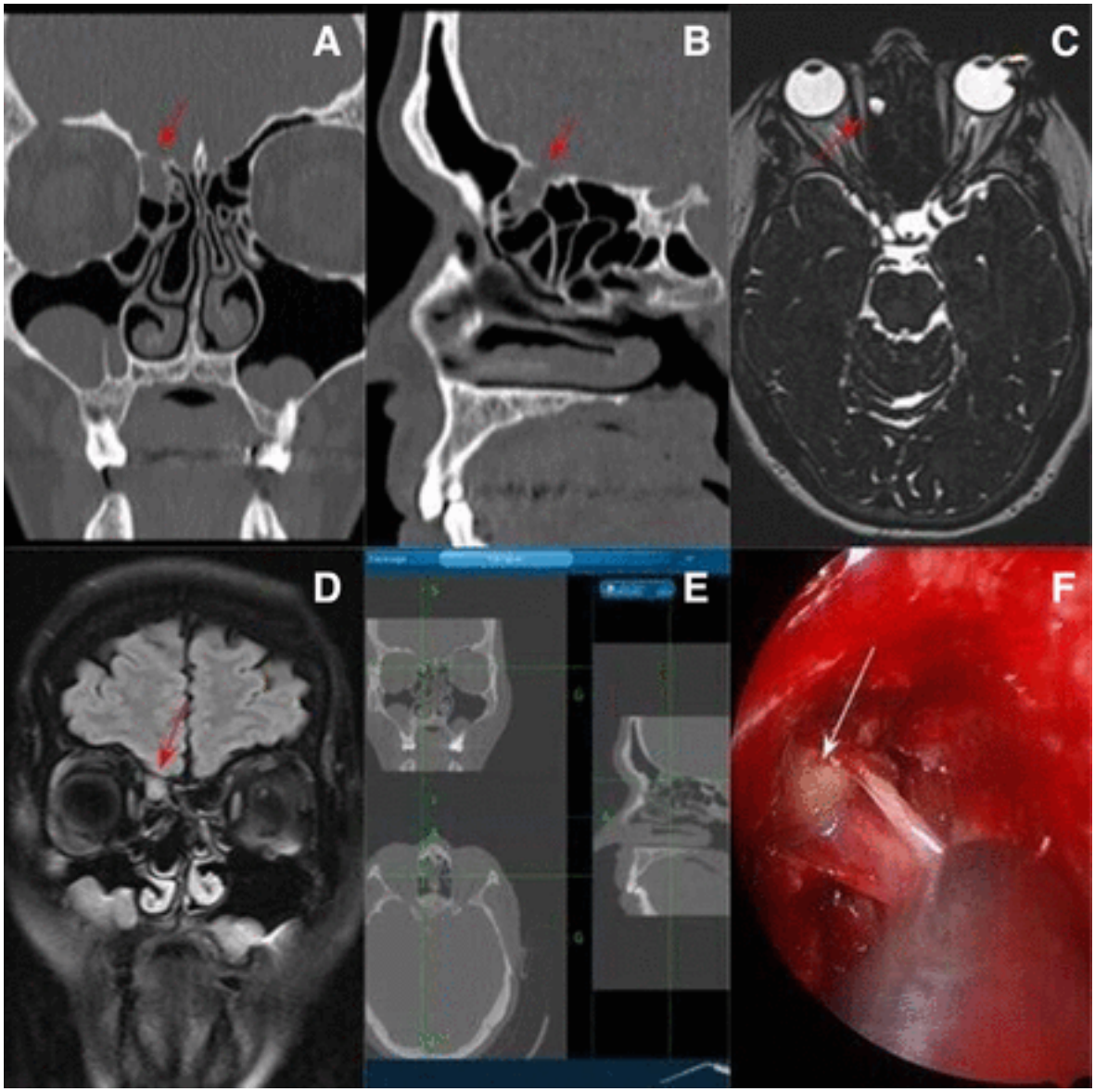
- HCV + but no viral load. Spontaneously cleared?
- 4WW, independent with ADLs

Issues

- **Severe respiratory disease**
    - Recent antibiotics and steroids
    - Hyperinflated in clinic, SpO2 92%. Chest clear and expiratory phase normal.
    - BODE 4 (60% mortality at 52mths)
    - Gold class 3B

Discussion

- **What is a skull base meningoencephalocoele?**
    - Rare
    - Occur after head trauma (relevant for this man), can be congenital or rarely reported to develop secondary to benign intracranial hypertension.
    - Trans-sphenoidal, transethmoidal, spheno-orbital, sphenoethmoidal or sphenomaxillary.
    - Commonly present with nasal obstruction, CSF rhinorrhoea, intranasal polyps, recurrent meningitis, and headaches.
    - Often combined approach, with neurosurgeons and ENT.
    - Treated with endoscopic trans-nasal approach (good access to skull base) or with open surgery.
    - Case report: https://casereports.bmj.com/content/13/5/e234703

- 

Picture shows transethmoidal meningoencephalocoele

- **Opportunities for optimisation?**
    - Recent abx and steroids were in preparation for this surgical episode. Further delay to OT unhelpful.
    - Patient at high risk of postop pulmonary complications and ventilation
    - Optimised.

- **Alternatives to surgery?**
    - No

Plan:

- ICU 3, assuming nil intraoperative complications
- Proceed to OT
- Lung protective ventilation strategies given likely severe bullous disease.
- Risk of tension pneumothorax intraoperatively.

TOPIC 5: New diagnosis of Interstitial Lung Disease

79-year-old man for consideration of open vs endovascular AAA repair.

Background:

- 5.1cm infra-renal AAA
- OA knee - awaiting TKR
- Previously discussed at PIG meeting

Issues

- Desaturated significantly during CPET test: 96-84%. Asymptomatic
- Limited by knee pain, no dyspnoea.
- Spirometry - restrictive ventilatory defect. FEV1=2.28 (75%), FVC= 2.72 (67%)
- CXR - bilateral pulmonary infiltrates
- CT chest showed fibrosing interstitial lung disease - new diagnosis

Discussion

Suitability for open procedure?

- Awaiting respiratory review but consensus that this patient is optimised
- Endovascular approach would be preferable
- Open AAA repair reasonable in with effective regional analgesia and postoperative care

Post-operative Disposition

- ICU 2 for open procedure

Plan

- As above, await respiratory consult and surgical plan.

TOPIC 6: Revision TKR

70-year-old lady for revision TKR.
Fall and periprosthetic distal femur fracture in 2020

Background:

- R Arm Amputation in 2015 - Necrotising Fasciitis. Long, complex ICU admission
- Recurrent falls - multifactorial aetiology; UL amputation, charcot foot, hypoglycaemia, and knee locking.
- BMI 44
- Chronic pain - Migraines, phantom limb pain, and CRPS, medical marijuana and PRN opioids.
- Subclinical hypothyroidism
- TIA 2019
- Chronic iron deficiency anaemia - managed by GP, regular Fe infusions

Issues:

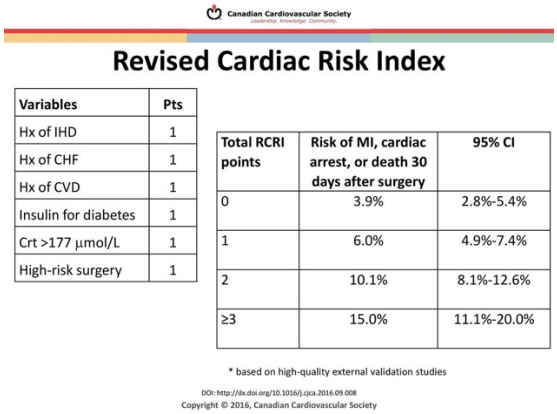
- IHD
    - 2 previous AMI with minimal symptoms.
    - Sestamibi in 2019 showed a small area of fixed perfusion defect in LAD territory.
    - Ongoing stable angina.

    - Lifelong DAPT
    - Clinically bilateral pitting oedema to mid-shins
    - 2-pillow orthopnoea.
    - Last echo 2020 normal biventricular function.
- IDDM
    - HbA1c 7.9%.
    - Severe bilateral peripheral neuropathy.
    - Frequent hypoglycaemic episodes.
    - Regular endocrinologist review.
- Wheelchair-bound - since femur fracture last year.
    - NDIS care-package in place, requires assistance with all ADL's.
    - Physiotherapy included in package, engaging with physio recently.
    - Previously able to walk 50m on flat

Discussion:

Risk assessment

- High risk patient and complex operation
- RCRI = 4



Canadian Cardiovascular Society

Revised Cardiac Risk Index

Variables	Pts
Hx of IHD	1
Hx of CHF	1
Hx of CVD	1
Insulin for diabetes	1
Crt >177 µmol/L	1
High-risk surgery	1

Total RCRI points	Risk of MI, cardiac arrest, or death 30 days after surgery	95% CI
0	3.9%	2.8%-5.4%
1	6.0%	4.9%-7.4%
2	10.1%	8.1%-12.6%
≥3	15.0%	11.1%-20.0%

* based on high-quality external validation studies

DOI: http://dx.doi.org/10.1016/j.cjca.2016.09.008

- NSQUIP - above average for all variables, 70% discharge to nursing home/rehab facility.
- Risks conveyed to patient, wishes to proceed. States she would never want to be in a nursing home long-term.

Cardiac optimisation

- Discussed at cardiology MDT - high-risk, on optimal therapy
- Echocardiogram - IHD, orthopnoea and peripheral oedema.
- Symptoms could be attributed to BMI, deconditioning, and immobility.

Diabetes

- Reasonable HbA1c, unlikely to improve
- Hypoglycaemic episodes ongoing
- Preoperative endocrine consult - HbA1c above cut-off value for major joint surgery
- High-risk for perioperative joint infection

Medical Marijuana

- Prescribed by GP. Patient declining cessation in hospital
- Endocrinologist recommended cessation - falls and hallucinations
- Pharmacy contacted and IPU form completed

Decreased Exercise Tolerance

- Discussed with surgeon, requests that patient can mobilise preoperatively
- Rehabilitation will be difficult with current level of immobility/deconditioning

- Referred to Kaden centre for prehabilitation in conjunction with Dr Jen Mackney and patients own physiotherapist.

Plan

- Postpone for 6 weeks pending prehab and endocrine review

TOPIC 7:

70-year-old man for open AAA.
6cm supra-renal aneurysm. Asymptomatic

Background

- Carotid Disease – under surveillance. No CVA/TIA
- Non-hodgkins lymphoma

Issues

- IHD
    - Recent angiogram in Private hospital – chronic occlusion of RCA with collaterals. Mild to moderate LAD disease.
    - Works as a cleaner. DASI 7.6 MET's
    - Non-specific infero-lateral ST depression (1mm) on baseline ECG
- Peripheral vascular Disease – aorto-iliac stents. Not suitable for EVAR
- Complex surgery
- Current Smoker – 28 pack year history. Normal Spirometry
- Chronic Renal Impairment – Stage 2a

CPET

- Sub-maximal test – HRmax152 (80%pred). Limited by assessor due to ECG changes.
- Up-sloping infero-lateral ST depression during exercise
- 1mm ST depression during recovery
- No chest pain/dyspnoea
- Patient happy to continue exercising.
- Peak VO2 = 1.5ml/kg/min
- AT 10.3ml/kg/min
- Nadir VE/VCO2 36.4
- HRR = 11bpm

Sestamibi

- Requested due to sub-maximal CPET and ECG changes
- Reversible ischaemic changes in mid basal-inferior wall
- Reduced ejection fraction (40%) post-stress

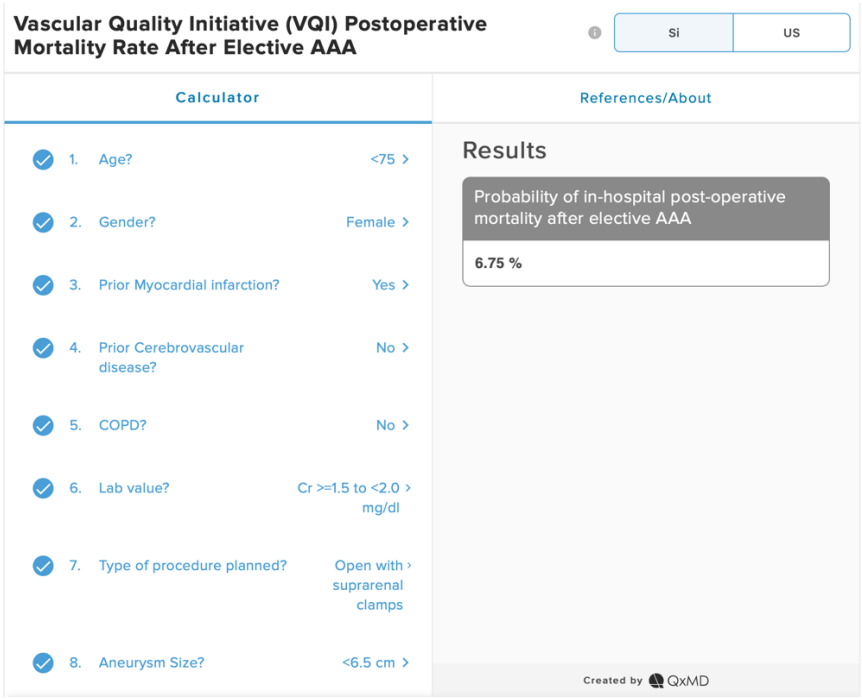
Urgent cardiology appointment via Rapid Access clinic

- Angiogram obtained from Private hospital (As Above)
- Sestamibi should be interpreted in the context of a chronically occluded RCA
- No angina despite good exercise tolerance
- Echocardiogram – normal LV systolic function and no regional wall motion abnormalities
- Nil further interventions required.

Discussion

Increased risk of cardiovascular and renal complications

- RCRI 3 - 15% risk of MI, cardiac arrest, or death within 30 days of surgery
- Vascular Quality Initiative index:



- Existing renal impairment, supra-renal clamp, and predicted, complex surgery - increased risk of post-operative renal failure requiring long-term dialysis

Plan

- Discussed with surgeon and procedural anaesthetist - decision made to bring patient and family back to clinic for shared-decision making.
- Convey increased risks outlined above and allow for family discussion before proceeding.