"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 29/7/21

TOPIC 1: Obesity Hypoventilation for Laminectomy

64-year-old male for L4 laminectomy. Cancelled in anaesthetic bay 3/12 ago with SpO2 85% and HCO3 37

Background

- Lower limb neurology due to spinal canal stenosis
- OSA/OHS - New diagnosis after last attempted surgery
- Now on BiPAP (IPAP 18, EPAP 10, backup RR 10), daytime SpO2 improved to ~90%, ESS reduced
- Obesity BMI 44
- Distant ex-smoker, nil COPD
- Mild asthma, distant puffer use.
- HTN
- AMI 2014, medical mx, now discharged from cardiologist care

Issues

- unoptimised OHS?
- ABG in clinic - PaCO2 55, PaO2 63, HCO3 30

Discussion

- **Should procedure be postponed?**
  - Significant lower limb neurology, neurogenic claudication, and numbness
- **Possible optimisation**
  - May require O2 addition to BiPAP to further stimulate respiratory drive (although recent overnight oximetry shows SpO2 ~90% on average).
  - Consultation and further adjustment of BiPAP may be possible while inpatient post-operatively
  - TTE to assess for cor-pulmonale due to OHS (difficult to assess due to limited mobility due to lower limb neurology, obesity, and chronic lower limb oedema).

Plan

- TTE
- Proceed with OT
- Respiratory AT agrees with plan to proceed and asked to be notified on admission so that they can provide input postop.

TOPIC 2: Multiple comorbidities for THR

61-year-old male for THR

Background

- BMI 56
- OSA – severe AHI 86, can't tolerate CPAP
- Chronic back pain
- Hiatus hernia

Issues

- OSA
    - HCO3 normal, unlikely to have obesity hypoventilation syndrome
    - SpO2 on RA 97%
    - Patient cannot tolerate mask
    - Limited scope for optimisation apart from weight loss

- BMI 56
    - Likelihood of preoperative weight-loss small.
    - Evidence for weight loss strategies points to gastro-reductive surgery, but extremely limited public availability (especially with absence of metabolic syndrome) and expensive in the private sector.
    - There is merit at face value for preoperative weight loss, but no clear evidence to suggest improved outcomes.
    - Unusual that patient was offered surgery at this BMI. See table below, obesity and smoking only co-morbidities with RCT evidence to support increased perioperative risk.

- SOBOE
    - Reviewed by cardiologist. Sestamibi normal. TTE showed diastolic dysfunction (diuretics commenced)
    - SOB thought to be multifactorial – diastolic dysfunction, obesity, deconditioning.
    - Nil further cardiac investigations thought necessary by cardiologist

2 Summary of patient comorbidities, their associated risk, and evidence for pre-operative interventions to attenuate comorbidity risk for total knee arthroplasty (TKA)

Comorbidity	Risk in TKA	Evidence for pre-operative interventions
Other joint disease	Presence of contralateral knee pain: 4.1 times risk (95% CI, 1.5–11.5) of poor self-reported function post-TKA[55] Presence of other joint disease: arthritis of the ipsilateral foot/ankle, neck or back associated with worse pain/function scores post-TKA[56]	Not supported by evidence from multiple randomised trials and systematic reviews[57–65]
Mental health	Lower pre-operative mental health scores (Short Form-12, Short Form-36)[19,23] and Hospital Anxiety and Depression[18] scores associated with dissatisfaction post-TKA	No randomised trial evidence available
Cardiac disease	History of myocardial infarction: increased 90-day mortality risk (HR, 3.46; 95% CI, 2·81–4·14)[75] History of heart failure: increased 45-day mortality risk (HR, 2.15; 95% CI, 1.71–2.69)[76]	No randomised trial evidence available; general international guidelines available[77]
Respiratory disease	Sleep apnoea associated with higher risk of aspiration pneumonia (OR, 1.41; 95% CI, 1.35–1.47) and requirement for intubation/ mechanical ventilation post-TKA (OR, 5.20; 95% CI, 5.05–5.37)[84]	No randomised trial evidence available; general international guidelines available[85–87]
Diabetes	Higher risk of deep infection (OR, 1.61; 95% CI, 1.38–1.88), aseptic loosening (OR, 9.36; 95% CI, 4.63–18.90),[94] and moderate/severe functional limitations 2 years post-TKA (OR, 1.71; 95% CI, 1.26–2.32)[95]	No randomised trial evidence available; retrospective evidence available incorporating compliance with international guidelines[101]
Obesity	Higher risk of deep infection (OR, 2.38; 95% CI, 1.28–4.55) and overall revision post-TKA (OR, 1.30; 95% CI, 1.02–1.67)[105]	Limited support from two pilot randomised trials[109]
Peripheral vascular disease	Higher risk of 90-day mortality (HR, 1.49; 95% CI, 1.20–1.87) and deep infection (HR, 1.13; 95% CI, 1.01–1.27)[75]	No randomised trial evidence available; international guidelines available[113]
Smoking	Higher risk of any post-operative complication (RR, 1.24; 95% CI, 1.01–1.54) and peri-operative mortality (RR, 1.63; 95% CI, 1.06–2.51)[116]	Randomised trial evidence available, incorporated into general evidence from a systematic review[123]

HR = hazard ratio; OR = odds ratio; RR = relative risk.

https://www.mja.com.au/system/files/issues/210_03/mja212109.pdf

Plan

- Proceed with surgery
- Encourage compliance, where possible, with CPAP
- ICU level 3
- Neuraxial technique and minimal sedation recommended.

TOPIC 3: Frail patient for TKR

80-year-old female for TKR. Previously postponed due to lower limb infections. Dermatologist input - legs as good as can be.

Background

- Widespread OA with severe kyphoscoliosis
- Mild Asthma, distant ex-smoker, FEV1 70%, FVC 85%, ratio 74%
- Hiatus hernia
- Low ex tolerance <4 METS
- CFS 6, always requires 4WW and significant assistance with ADLs
- TTE - mild PHTN, EF=61%
- Iron deficiency anaemia

Issues

- Iron deficiency anaemia
- Frailty, concerns about recovery.

Discussion

IDA

- Additional investigations required?
    - Longstanding since 3yrs.
    - GP has been treating with iron but nil additional investigations
    - Likely due to inadequate intake, but GI malignancy should be excluded (unlikely but endoscopies usually part of the routine workup)
- Stress myocardial imaging - low exercise tolerance but nil active cardiac conditions/symptoms and RCRI class 1, so not indicated as per the ACC/AHA guidance.
- Should surgery proceed?
    - Extensive risk discussions with patient and family members. Appropriate to proceed as this is in line with the patient's values and understanding.

Plan

- Speak with GP regarding Fe deficiency - are they satisfied that this represents poor intake rather than a more sinister cause requiring investigation. If so, proceed with further Fe infusion and surgery.
    - Update - GP only took over care ~6/12 previously. Feels that further investigation is warranted.
    - Postpone surgery while awaiting above.

TOPIC 4: Splenectomy with current URTI

25 year old patient for laparoscopic cholecystectomy and splenectomy due to hereditary spherocytosis.

Background

- Hereditary spherocytosis
    - Pigment gallstones and biliary colic
    - Symptomatic splenomegaly
    - Hb drop from 132 to 107 over last 3 weeks
    - Recurrent severe haemolytic crises - Admission this year with nil precipitant, Hb drop to 40g/L
    - Pre-splenectomy vaccinations up to date
- Anti-E antibodies (due to recurrent blood transfusion)
- Smoker

Issues:

- Current URTI
    - COVID negative
    - Improving last 2 days, almost normal

Discussion

- What is hereditary spherocytosis?
    - Autosomal dominant, abnormality of red cell membrane structural proteins
    - Classically diagnosed in children with haemolytic anaemia after Parvovirus infection, but may be asymptomatic

    - Variable severity.
    - Precipitated by infection
    - Splenic red cells sequestered in spleen, shortening T1/2 to as little as 10d.
    - Anaemia, splenomegaly, jaundice, increased reticulocyte count and spherocytes on peripheral blood smear.
    - Gallstones common, occurring in 50% of HS patients by 50yo.
    - Treated symptomatically, with folic acid, transfusions, vaccinations (same as for splenectomy), cholecystectomy and splenectomy, as needed.
    - Risk of overwhelming post-splenectomy infection (OPSI). Pneumococcal vaccination required preop. Prophylactic antibiotics used for at least 3 years, lifelong in some cases. Patients always carry emergency antibiotics with them, due to risk of rapid progression of sepsis.
    - Splenectomy also carries a long-term thrombosis risk.
    - Spherocytes persist in the blood after splenectomy, but their lifespan is normalised.

- Should surgery proceed given current URTI?
    - Frequent URTIs in the community at present, may cause repeated delays to surgery.
    - ARISCAT scoring (assuming conversion to open abdominal procedure) suggests proceeding within 1 month of URTI in *this* patient would be associated with high risk (~44%) risk of POPC, dropping to moderate risk (~13%) thereafter.
    - Severity of haemolytic crisis this year is motivation to proceed.

Plan:

- Proceed with surgery, as discussed with the treating surgeon.
- Phone call to procedural anaesthetist

TOPIC 5: Consultation for Open v. Endovascular Distal Aortic Reconstruction

62-year-old indigenous lady with complete occlusion of the distal aorta.

Background

- PVD
    - Thrombosed distal abdominal aorta and occlusive iliac artery disease
    - Claudication and lower limb ischaemic neuropathy
    - 50m on flat with 4WW -> rest
- COPD – moderate, NYHA class III, nocturnal cough, ceased smoking 1/12 ago, symptoms improving.
- NIDDM – good control
- PAF/flutter – on rivaroxaban and beta blocker
- HTN and Dyslipidaemia
- Chronic back pain
- Lifelong high WCC, up to 23, cause unknown
- Obesity

Issues

- Incidental finding of adrenal lesion
    - Seen on CTPA done in context of chest pain and rapid AF (self-resolved). CTPA negative
    - CT images suggest consistent with adrenal adenoma

Discussion

Adrenal lesion

- Common pathology – prevalence of 7% of people over 70yo (as per BMJ best practice)
- Investigate - Before non-emergency surgery, yes. Especially this surgery with consequent physiologic derangement.
- Need to exclude Cushing's, phaeochromocytoma, and primary hyperaldosteronism
- Endocrine team requested - Plasma metanephrine and catecholamines, a dexamethasone suppression test, renin:aldosterone ratio, and DHEAS

WCC

- Haematology AT suggests could be due to obesity and smoking.
- Further pathology tests requested to exclude myeloproliferative disorder although thought unlikely.

Open v. Endovascular procedure

- For open procedure: SORT 2.59% risk of death (not adjusted for clinician assessment), ARISCAT 13.3% (moderate) risk of POPC, Gupta postop pneumonia 7.3% NSQIP risk of serious complications 16% v. 23% with open procedure.
- Proceed with open procedure if desired for surgical reasons, given the above risk indices.

TOPIC 6: Suspected Ovarian cancer v. Decompensated liver failure

57-year-old female with an ovarian mass for Investigation.

Background

- Liver disease
    - Long history of untreated HCV
    - Now diagnosed with Childs Pugh B liver cirrhosis – albumin 20, bilirubin 64, platelets 57.
    - Recent admission with decompensation – severe hydrothorax treated with diuretics.
    - Antivirals recently commenced but not with curative intent.
    - Letters suggest gastro teams and gynae team all aware of both issues.

- Ovarian mass
    - Incidental finding although some abdominal discomfort
    - 7.7cm2
    - Ca125 274 (could be elevated due to liver disease)

- Asthma
- PAF

Discussion

Should surgery proceed?

- Cirrhosis surgery risk score (http://www.vocalpennscore.com) suggests:
    - 30d mortality of 7%
    - 6/12 mortality 19%

- Phone call to gastroenterology team:
    - High risk of haemorrhage (very difficult to control) with any abdominal surgery, especially laparoscopic, due to portal hypertension.
    - High risk of postoperative decompensation, encephalopathy, infection, and wound breakdown.
    - Patient requires urgent variceal banding, but this will worsen portal hypertension.
    - Delay of 2/12 to enable gastroscopy, ongoing antiviral treatment, anti-portal HTN treatment, repeat imaging, and possible mild improvement.

- General opinion at the meeting was that the real risks highlighted by the gastroenterologist superseded the theoretical risks of a delayed diagnosis of a possible ovarian cancer (patient unlikely to be a candidate for radical curative surgery or chemotherapy). See attached summary article.
- TIPS (or similar procedure) may be an option to offload portal hypertension prior to consideration for gynae surgery – for further discussion after 2/12 delay.