



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 2<sup>nd</sup> June 2016.  
Publication date 9th June 2016.

#### **TOPIC 1:            *Incidental anaesthesia in Pregnancy***

A patient with G4P3 twins at 25 weeks with a recent history of E.coli sepsis at 18 weeks now presents with premature rupture of membranes. Babies estimated at 900grams. Steroids have been given. Urology requests change of stent within 2 weeks due to increased risk of encrustation of stent during pregnancy.

Question:- What advice should be given by anaesthetists?

Discussion: Anaesthetic management and perioperative risk - including precipitating delivery - is more or less the same within the next few weeks regardless of the outcome of discussion between other the specialists. Hence the timing of the procedure appears to be entirely a concern to be resolved between obstetricians and urologists. Suggested management would include perioperative CTG monitoring and before & after ultrasound scan. There is a widespread suggestion that volatile agents are preferred to propofol (TIVA) to maintain uterine relaxation (i.e. the opposite of commonly suggested management in PPH), but the quality of the “evidence” that propofol has significantly different effects on the uterus to volatile agents is questioned.

#### **TOPIC 2:            *Clexane bridging after clopidogrel***

A patient who has regular anaesthetics for urology procedures is normally on clopidogrel. This is his first procedure at this hospital. For some years with each procedure the clopidogrel has been ceased and the patient has been given clexane “bridging” for 6 days pre-operatively. It has been organised by his GP. Is this appropriate? How should it be managed?

Discussion: - The patient's case was discussed at the perioperative cardiology meeting and then with the patient's usual cardiologist. He was unaware of the therapy that had been going on for some years in “his” name. He agreed that it was appropriate just to cease clopidogrel for 5 to 6 days pre-operatively, as desired by the urologist, but no 'bridging' was necessary. Some would argue that clexane, as an anticoagulant, is not an appropriate substitute for an antiplatelet agent, and 'gives a false sense of security'. The recent BRIDGE trial looked at bridging in dewanfarinisation, so is not strictly comparable. It is noted that anticoagulation (usually heparin) is part of therapy for Acute Coronary Syndromes, but this is thought to be an acute hyperthrombotic state (more akin to a postoperative situation), possibly low-flow, and regardless may also not be based on strong evidence... There is an matter of professional sensitivities. A letter to be sent to the GP documenting this 'new' opinion. An explanation was given to the patient, who accepted this management.

#### **TOPIC 3:            *Jehovah's Witnesses***

Although the legal side of managing Jehovah's witnesses perioperatively (for legally competent adults) is reasonably clear, the 'emotional' ramifications are less so. Some discussion notes giving a perspective on some of the non-clinical complexities has been produced (see attached).

Other points:-

- Early parenteral iron should be considered, but Erythropoietin is not commonly used. There is some concern that it may increase recurrence of malignancy, and some evidence of association with increased thrombogenic risk. (This was based on a study in brain trauma patients who are therefore at increased risk already, but would be comparable to perioperative patients.
- When counselling a patient it may be appropriate to advise them to seek guidance from their spiritual advisers, however this should be done by the patient. Direct contact with these groups by hospital staff should not be made. (Apart from anything else, this would be compromising patient confidentiality.)

- A patient's deeply held beliefs (of any sort) may cause 'disabling' psychological challenges for the anaesthetist or other clinician. It would be ethically appropriate for an anaesthetist to refuse to be involved if an alternative clinician was available. In this situation, withdrawal from involvement in the patient's care should be done politely and respectfully. This principle would also apply in other situations where there are issues arising from the interaction between the patient and the clinician that would significantly adversely impact on the clinical performance of the clinician, but where a suitable alternative person was available.



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### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 5<sup>th</sup> May 2016. Publication date May 16th 2016.

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#### **TOPIC 1: Prolonged APTT Preoperatively**

74 year old male admitted following STEMI. Coronary angiography, demonstrated severe triple vessel disease and was planned for CABG. Work-up for surgery demonstrated abnormal coagulation studies with a markedly prolonged APTT. He was investigated further for causes of isolated abnormal APTT.

- There was a normal platelet count, PT and TT. The patient was not on heparin, had no previous bleeding or clotting disorders and had normal liver function. Upper abdominal ultrasound – essentially normal.
- Mixing studies demonstrated abnormal APTT indicating possible inhibitor. *(Isolated prolonged APTT may be due to Factor deficiency (e.g. VIII, IX, XI, XII, vWf.) A mixing test is used (mixing sample plasma with equal volume of 'normal' plasma) to counteract a factor deficiency. If the APTT will not normalise it suggests there is an inhibitor, usually an antiphospholipid antibody such as lupus anticoagulant.)*
- Factor assays – vWF, Factor V, Factor VIII, Factor IX, Factor X – were all normal
- Strongly positive lupus anticoagulant.
- Normal TEG with ACT measured from TEG of 105 (i.e. normal)

**Discussion:** - What is the best way of tracking heparinisation for cardiac bypass? The lupus anticoagulant will interact with ACT testing, and therefore interfere with assessment of degree of anticoagulation for cardiopulmonary bypass. This case was discussed with the haematology team. They suggested:

- Use of anti-Xa levels to monitor heparin levels, but this is not suitable for theatre during bypass due to long turn-around time.
- Use of ACT given it starts with a normal baseline value, suggesting lupus anticoagulant is not causing much interference. Some studies say to double ACT if baseline value is artificially prolonged.
- Use TEG to guide anticoagulation – however this is not validated in this setting.

(update - the case went ahead based on ACT and used 'normal' doses and numbers, went well.)

*(Lupus anticoagulant prolongs APTT, and hence carries the misnomer 'anticoagulant', although in vivo it leads to increased risk of thrombosis. Despite the statistically increased risk of VTE, patients with Lupus Anticoagulant should not be treated differently from normal population unless there is a clinical history of recurrent VTE. The term 'lupus' is also a misnomer as most patients do not have LE. )*

#### **TOPIC 2: Improving Respiratory Status with CPAP and weight loss**

A 45year old man, for mastoid surgery. Plays touch football and works as a scaffolder. Initially managed at a smaller hospital. At that time 166kg and 185cm. Problems on induction due to difficult intubation and airway management, exacerbated by patient size and by some equipment (bed) issues. Problems lead to major desaturation, and procedure was abandoned. Subsequently patient had respiratory review and sleep study performed (the patient was known to have OSA previously investigated and had CPAP device). Sleep study showed highly fragmented sleep.

6 weeks ago after initial episode he has quit smoking and has lost 15 kilos in 4 weeks. Has also changed the CPAP mask and feels a lot better (less somnolence etc etc). Patient himself suggests that although he was using “using” CPAP, perhaps it was not working effectively. Was now rescheduled for surgery (at a major centre). On presentation had acute respiratory symptoms. Patient was encouraged to continue losing weight and postponed a further 4 to 6 weeks. Patient accepted this plan.

**TOPIC 3:            *Cardiac Investigations prior to EVAR***

A 64 year old female for EVAR for an asymptomatic saccular AAA. Typical vasculopath history:- 2TIAs, Peripheral vascular disease with claudication at 100m. Carotid studies show 50 – 60% stenoses. Occasional angina which seems stable but limited exercise. Current smoker. Should the patient have further cardiac evaluation, and if so, why??

**Discussion:** - It could be argued that it won't change anything. But given the multiple risk factors sestamibi would seem to be worthwhile as there maybe ischaemic heart disease amenable to stenting. Regardless, the patient should stop smoking prior to surgery. If the procedure became complex it may lead to open surgery. Clinical management decision-making may be affected by findings on sestamibi. There may be a role for consideration of conservative therapy (i.e.: 6 monthly scanning to identify if the aneurysm is actually changing in size. Should be considered for EVAR under regional anaesthesia. Clopidogrel needs to be changed to aspirin 1 week prior to surgery.

**TOPIC 4:            *Complex Revision Knee Replacement***

60 year old booked for revision of knee replacement. Complex history including all old brain injury, OSA, BMI 51, diabetes (Type 2), hypertension, smoking, in a wheelchair although can walk short distances. Currently treated with pregabalin, gabapentin, Epilim. Past history of "infection in his heart" with only some details from GP summary. Some words suggesting this was constrictive pericarditis.

**Discussion:** - Postpone surgery. Needs full cardiology work up to clarify previous history and current status including potential for optimisation. Medications with pregabalin and gabapentin (simultaneously) suggests that primary care needs to be better coordinated and documented. Multiple risk factors and current functional state suggests that revision surgery may not have a worthwhile improvement in functional state. Should be referred back to orthopaedic surgeons for multidisciplinary meeting for active consideration of appropriateness of this surgery. (The orthopaedic department is in the process of establishing a case review meeting particularly focusing on complex revision surgery such as this case).

**TOPIC 5:            *Colonoscopy in unfit patients***

A patient with severe lung disease is presented for colonoscopy. What is the point of colonoscopy in a patient who cannot have a laparotomy?

**Discussion:** - It is very appropriate to discuss this with the surgeon or endoscopist to clarify the issue. Colonoscopy may be appropriate for either:- (1) Colonoscopic intervention e.g. polypectomy, particularly if this is a cause of ongoing bleeding which may be cured by colonoscopy procedures. (2) Where an obstructing lesion may be discovered that may be suitably treated by a colonic stent. This may be possible even for right sided lesions. (3) Diagnosis of medically treatable disease. (4) (possibly) Diagnosis & prognosis.

CT colonography may be an alternative to colonoscopy for diagnosing mass lesions in patients who are too sick to undertake bowel prep for an effective colonoscopy, however there is little reason to do colonography unless the patient can subsequently have a procedure by colonoscopy. Until recently, access to CT colonography was restricted to patients in whom there had been a technical failure in performing colonoscopy, however this has recently changed.



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### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 7<sup>th</sup> April 2016.  
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#### TOPIC 1:            *Undiagnosed Obesity Hypoventilation Syndrome*

42 year old obese (BMI 46), smoker, for C1-2 fusion for C-spine instability due to an unusual degenerative ligamentous condition. Past history of sickle cell trait and previously anaemic. Patient had travelled from northern NSW, seen shortly before surgery. Had previously been encouraged to stop smoking but was continuing.

Saturation in clinic documented as 95%, although the nurse noted that this was after taking deep breaths. Fine inspiratory creps noted on exam. Spirometry 'OK', but tracing/performance was suboptimal and not adequate to make conclusions. Patient was passed for surgery.

On Day of Surgery was prepared in Anaesthetic bay including arterial line insertion. Then noted that oxygen saturation was persistently "misreading" as 75-80% (despite patient in no distress). It was then noted that she was indeed centrally cyanosed, and Sats were confirmed multiple times with arterial blood gases. No sedation had been given. In retrospect there were subtle clues to a significant chronic respiratory issue on bloods with Hb 168 (despite sickle trait) and a raised bicarbonate. (HCO<sub>3</sub> 41). Ability to raise SaO<sub>2</sub> with voluntary deep ventilation is consistent with Obesity Hypoventilation Syndrome.

Outcome:- Not for surgery. Patient is currently an in-patient being investigated by respiratory, likely very significant sleep/obesity related disorder.

#### TOPIC 2:            *Von Willebrand Disease*

48 year old male booked for removal tension band wires from elbow. Bokie club member with multiple previous traumas and ICU admission for major trauma. History of Von Willebrand's type 1 – diagnosed 1998, no follow up with haematology. Previously given Factor 8 on induction and 24 hours after, as 'non-responsive to DDAVP' (n.b. Found in about 10% of Type 1). Discussed with bleeding disorders Haematologist at the Mater and referred for follow up.

Info about Von Willebrand's disease:

- The most common inherited bleeding disorder, prevalence 1 in 100 but most asymptomatic
- Clinically significant 1 in 10,000
- Quantitative or qualitative defect in vWF
- vWF is a plasma glycoprotein that is involved in platelet adhesion and aggregation and carrier for factor 8 (decreases clearance from plasma)
- Deficiency leads to easy bruising, epistaxis, gum bleeding and bowel bleeding. Can cause prolonged bleeding post op.

Classification:

- o Type 1 (60-80%) – quantitative defect (mild to moderate bleeding disorder)
- o Type 2 (15-30%) – qualitative defect, with subtype dependent on platelet binding, factor 8 binding and size of vWF
- o Type 3 (5-10%) – absence of vWF (severe bleeding disorder)
- o Acquired vWF – associated with autoimmune disease e.g. lupus
- Autosomal inheritance, dominant or recessive depending on subtype
- Lab diagnosis: factor 8 level, vWF, collagen binding assay, EPG
- Can have thrombocytopenia, prolonged bleeding time and APTT, but normal PT

Treatment:

- o DDAVP in type 1: stimulates release of vWF (n.b. need fluid restriction)
- o Tranexamic acid for minor procedures (e.g. dental work)

- vWF/factor 8 concentrates
- Platelet infusion if bleeding despite factor 8 and vWF replacement

Anaesthetic consideration (from CEACCP):

- Multidisciplinary management comprising haematologist, surgeon, anaesthetist, physiotherapist, and occupational therapist.
- Liaison with laboratory services to ensure that appropriate factor concentrates are available and in sufficient quantity. (Locally this is via the Haemophilia nurse at CMH.)
- Elective surgery scheduled early during the week and preferably in the morning.
- Preoperative clotting screen and specific factor assays depending on the type of bleeding disorder and preoperative transfusion of recombinant factors 30–60 min before the surgical procedure.
- Perioperative avoidance of mucosal trauma, i.m. injections, maintenance of normothermia, and pressure point care.
- Care with vascular access and invasive monitoring. Low threshold for use of ultrasound.
- Avoidance of tachycardia and hypertension.
- Risk–benefits for neuraxial block and regional blocks need to be assessed individually and in general avoided.
- VTE prophylaxis by early mobilization, and mechanical deep venous thrombosis prophylaxis. Risk–benefits of pharmacological methods must be considered and discussed with the surgeon and haematologist.
- Multimodal pain management, avoid non-steroidal anti-inflammatory drugs.

**TOPIC 3:** *Report from Perioperative Surgical Home Meeting, Melbourne 8-10 April*

This meeting was attended by Paul Healey, Pragya Ajitsaria, Ross Kerridge and John Brennan (Respiratory Scientist). The conference was made up of 2 main sections:

- Workshop on Perioperative Prehabilitation and Cardiopulmonary Exercise Testing (Friday)
- Meeting on Evidence Based Peri-Operative Medicine – An Update in collaboration with EBPOM (UK) on Saturday and Sunday.

The meeting was fortunate to include a large number of Australian and British researchers and clinicians who are at the forefront of current developments in perioperative practice. The speakers included members of the Xtreme Everest Challenge who hold the record for the highest VO<sub>2</sub> test (at 7100m) and the highest arterial blood gas (Femoral stabs at 8100m after summiting Everest!!).

The workshop consisted of lectures and presentations on CPET testing that included live demonstration and interpretation of test results. The meeting included presentations clustered in the following areas.

1. From quality to value
2. The Tsunamis we face
3. Prehabilitation
4. Optimising Organ systems
5. Controversies in Monitoring and Fluid Therapy
6. Expanding our Perioperative role

SOME LEARNING POINTS

**Post-Operative Cognitive Deficit (POCD)– A/Prof Brendan Silbert**

- He currently conducts research in the Centre for Anaesthesia and cognitive function through the University of Melbourne
- POCD – cognition that does not return to normal after an episode of surgery and anaesthesia, when examined with a reliable neurocognitive test.

- POCD occurs with:
  - Cardiac on pump and off-pump surgery
  - Non-cardiac surgery
  - Sedation (eg Coronary angiogram with PO temazepam only!)
  - Regional anaesthesia
  - Surgery without sedation
- He presented the results of a trial conducted at his own institution, whereby ESWL was performed on patients with a Spinal anaesthetic (NO sedation at all) or a general anaesthetic with sevoflurane. They had neurocognitive testing for POCD at 7days and 3 months. He found higher rates of POCD with spinal and NO sedation vs general anaesthesia!! At 7 days the rates of POCD were 12% vs 4% in Spinal vs GA, and at 3 months they were 19% vs 7%.
- He presented information on the pathophysiology of Alzheimer's disease, which makes up 70% of cognitive impairment in the community. There is a long pre-clinical phase, followed by a phase of minimal cognitive impairment then clinical Alzheimer's disease. During the disease there are abnormal proteins being deposited in the brain (Beta-Amyloid and Tau).
- He hypothesized that the POCD population is the same as the community population with cognitive impairment (i.e. we anaesthetize members of the community), so given that Alzheimer's makes up 70% of cognitive impairment in the community, we may be able to predict the population at risk for POCD who don't have clinical symptoms before their surgery and anaesthesia.
- His research includes analyzing the CSF of patients being anaesthetized for THR, for the presence of proteins that are similar to those in Alzheimer's pathology. They have found that the presence of higher levels of some Alzheimer's proteins (Amyloid Beta) may be predictors of POCD at 3 months.
- Finally his answers to the perennial questions
  - Does anaesthesia cause cognitive impairment? – No, but it can unmask it in susceptible individuals
  - Can we prevent cognitive impairment? – The same principles apply as in the general population – control of cardiovascular risk factors (what is good for the heart is good for the brain) and exercise (prehabilitation may help). He is conducting a trial on pre-habilitation and POCD.

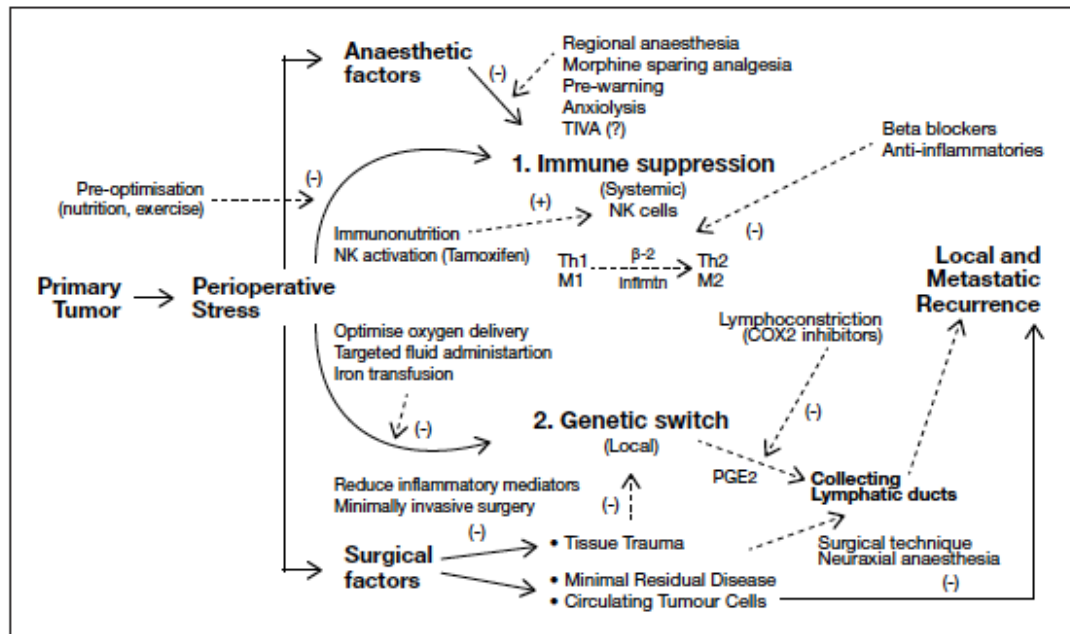
### **Onco-anaesthesia - Dr Jonathan Hillier**

*(NOTE This topic is a topic of active debate:- See a recent editorial in Anaesthesia)*

- He is an anaesthetist in Melbourne who is undertaking a PhD on the role of anaesthetic and analgesic agents on inflammation in cancer surgery.
- His presentation highlighted the emerging sub-specialty of onco-anaesthesia, and in particular the research that is being conducted into anaesthetic practices that may influence outcomes.
- The outcomes of interest in onco-anaesthesia studies include: mortality, cancer clearance, cancer recurrence and RIOT (Return to Intended Oncological Therapy). RIOT measures the time to commencement of adjuvant chemo/radiotherapy, and is a marker for patient recovery after surgery and anaesthesia. There is evidence that shows a reduced survival in cancer with delay to initiation of adjuvant chemotherapy.
- His current research involves the study of COX-2 inhibitors to reduce cancer recurrence. The mechanism is reduced lymphatic dilation due to reduced prostoglandin production, which can reduce spread of disease via lymphatic system. There are currently 4 prospective studies in progress to assess the effect of COX-2 inhibition at the time of surgery.
- Similarly, the use of effective neuro-axial anaesthesia for cancer surgery has been shown to possibly reduce recurrence. Again the mechanism is thought to be via reduced spread via lymphatics. This time there is reduced lymphatic contraction due to sympathetic blockade, and he presented a slide comparing lymphatic activity normally vs spinal anaesthesia to demonstrate this.
- Other promising areas that are currently being actively researched
  - Does TIVA reduce cancer recurrence (there is one paper to support this)

- Does immune suppression from dexamethasone affect outcomes? There will be a sub-study of the PADDI trial investigating this in cancer patients.
- Finally he summarized the current perioperative approach to onco-anaesthesia, as shown in the diagrams below:

**Figure 2. Potential components of a cancer anaesthetic**



Abbreviation: TIVA – total intravenous anaesthesia





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### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 9th June 2016.  
Publication date 16<sup>th</sup> June 2016.

#### Complex Patients and Responding to Patients expectations

##### TOPIC 1: *The High Risk Patient making difficult choices*

A 60+ year old wheelchair bound T4 motor paraplegic following a anterior cord syndrome many years ago. Has an unstable but minimally displaced fracture high on the femoral shaft which occurred after a twisting fall while being lifted using a hoist. Osteoporotic, partly due to steroids for asthma. Patient absolutely refuses a neuraxial block, as they blame a previous neuraxial block to the development of the current complex region pain syndrome and autonomic dysreflexia. Although this may seem illogical, these problems did develop after a previous procedure using a block. Patient also has a history of multiple anaphylaxis type episodes, and 'brittle' asthma with respiratory arrest due to asthma on a number of occasions.

**Discussion:** - Clarify what is the point of surgery? A - The patient has ongoing severe pain with movement, even though there is no motor function and the patient will always be in a wheelchair. Is the patient open to education/discussion?:- There had been a long discussion with the patient who insisted that regardless of risk, neuraxial block was unacceptable. The patient asserted that they had general anaesthetics before and “sailed through them”. Reference to the notes seem to confirm this.

**Conclusion:-** After some discussion, it was agreed that it was appropriate to go ahead with a GA. The patient is making an informed choice.

##### TOPIC 2: *Morbid Obesity, delusions, and OSA surgery*

A 70+ year old morbidly obese patient with symptomatic OSA. Not tolerant of face mask CPAP. Nasal CPAP is ineffective because of a chronically blocked nose. Patient wants to have surgery to unblock his nose, which the surgeon thinks is appropriate. But the patient also thinks that this will help him exercise and lose weight. He attributes his weight to lack of exercise due to blocked nose. The patient is clearly wrong in this regard. His risk of OSA and need for surgery would be reduced by weight loss. But patient beliefs are stopping engagement in strategies to lose weight.

**Discussion:-** The severity of OSA means surgery requires HDU post-operatively. Given his fixed beliefs, it is unrealistic to expect that he will lose weight pre operatively (and indeed very unlikely post operatively) but the surgery will make other significant improvements to his quality of life, and may improve the OSA. Therefore it is reasonable to proceed.

**Further Discussion:** - The Clinic doctor says “I gave him appropriate weight loss education.” Among other things, this was based on previously discussed principles of preoperative advice to obese patients (see communication from Avant insurance recently, dealing with the SA Coroners cases). 'Appropriate Advice' for obese patients conventionally includes:-

- empathic counselling;
- education;
- discussion of the need for lifestyle changes;
- emphasis that it is long term effort.
- Discuss the environmental factors involved in developing and maintaining obesity (the obesogenic modern environment, and perhaps inappropriate emphasis on low fat diet) and
- recommendation to see a GP and then a dietitian.

**BUT is this appropriate education for short-term rapid preoperative weight loss?**

Further:- There is no clear scientific consensus (at this time) that overall outcome from knee replacement (for example) is affected by obesity enough to justify not performing surgery. (See references) - it seems intuitively obvious but is an ongoing controversy.

Hence, In the absence of “hard” evidence, refusal or postponement of surgery for such patients cannot be described as “evidence based”. But advice for rapid weight loss may still be seen as appropriate.

Techniques for rapid weight loss prior to surgery maybe better focused on short term very low calorie diet using proprietary mix (Optifast) etc. This may rapidly reduce abdominal visceromegaly and reduce omental fat mass very quickly, which may be particularly useful for intra abdominal surgery from a technical point of view, even though this is not a long term solution.

### ***SOME REFERENCES on Obesity and Knee Replacement controversy:-***

1: Rodriguez-Merchan EC. The Influence of Obesity on the Outcome of TKR: Can the Impact of Obesity be justified from the Viewpoint of the Overall Health Care System? HSS J. 2014 Jul;10(2):167-70. doi: 10.1007/s11420-014-9385-9. Epub 2014 Apr 5. Review. PubMed PMID: 25050100; PubMed Central PMCID: PMC4071468.

2: McElroy MJ, Pivec R, Issa K, Harwin SF, Mont MA. The effects of obesity and morbid obesity on outcomes in TKA. J Knee Surg. 2013 Apr;26(2):83-8. doi:10.1055/s-0033-1341407. Epub 2013 Mar 11. Review. PubMed PMID: 23479424.

3: Samson AJ, Mercer GE, Campbell DG. Total knee replacement in the morbidly obese: a literature review. ANZ J Surg. 2010 Sep;80(9):595-9. doi: 10.1111/j.1445-2197.2010.05396.x. Epub 2010 Aug 19. Review. PubMed PMID: 20840400.

### ***TOPIC 3: The demanding patient with complex multipathology***

A middle aged female with a history of multiple previous general anaesthetics, all with a variety of problems, complex pain syndromes, psychiatric issues, and brittle asthma, all of which appear to interact. Vascular access is a particular problem. There have been multiple medical complications from treatment in the past. During the perioperative consultation the patient refused compliance with some aspects of care, bargained, requested particular types of care, and avoided engagement with some other routine cares techniques. How should this be managed?

**Discussion:-** The details of this case were reviewed. Anecdotes about other similar patients were discussed. It was strongly advised that a good general principle was to not get “seduced” into the chaos and avoid bargaining with the patient’s complex psycho-physio-pathology. Best to plan rigorously to give “routine” care.



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 12<sup>th</sup> May 2016.  
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**TOPIC 1:** *Anti-coagulation in the context of a mechanical Mitral Valve pre-THR: Clexane S/C vs IV Heparin to reduce the peri-operative risk of thromboembolic events*

Background: 72y/o male for THR. PMHx: AVR/Bentall's procedure 2008, MVR 2012. The mitral valve is described by the patient as 'metallic' (i.e. mechanical rather than tissue). Patient had recently been reviewed by his cardiologist. Considered to be in optimal cardiac state.

Mechanical mitral valves are at risk of thrombosis when not anticoagulated, and at highest risk of embolus, and thus need high levels of anticoagulation. Tissue valves can be considered to have the same embolic risk as a patient with native valve but atrial fibrillation etc.

*Question:* What is the best strategy for bridging anticoagulation?

Discussion:- Case was discussed at perioperative cardiology meeting, and with patient's own cardiologist.

- There are no definitive evidence-based guidelines. Warfarin is better thromboprophylaxis than heparins. Admission for four-five days of IV heparin infusion is an accepted strategy, but can be problematic getting the level right, and the appropriate level is presumed to be different for each patient. Thus heparin infusion may be less effective than therapeutic subcutaneous Clexane (>1mg/kg bd). If bd Clexane is used, the 24 hours prior to surgery will require shorter-acting anticoagulation (i.e. Heparin). Intravenous Heparin infusion will need to be used until four hours preoperatively. 'Acute' reversal with preoperative Prothrombin Complex Concentrate may also be an option. Check INR and APTT preoperatively. ICU/HDU postoperatively.
- Plan needs to be discussed and agreed in advance with surgeon, including regarding postoperative heparin and warfarin as soon as possible.
- Prior to surgery, there must be clarification of the cardiologist responsible for the patient throughout inpatient period. This needs to be clearly documented in patient records. Proactive notification of cardiologist prior to surgery.

Following discussion, the case was discussed with the surgeon, who decided to re-evaluate the need for surgery with the patient. After discussion of risks with the patient, the case was cancelled.

**TOPIC 2:** *Management of patient with possible OSA*

Background: 62y/o female for THR. Significant morbidity due to pain etc.. PMHx: Recent ex-smoker; mild COPD; BMI 40 (131kg/180cm); some episodes of atypical chest pain, but reassuring cardiac investigations & cardiology review. Likely OSA on risk factors, history & examination in clinic but no clear history of somnolence etc. Respiratory review & sleep study booked but formal sleep study not available until November 2016. Preoperative weight loss advised but considered unlikely. Patient will accept Regional Anaesthesia.

*Question:* Should this elective surgery be deferred until after the Sleep Study?

- The sleep study may or may not show significant sleep apnoea and OSA. Regardless of findings on sleep study, the appropriate therapy may or may not be used effectively. Even if the patient does not need or use CPAP, use of high-flow oxygen/air postoperatively will be appropriate. Consensus was to treat patient as if she *has* OSA, use a regional anaesthetic technique and use high flow nasal air/oxygen perioperatively.

Ideally should be in a higher acuity unit for monitoring post-op. Should be monitored and evaluated in PACU when on nasal high-flow therapy. If patient or surgeon refuses use of RA the surgery should be deferred until after sleep study.

- OBESITY:- A perennial discussion topic. There are 'broad' issues of community health, patient selection, prehabilitation & preparation. In the interim, there is also a need to increase availability of high-flow oxygen/air devices. Avant has recently published advisory guidelines regarding aspects of discussing obesity with patients.

**TOPIC 3:** *Pre-operative transfusion vs. Iron supplementation*

**CASE:** 87y/o with Hx Bladder Ca & radical cystectomy + ileal conduit (2012) presents with haematuria for colonoscopy to investigate this. Recently increasing peripheral oedema, dyspnoea, confusion. and hyperglycaemia. FBC performed in clinic: Hb 72g/L Iron studies:- low serum Iron and low-normal Ferritin.

- *Questions:*
- i) Should the patient be given Iron?
- ii) Role of iron supplementation in possible infection/sepsis.

Serum iron is not useful in the diagnosis of iron deficiency. Serum iron fluctuates widely regardless of iron stores. Why? Bacteria cannot store iron, and depend on environmental iron for replication (Remember blood agar?). Thus reducing serum iron will reduce bacterial replication rates, and augments the host organism's ability to fight the infection - a rather elegant physiological defence mechanism. (Bacteria species differ in their 'sensitivity' to iron levels). Hence there is a teleological rationale that part of the inflammatory response is to reduce serum iron by restricting iron release from stores and reducing iron absorption. Hepcidin (discovered 2001) is a key regulator of this process. From a Darwinian perspective, inflammation has been overwhelmingly due to infection, but since the 'pax antibiotica' after penicillin, this is less relevant. In the absence of bacterial infection, some aspects of the inflammatory response (such as iron regulation) are non-advantageous. So..... patients with chronic inflammatory states may develop actual or functional iron deficiency. And in the context of general inflammation, ferritin may appear adequate but there may be functional iron deficiency.

- A Ferritin level **below 30 µg/L is diagnostic of iron deficiency.**
- Ferritin levels **between 30-100 µg/L are highly suggestive** of iron deficiency. CRP will help clarify if infection is present.
- Iron deficiency is **unlikely when ferritin is >100 µg/L.** If anaemia is present, consider functional iron deficiency (FID) also known as anaemia of chronic infection.

When the clinical features and haematology profile are suggestive of iron deficiency, but the ferritin is normal, consultation with a haematologist / pathologist is suggested. Additional tests, such as Total Iron Binding Capacity, Transferrin saturation and C-Reactive Protein (CRP) to identify inflammation, may be required to identify functional iron deficiency (FID), where iron stores may be adequate, but cannot be utilised.

It has been suggested that Iron therapy in the context of bacterial infection may actually "fuel" sepsis. This is an ongoing discussion 'in the literature'. If it does, transfusion may have the same effect, although this too is controversial. The appropriate role of EPO therapy is not clear. EPO may be thrombogenic and may accelerate metastases. Pragmatically, and in clinical trials thus far, iron therapy alone is effective.

In view of symptomatic anaemia, and difficulty organising therapy in the residential aged care setting, this patient was brought into hospital on day before surgery for transfusion of Packed Cells.



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Based on Cases discussed at the Weekly PIG Clinical Meeting on 14<sup>th</sup> April 2016. Publication date 18<sup>h</sup> April 2016.

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#### TOPIC 1: *High Risk Surgery and Severe Lung Disease*

76 year old female with a SCC of the tongue. Booked for resection involving the tongue and then free flap from the forearm. Estimated 10 hours of surgery. Patient has severe lung disease (FEV1 680mls) although has “good” exercise tolerance on level walking and can get up one flight of stairs but has prolonged breathlessness after this. Cough is very weak. Patient is on optimal respiratory therapy. The surgery is clearly high risk however the surgeon says that it is “curative” and there will be a very unpleasant demise within 6 to 12 months without surgery. Surgery will end with a (temporary) tracheostomy.

**Discussion:-** Discussed for some time. Questions to be asked:- Is there any possibility of alternative surgery eg Limited “palliative” resection that would only take a shorter amount of GA time. Particular concern is that such a long operation is likely to lead to atelectasis and respiratory complications from which the patient is very unlikely to recover, whereas a shorter GA maybe tolerable. Further, what is the patients realistic life expectancy given the severity of respiratory disease.

The initial consult had left the patient with a warning about potential adverse outcomes from surgery and advised that the case was for further consideration (by both medical team and the patient & family). It was suggested that the procedural anaesthetist (i.e. senior head/neck anaesthetist) should review the patient personally, and further investigations should include cardiopulmonary testing (CPET) to clarify the patients respiratory versus cardiac reserve. If the patient has good cardiac reserve then their chances of surviving surgery (particularly a shorter duration surgery) may make surgery appropriate. If there is poor cardiac reserve as well as severe respiratory disease, then non-surgical management would be appear to be the appropriate choice. Liaison with the Surgeons by senior anaesthetist familiar with this work is needed.

#### TOPIC 2: *TURP in Respiratory Disease*

86 year old booked for TURP currently on home oxygen with CPAP 16 hours a day. Has “stable” chronic airways disease (FEV1 600mls). Can lie flat. Treated with Seretide, Spiriva and pulmonary rehabilitation.

**Discussion:-** The key factor is that the patient can lie flat for long enough for surgery. Respiratory status is as good as can be. Cardiac status appears acceptable. Would be acceptable for a spinal with minimal sedation. The discussion then lead on to what should be the “default” anaesthetic technique for TURP. Historically, the risk of “TURP Syndrome” (especially due to Glycine absorption) was a driving factor for use of spinals. The advent of Gyrus resection technique makes this no longer relevant. So should spinals still be the “default” technique for TUR Prostate surgery? The consensus was that there is some value in maintaining a “cultural” expectation of spinal anaesthesia for prostate surgery, in particular as this makes it easier to set expectations particularly for this sort of patient.

#### TOPIC 3: *A younger Patient post major trauma with Cervical Spine Injury and fractured pelvis*

A previously healthy younger patient post major trauma recovering after cervical spine injury and other injuries including fractured pelvis. Pelvis treated with an external fixateur, Came to hospital for the removal of the fixateur. He had received normal (appropriate) VTE Prophylaxis. One day after surgery he collapsed and died from a massive pulmonary embolism. Should this patient have had an IVC filter? **Discussion:-** In recent years the use of IVC filters has been associated with increasing recognition of problems, such as implantation of the filter, difficulties in removal (even with the temporary filters) and logistical issues of ‘losing track’ of patients with filters because of uncertainty as to who is responsible for their follow-up and maintenance. The patient is committed to anticoagulation while the filter is in place. There is a role for IVC filters is thus limited to those patients where there is a clearly defined risk due to current lower limb thrombosis. This patient does not appear to fit this indication.



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 16<sup>th</sup> June 2016.  
Publication date 5<sup>th</sup> July 2016.

#### **TOPIC 1**

#### ***Respiratory Difficulty***

Bronchioectasis A 69 year old female - Obese, well documented ischemic heart disease (CABG plus stents) but stable from cardiac viewpoint. Has bronchiectasis with recent pseudomonas colonization requiring hospitalisation ie recent respiratory review. Now considered “optimized” with resolving cough but has remaining very limited exercise tolerance. Patient has completed long antibiotic course and has recently ceased nebulizer therapy (in conjunction with resp physician.) Booked for a cystoscopy and cystodilation +/- botox injections for to bladder dysfunction/incontinence.

Patient refusing a spinal anaesthetic. Patient asked to recommence nebulizer therapy from clinic date until surgical date (approx. one week) and warned that she may be cancelled on the day at discretion of procedural anaesthetist and also the discretion of person in charge of HDU/ICU resource allocation on surgical date.

**Discussion:-** 1. Would this be possible under local anaesthetic alone:- Discussed that this is theoretically possible but the patient would be very unlikely to tolerate it.

2. Should the procedure go ahead with general anaesthetic after risk discussion?

This runs a significant risk of re: exacerbation of her bronchiectasis with the need for ongoing HDU or prolonged lengthy stay as a result.

3. Is it appropriate for the patient to decide that she will have a GA?

In view of the procedure, should the procedure be contingent on the patient agreeing to a spinal anaesthetic?

Discussion centred around who should ultimately decide on the type of anaesthesia (doctor vs patient) given the medical risks and also the expense associated with the limited resource HDU/ICU stay.....

There was no general consensus amongst the staff present. The difficulty of the patients perception (ie I’ve had GA’s before and have been fine’) was acknowledged.

#### **TOPIC 2**

#### ***Colonoscopy with severe COPD***

80 year old for colonoscopy with severe COPD and a recent infection currently on weaning prednisone. Complex medical history noted with ischemic heart disease, (stents) but not currently on anti-platelets. Rivoroxaban for atrial fibrillation. Exercise tolerance very minimal. Aortic stenosis on echo in 2015, with moderate pulmonary hypertension.

Recent admission to BDH with SBO which was conservatively managed. Now the patient has positive FOB but has refused chemotherapy, radiotherapy and colostomy. Is there any point in proceeding?

**Discussion:-** The patient is keen for a diagnosis. Cardiology review was appropriate as this has not happened for 3 years and the patient was not considered to be on optimal medication. It was agreed that despite the lack of surgical options the colonoscopy offered 1. diagnostic certainty: 2. planning for the patient (i.e. end of life planning) 3. potential for fixing problems e.g. polypectomy.

The agreed plan was to review this man again in clinic post cardiology review.

#### **TOPIC 3:**

#### ***Troponin***

From the journals the debate about troponin measurement post operatively has become more confused with the recognition that preoperative troponin’s appear to be predictively of post-operative outcome. There has been some interesting reviews of outcome associated with postoperative troponin measurements, however it is unclear whether raised troponin in the absence of other clinical symptoms or signs is causative or is just an association with poor long term outcome. Recent papers from dealing with this are attached.



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 19th May 2016.  
Publication date 26th May 2016.

#### **TOPIC 1:** *Chronic hepatitis unknown cause*

71yo Female for THR, noted to have moderately raised LFTs. (ALP 348 ALT 93 AST 105) on path results for the last two years. Normal bili/coags when first seen in clinic Feb 2016. Sent for USS, no abnormality detected. Patient had been passed for surgery, and LFT result noted again in anaesthetic bay. No viral studies available. At this time, should surgery proceed? Should we do virology for chronic hepatitis, or send to GP or gastroenterologist to follow up? Should surgery be deferred?.

**Question/Discussion** - In the perioperative setting, what is the appropriate investigation of 'isolated' raised LFTs? (discussed at PIG and with gastroenterologist).

Common causes of abnormal LFTs:- Alcohol (inc. ASH), drugs, obstruction, NASH (non-alcoholic steatohepatitis), malignancy, Hep B or C, and 'everything else'. It is reasonable for the clinic Doctor to take a history (Symptoms, Drugs, EtOH), and order an ultrasound to rule out obstruction & malignancy, all of which may change perioperative management. NASH may be 'diagnosed' on USS, although probably won't change perioperative management. Viral studies are appropriate and reasonably quick, and are of interest to perioperative staff. After these tests, investigation can be referred to the GP, and can generally wait till after surgery.

Possible causes in this case includes drug effect. (allopurinol/astorvastin). Case went ahead after D/W surgeon, with some 'extra' precautions against possible Hep C.

#### **TOPIC 2:** *Colonoscopy in Morbidly Obese Man with CCF, OSA etc*

Morbidly obese 150kg Male, recent 40kg weight loss with optifast and hydrotherapy, but has severe OSA/OHS (AHI 87), treated with home CPAP. Unstable CCF with poor echo 6 months ago showing global hypokinesia, severe diastolic failure, EF 25% and moderate pulmonary hypertension. He also has a chronic kidney disease. Indication for colonoscopy: positive FOBT in a community screening program, but has known proctitis on mesalazine. This could be the cause of blood on FOBT, but also increases risk of CRC.

**Discussion:-** The colonoscopy itself carries risk; The bowel preparation itself would be a risk, and hospital admission may be required for this. Regardless, would the patient be considered for surgery if any lesion found? Suggested action:- Letter to Gastroenterologist documenting concerns re procedure, and direct discussion suggesting that the indication and appropriateness of procedure be reconsidered by the Gastroenterologist. Case postponed.

#### **TOPIC 3:** *Trigeminal neuralgia for decompression*

75 year old Male, rate controlled AF on rivaroxaban. BP measured as 190/80 in clinic, no improvement with resting. Treated with three antihypertensives including a beta-blocker. Patient states that Blood Pressure is always that high and cardiologist and GP aware of this. Patient has just recently moved from the Central Coast (Letters available confirm recent cardiology visit with BP highish, apparently acceptable to cardiologist).

**Discussion:-** A common problem in Clinic. Recent UK guidelines suggest that evidence of adequate BP in the community is sufficient to proceed, and we should 'ignore' clinic findings. In this patient, primary care and cardiologist both seem to accept the current BP. Note that beta-blockers may cause systolic hypertension by slowing rate and thus increasing pulse volume.

**TOPIC 4: 'New' Atrial Fibrillation**

70 year old male, distance patient, arrived at the clinic on day prior to surgery. Found 'incidentally' to have previously undiagnosed slow AF in clinic. No anticoagulant, no rate control medication, haemodynamically stable. No history suggesting recent cardiac events. Attends GP irregularly but when necessary. Feels well.

**Question:-** Should he be postponed/investigated?

Discussed with cardiology – recommended continue with surgery as 'probably has had paroxysmal AF for years'. Recommend patient follow up with GP. May be appropriate to investigate and treat postoperatively if AF continues. Note the CHADS risk profile. Patients with isolated AF are at increased risk of embolic events, but the increased absolute risk is not as dramatic as is sometime thought.

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*Please have a look at our Perioperative Talk Website – Comments, Ideas & Informative Perioperative Issues welcome!*

[www.perioptalk.org](http://www.perioptalk.org)





## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 21st April 2016. Publication date 28th April 2016.

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#### TOPIC 1:            *Head & Neck Cancer Surgery - Further preoperative investigations?*

62 year old man for wide local excision of painful and growing cancer on tongue, including tracheostomy. Lifelong heavy smoker, cut down since diagnosis to about five/day. Recent loss of weight of 5KG due to difficulty eating; weight 49Kg. CAL; FEV1/VC 1.7/2.5; Peripheral vascular disease with peripheral stents more than twelve months ago, on Clopidogrel. Asymptomatic for ischaemic heart disease but exercise tolerance limited by radicular back pain. Should he have further investigations for Ischaemic Heart Disease?

#### **Discussion:-**

Investigations will delay surgery and not change management. There is no clinical indication for cardiac intervention; anaesthetic management will not be changed; the surgery itself is not a great physiological stress; the patient is suffering due to symptoms. Hence:- preoperative liquid nutrition (Dietitian advice if possible); Change Clopidogrel to aspirin; Stop smoking; Continue Statins. Consider HDU postoperatively.

#### TOPIC 2:            *Laparoscopic Nephrectomy and Pulmonary Disease*

64 year old; incidentally discovered renal mass on imaging (no tissue diagnosis). Chronic pulmonary disease Smoked 30/day for 40 years but ceased 2 years ago. FEV1/VC 1.6/2.8 TLCO 57% no response to bronchodilators. History of VAT pleurodesis in 2014; Recent pneumonia Feb 2016 (when renal mass found). Asbestos exposure with bibasal opacities but these are thought to be benign. Rheumatoid Arthritis on Prednisone 5mg/day. Exercise tolerance one flight of stairs or level walking. Patient exercises using an exercise bike and walking. What preoperative investigations or management?

**Discussion:-** what can be gained? Lung function appears fully investigated; He is stable; non-responsive to bronchodilators. Pulmonary rehabilitation mainly focusses on building exercise capacity, which he is doing already. Always assess sputum production, particularly as this is commonly overlooked. If significant, 'aggressive' physio to clear the chest preoperatively is worthwhile. What is the indication for surgery - clarify the findings, as early renal masses may be appropriately managed by surveillance (small incidental renal tumours have been included in the medical phenomena of 'Over diagnosis') Discuss with surgeons.

**Outcome:-** Clarified with surgeons:- The mass is quite large, and the scan findings are suggestive of active but currently local malignancy. Tissue diagnosis is not considered necessary. The risks discussed with patient, who wishes to proceed to surgery. (This case emphasises that risk assessment needs to consider the natural history of the surgical disease if untreated by surgery)

TOPIC 3:            *Perioperative management of Amputation*

71yo, Leiomyosarcome of lower leg, booked for AKA. Morbid obesity:- will not be a candidate for rehabilitation to walking. Recently admitted with sepsis arising from the tumour. Moderately severe OSA with significant desaturation but echo normal. Anaemia 82g/L (Iron studies normal) Renal impairment GFR 40.

Discussion:- :- Best technique may be CSE plus Ketamine, with sciatic sheath catheter inserted under direct vision by surgeon. Postoperative Gabbanoids for first five days or so. (e.g. Pregabalin 75 -150 mg/day) He will not be getting up so postural/balance effects are not a consideration. Amitryptaline may be synergistic with Gabbanoids, thus give for similar duration. May not be of great benefit after the first week. Ketamine infusion at (say) 10mg/hr for 2-3 days.

TOPIC 4:            *Changing Recommendations on Dual Antiplatelet Therapy*

The ACA/AHA has published on their website an accepted manuscript of a new systematic review on duration of Dual Antiplatelet Therapy in patients with Coronary Artery Disease.

The review deals with the newer generation of drug-eluting stents, and suggests that it may be appropriate to reduce the time for mandatory DAP therapy to six months.

Pragmatically, this is reassuring for perioperative management, but management of each patient must be individualised depending all relevant factors including type, size and placement of stents, and the surgical risk.

(The manuscript is on the ACC website, and will be co-published in JACC and Circulation. Authors Blittl JA, Baber U, Bradley SM Wijeyesundera DN.)



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 23<sup>rd</sup> June 2016.  
Publication date 30<sup>th</sup> June 2016.

#### **TOPIC 1: *Left THR and Bone Grafting***

Mr GL a 59 year old male seen in clinic for left THR and bone grafting secondary to severe OA, with huge cyst in the acetabulum.

#### Background

1. ? Mastocytosis – sees Dr De Malmanche (Immunologist at JHH)
2. Anxiety
3. Hayfever
4. Rosacea

Medications: Dothiepin, ranitidine

This gentleman reports intermittent episodes of facial and body rash, and swelling of half of his tongue. They occur with periods of stress. The episodes usually occur at home of a night time, and have never required adrenaline or ambulance/hospital treatment. There is never any respiratory compromise.

He was first seen by an Immunologist in 2012. The provisional diagnosis is Mastocytosis. He has a persistently raised resting serum tryptase of 14.5 over the past 3 years (normal <13.5). Other investigations for allergy and auto-immune diseases have been NAD. He has had a skin biopsy to look for mast cell clumps which were not found. The final definitive test is a bone marrow biopsy which he has not had.

His management has been anti-histamine agents. He has been on regular ranitidine and dothiepin (has anti-histaminergic effects). He takes PRN Phenergan when he has an attack at home. He has an EpiPen, but has never used it.

His perioperative management was discussed with Dr de Malmanche. He suggested the following:

- To continue his current anti-histamine agents in the perioperative period.
- Add fexofenadine TDS (Telfast) pre and post operatively for maximal anti-histamine effect
- Generous pre-medication
- Avoid agents known to cause anaphalactoid effects, eg Morphine, atracurium, mivacurium
- If airway intervention – should be monitored in Recovery for 4 hours post operatively
- Does not require routine HDU admission

The patient was conveyed the above and discussion of a spinal anaesthetic with sedation, with an explanation of risk vs benefits. The patient then offered that his father had sustained an epidural haematoma after thoracic epidural for upper GI surgery some years ago. He required urgent decompression, however, sustained a spinal cord injury and remained a paraplegic. There was no personal or family history of bleeding disorders.

The risks of airway management vs neuro-axial anaesthesia were explained to the patient. He understood the implications of both and was accepting of the risks of either approach as deemed safe by the anaesthetist on the day of surgery.

See AAGBI information brochure on Mastocytosis attached.

**TOPIC 2:            *Whipples procedure for lower third CBD carcinoma***

Mr EW a 75 year old male reviewed in the perioperative clinic for Whipples procedure for lower third CBD carcinoma.

Background:

1. Dilated cardiomyopathy (unknown cause)
  - Presented in 1995 with symptoms of heart failure
  - Biventricular pacemaker and ICD since 2006 with significant improvement in ventricular function. Recent box change in 2016.
  - Last echo > 12 months ago.
2. CVA (2010). No residual deficits
3. Ex-smoker 1998.
4. Gout
5. Chronic renal impairment
  - eGFR = 58mL/min

Medications : metoprolol, amiodarone, digoxin, clopidogrel, aspirin, frusemide, spironolactone, escitalopram, irbesartan, rosuvastatin. NKDA. He is independent with ADLs and reports an exercise tolerance of approximately 2 flights of stairs, and walks a few kilometres regularly during the week.

On examination he was a well looking man with normal cardiorespiratory exam, although he had reduced peripheral pulses bilaterally, with cool skin. He had a paced ECG. His pathology results were remarkable only for his mild renal impairment.

Given the high risk nature of this procedure and patients background he was referred for an echocardiogram that demonstrated mild LV enlargement with moderate to severe global hypokinesis with severe diastolic dysfunction. He had mild right ventricular enlargement with normal function. There was mild mitral and tricuspid regurgitation.

He was further sent for CPEX testing at JHH in an attempt to quantify his cardiorespiratory function, and assist in determining perioperative risk stratification. He was able to perform a maximal test on a cycle ergometer. His major limiting factor was leg fatigue. His maximal workload was 62% of predicted, his Anaerobic Threshold was 10.4mL/min/kg, and his VO2 max was 14 mL/min/kg. His

heart rate response was reduced at the low end of normal for his age (his maximum heart rate was 94bpm).

His case was discussed with Anaesthetics, ICU and Surgery. He understands the risks vs benefits of surgery and the options of not having surgery. He was keen to proceed to surgery. He had advanced care directives discussed in the perioperative clinic.

See recent BJA meta-analysis attached on CPEX testing as risk-assessment tool in patients undergoing intra-abdominal surgery.

### **TOPIC 3:        *Left TKR***

Mrs JT a 75 year old female seen in the preoperative clinic for a left TKR.

Background:

1. Hypertension - taking 4 anti-hypertensives
2. Type 2 Diabetes Mellitus
3. Obesity – BMI 38
4. COPD
  - FEV1 1.44 (69% predicted). Normal DLCO. Mild obstruction on spirometry.
  - Stopped smoking December 2015 – approx. 40 pack years.
5. AAA – Sees Dr Deshpande (<4cm)
6. ?Popliteal artery thrombosis – treatment with clexane only. Reviewed by Dr Sebastian, not for further management. Now resolved on US imaging.
7. Chronic low back pain – lumbar laminectomy and fusion in 2013. Ongoing pain treated with pregabalin and duloxetine. Recent transforaminal steroid injection.
8. Hiatus hernia

Medications – Irbesarten, lercanidipine, moxonidine, rosuvastatin, pregabalin, carvedilol, metformin, duloxetine, omeprazole, Spiriva. She has no allergies to medications. Her exercise tolerance is limited by knee pain and perineal and left leg paraesthesia. She lives alone and is able to complete her own ADLs.

This is her fourth visit to the Perioperative clinic. Her surgery has been postponed previously due cellulitis in her lower limbs and investigation and management of ? popliteal thrombosis. She had an admission to JHH in December 2015 with type 2 respiratory failure. Her blood gas at the time demonstrated a pH of 7.1 and a PaCo2 of 83mmHg. This was managed with NIV.

On follow-up with Dr Wark (Respiratory Physician) she had lung function studies that demonstrated only mild COPD and sleep studies. The patient reported that the sleep studies demonstrated severe OSA and she is currently awaiting CPAP therapy. Therefore her surgery was again deferred until her CPAP has been fitted and titrated. She will be reviewed again following stabilisation of her CPAP therapy.



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 26th May 2016.  
Publication date 2<sup>nd</sup> June 2016.

#### **TOPIC 1:**        *Feedback from previous discussions*

Some feedback on previous topics covered in previous PIG Meetings was discussed.

1. Further debate about “default” anaesthesia for TURP. Traditionally, the “default” technique has been spinal. This was originally based on need to use CNS status as an early sign of “TURP Syndrome” due to glycine absorption. Now that Gyrus resectoscopes are being used, there is no need to use glycine/water irrigation, and TURP syndrome is not a concern. General anaesthesia is therefore more suitable. It is generally quicker for a 'simple' TURP, and in many situations would thus be preferred as the anaesthetic technique. So is there value in maintaining a cultural expectation of spinal for TURP? The debate continues....
2. A patient with severe proclivita and severe coronary artery disease, with recent complex coronary artery stents was a complex consult about the management of surgery - focussing on the appropriateness of stopping dual antiplatelet therapy (DAPA). The gynaecologist was convinced to operate with DAPA continued except on DOS. The surgery was “uneventful” with use of local anaesthetic with adrenaline plus a GA. There was no significant problem for the surgeon from bleeding, however the initial arterial line attempt lead to a major haematoma over the arterial line puncture site. Patient went home well the next day and there were no surgical 'complications' other than some more postoperative bloody discharge than usual. However.... the patient was admitted in acute pulmonary oedema after another NSTEMI with significant troponin rise ten days postoperatively. Repeat angiogram showed stents were still patent, and patient recovered well.

***What is colpocleisis? (See notes at end)***

#### **TOPIC 2:**        *How useful are the NSQIP Database predictions?*

An 87 year old patient had a partially obstructing descending colon mass. Long history of ischemic heart disease. Aortic stenosis left ventricular dysfunction (EF30%), PFO, mitral regurgitation. Exercise tolerance 30 metres on flat ground. DM. Warfarin, past history CVA, hypertension and cognitive decline. Cardiologist opinion indicated the patient had moderate to severe LV dysfunction but was optimized as much as possible. A colonoscopy was commenced using ketamine, propofol, aramine and 'Thrive' to support oxygenation. There was a severe bradycardia shortly after the colonoscopy started and the procedure was abandoned. It was suggested that the risk of surgery was such that resection should not be considered. This had been the discussion with the family, and accepted by them. But reference to the NSQIP database suggests that this patient has 'serious complication rate' of 20% and death of 6.3%. This seems optimistic! (Note that 'discharge to rehabilitation facility' in the NSQIP system does not necessarily imply long-term residential care).

The consensus of the meeting was that despite the reassuring numbers produced by the NSQIP database, it was still inappropriate to proceed to surgery.

Further:- the same anaesthetist later used NSQIP to calculate perioperative risk for a different patient having major head and neck surgery (surgery was in progress) the patients perioperative risk on this occasion was 60% which by contrast with the previous case seems (slightly) pessimistic.

### **TOPIC 3:        *A patient with a recent vitrectomy presented for laparoscopic nephrectomy***

The patient had a wrist band indicating “no gas anaesthesia” & “no pressure variation”. The patient had recently had a vitrectomy at a different hospital. Following vitrectomy the patient had had intraocular gas injected. It was unclear whether the patient could be placed prone. The case had been postponed to clarify this.

The issue was clarified with ophthalmologist (who needed to seek further advice). The 'no gas anaesthesia' refers only to nitrous oxide use in a patient who has had gas injected into the globe prior to surgery. This is due to diffusion of nitrous oxide into the gas bubble in the globe. The ophthalmic surgeon offered to remove the gas from the eyeball temporarily if nitrous oxide had to be used. (He was assured that this was not necessary). The gas bubble is a highly insoluble gas injected as a ‘splint’ to hold the retinal repair in place. It is resorbed over about 3-4 weeks. Nitrous oxide will diffuse into the bubble, raising IOP and potentially causing permanent visual loss. There is no particular problem with positioning the patient other than avoiding external pressure on the globe. The need to avoid pressure variation is perhaps over stated, and not incompatible with 'normal' careful anaesthesia.

### **Colpocleisis and other procedures:- A brief overview of prolapse surgery**

*(Penny Thomas, Gynaecology Fellow)*

#### **Considerations:**

1. **Does the patient need vaginal function** i.e. Are they sexually active?  
Yes→ Reconstructive surgery  
No→ Consider option of Obliterative surgery  
The majority of prolapse surgery is **reconstructive**. This aims to preserve the vagina and maintain normal anatomy. **Obliterative** surgery is not performed by all gynaecologists.
2. **Which compartments are involved?**
  - a. Anterior (Cystocele)→ Anterior colporrhaphy (repair)
  - b. Posterior (Rectocele or enterocele -depending on which level of vagina involved)  
→ Posterior colporrhaphy(repair)  
→ +/- Perineorrhaphy (reducing the size of the genital hiatus and rebuilding the perineal body) to give support to the lower vagina  
→ +/- Levatorplasty (tightening the levators) to give support to the lower vagina
  - c. Apex (uterine or vaginal vault prolapse)  
→ Apical support procedure (colpopexy)  
→ Alternative routes:
    - Sacrospinous colpopexy /fixation is the commonest
    - High uterosacral colpopexy (usually only performed with vaginal hysterectomy)
    - Abdominal procedure such as either open or laparoscopic sacrocolpopexy
3. **Mesh or not** – usually not nowadays, reserved for recurrent prolapse after previous surgeries. Most are no longer on the market. An alternative is SIS Biodesign (biodegradable animal small bowel collagen matrix which adds somewhat to support for repeated reconstructive repair)

## Types of Procedures

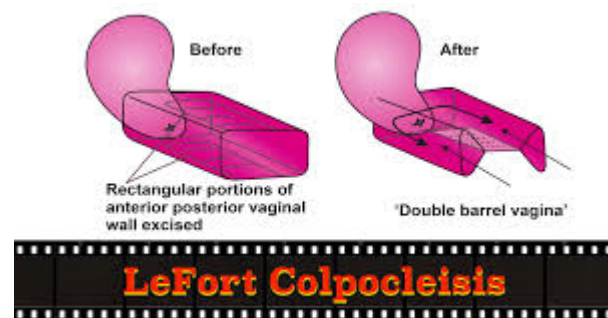
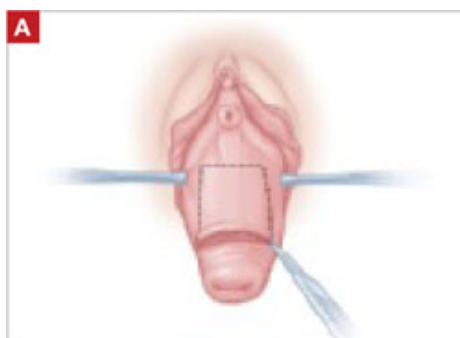
**Colpopexy** means elevation of vagina; when performed vaginally we use slowly absorbing or permanent sutures ; abdominally we use mesh tacked on to the vagina and fixed to the anterior longitudinal ligament of the spine.

**Vaginal hysterectomy** is not strictly speaking an operation for prolapse as to do this we must cut the supporting cardinal and uterosacral ligaments, but it is sometimes more straightforward to combine with these other procedures, particularly if an additional reason for VH is present.

**Obliterative surgery (colpocleisis)** is usually reserved for women who are not sexually active, have a procidentia, are significantly symptomatic or obstructing ureters, and have significant co-morbidities that put them at additional perioperative risk. Generally colpocleisis would be shorter and with less bleeding risk than the longer reconstructive options. For appropriate patients (as above), the procedure has a high rate of both anatomical success and patient satisfaction.

There are two types of colpocleisis

- **Le Fort (partial)**- for women who still have their uterus, is combined with D+C to allow sampling of the endometrium. This involves denuding a rectangular piece of vaginal epithelium from anterior and posterior walls to then close together, leaving the uterus and cervix in situ and forming a hammock distal to these. Channels are left at either lateral side to allow drainage of UGT secretions. (see diagrams below)
- **Total**- for women who have had a previous hysterectomy. This involves denuding the whole vagina vaginal and closing it from the vault down (remember this is hanging out), in a series of purse-strings.







## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 28th April 2016. Publication date 9<sup>th</sup> May 2016.

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#### **TOPIC 1: *The therapeutic recidivist with chronic airways disease***

A 60 year old patient with severe lung disease (FEV1 0.64L) booked for extensive onco-gynecological laparotomy. There are “no other surgical options”. Patient history includes being a heavy smoker, “asthma” multiple PE’s previously, T2DM, atrial flutter. BMI 37. Patient was previously cancelled in the clinic six weeks ago due to respiratory state at that time, with a plan for respiratory optimization including smoking cessation at home (distance patient). Phone contact with the patient during this time indicated she was well, had stopped smoking and was feeling better etc. She then presented for surgery 6 weeks later with severe wheezing and acutely unwell. Despite having said she had stopped smoking she now admitted only stopping one week previously.

**Discussion:-** According to surgeon the procedure is potentially curative. Her life expectancy is significantly reduced due to lung disease, but given her age this is of uncertain importance, so curing the cancer is an appropriate goal. Despite the delay thus far, it was still felt that the patient should again be postponed. Arrangements made for the respiratory physicians to review at time of cancellation to attempt to optimize the lungs with oral and inhaled steroids, and plan for admission in two weeks’ time. Admit two days prior to surgery for further review including overnight oximetry. The patient may need post-operative noninvasive ventilation. There needs to be ongoing liaison with the GP (distant patient) to oversee care. A case conference between the anaesthetist, surgeon and respiratory physician was considered but probably will not change management at this point.

#### **TOPIC 2: *Elective surgical procedure during recovery from asthma exacerbation.***

An elective procedure is scheduled on day after clinic visit. The patient has travelled a significant distance. The patient has chronic asthma with a recent ‘exacerbation’ treated with a short course of prednisone (initially 50mg and has now reduced to 10mg per day). This treatment may have been chosen by the GP to ensure the patient was well for surgery. Patient is now ‘well’, but is still on 10mg/day.

**Discussion:-** Ideally surgery would be held off until prednisone has ceased, however patient now seems well and prednisone dose is in the acceptable range for surgery. It is consistent with the dose used for PONV prophylaxis. The procedure could be done with a spinal. The ‘social’ implication of cancelling at this stage cannot be totally ignored. It suggested to discuss case with procedural anaesthetist to make decision.

#### **TOPIC 3: *Left Bundle Branch Block and Investigation for cardiac ischemia.***

It is general understood that left bundle branch block makes conventional ECG-based stress testing for ischaemia uninterpretable. So is a sestamibi the answer?

Left bundle branch block may also cause “false negative” findings on sestamibi. Why? The inco-ordinate ventricular contraction due to delayed conduction means that part of the left ventricle will still be electrically in systole (initially) when the rest of the ventricle is in early diastole. Coronary perfusion only occurs during diastole. Hence they area of the ventricle receiving delayed conduction will have delayed coronary artery perfusion. On sestamibi imaging, this may be confused with the appearance of ischaemia due to coronary artery disease. This phenomenon does not make sestamibi a worthless investigation for ischaemia, however it increases the difficulty of interpretation. Similarly, ventricle movement assessed on cardiac echo in the context of conduction defects may give an appearance that could be confused with coronary artery ischaemia. The ‘take-home’ message is that no test can be interpreted in isolation of the clinical details of the patient, and confusing tests need to be interpreted with caution.

**TOPIC 4: Takatsubo Cardiomyopathy:- Late Perioperative Management**

A 68yo patient for a knee replacement gives a history of severe Takatsubo Cardiomyopathy following death of her dog more than 2 years ago. She now appears well, she has good exercise tolerance, and is otherwise reasonably well. Only medication is Beta Blockers and Aspirin. How can she best be managed through the perioperative period?

**Discussion:** Recovery of the left ventricle both pathologically and functionally after Takatsubo Cardiomyopathy is almost universal. The risk of occurrence seems to be very low (less than 5%) and is unpredictable. There is no evidence to support any strategy to prevent a recurrence of Takatsubo Cardiomyopathy (eg anxiolysis, beta blockers and/or alpha Blockers, etc). Further, although there are good theories, there is still no clear understanding of what causes Takatsubo Cardiomyopathy. Therefore it is reasonable to treat a patient with a past history of Takatsubo who has recovered, as “entirely normal”



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 30<sup>th</sup> June 2016.

Publication date 11<sup>th</sup> July 2016.

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#### **TOPIC 1:                      *Colonoscopy due to constipation***

Mr LC a 56 year old male reviewed in the Perioperative clinic for colonoscopy due to constipation.

##### Background

1. COPD
  - current smoker (>30 pack years).
  - Spirometry FEV1/FVC 0.94/1.85L. FEV1 is only 27% predicted.
  - ABG on room air shows PaO<sub>2</sub> = 59mmHg, PaCO<sub>2</sub> = 57mmHg
  - 4 min walk test 375m
  - On home oxygen nocte despite still smoking!
  - 2 recent admissions to ICU for respiratory failure, one requiring intubation. Respiratory and cardiac arrest in 2013 requiring prolonged ICU admission.
2. IHD
  - AMI in 2013.
  - Recent CT coronary angiogram demonstrated calcified plaque in the LAD. Reviewed by Cardiologist, for medical therapy only.
3. Traumatic brain injury aged 21.
  - Absence seizures – last in 2014
4. Anxiety – takes olanzapine

Medications : symbicort, Spiriva, metoprolol, aspirin, olanzapine, atorvastatin, lamotrigine, rabeprazole.

##### Discussion:

- Indication for colonoscopy – no red flag signs of malignancy. Possibly suited to less invasive investigations first. Gastroenterologist had mentioned that CT colonography may be appropriate.
- Appropriateness of surgery – patient will not be fit for any additional procedure should colonoscopy be abnormal
- ? surgical “merry-go-round”. Has this patient tried to address causes of constipation and trialed treatment for constipation before ending up at the perioperative clinic for colonoscopy

##### Outcome

Patient referred back to GP and surgeon for consideration of CT colonography

#### **TOPIC 2:                      *Cyctoscopy and bladder biopsy***

Mr B a 76 year old male who presented to Belmont Perioperative clinic for cyctoscopy and bladder biopsy.

##### Background

1. IHD
  - CABG 2007
  - Angiogram March 2015 – patent grafts
  - TTE – normal LV, mild diastolic dysfunction, moderate pulmonary hypertension
2. COPD/Asthma
  - Quit smoking 6 years ago
3. Type 2 DM
  - OHG management only. No recent HbA1c.
4. Previous left nephron-ureterectomy for TCC – chemotherapy 2015
5. Recent functional decline. SOB with minimal exertion. Able to walk 50m.

Medications : ISMN, telmisarten, amlodipine, atorvastatin, aspirin, metformin, frusemide, symbicort, allopurinol.

His cardiorespiratory exam was unremarkable except for mild bibasal crepitations on chest auscultation and a trace of ankle oedema.

He had his last cystoscopy at Belmont in December 2015. On this occasion his case was cancelled at Belmont Hospital and referred to JHH due to being “not appropriate for Belmont”.

#### Discussion

- Anaesthetic review of patients at Belmont clinic. This is often done by SRMOs who are supervised by consultants in the clinic. Decisions regarding deferring patients for surgery should always have senior input.
- “Suitability” for Belmont hospital. This nebulous description is extremely subjective. Recent trainees at Belmont Hospital report this decision is often based on who is the anaesthetist on the day, and may include considerations of post-operative care. There is marked variability in practice. This should be simpler for day only procedures. This patient had recently had a similar procedure at Belmont with no issues.
- Alternatives to surgery and anaesthesia at Belmont Hospital. This can involve further delays to patient management, may require referral to a surgeon who operates at JHH, and for endoscopy may involve the patient’s procedure being transferred from an operating theatre with equipment and assistance close by, to the Endoscopy suite, a less ideal location. This is possibly a worse outcome for the patient.

#### Outcome

- This is an ongoing issue for the department.
- Possible solutions were canvassed. These included : attempts to standardize criteria for deferring surgery at Belmont, and additional support for more complex cases.
- Belmont has advantages for day only procedures due to its smaller size and efficiency.

### **TOPIC 3:                      *Patients taking high dose oral opioids***

There was a general discussion initiated by Carolyn Phelan of the pain service about patients who present for elective surgery who are taking high dose oral opioids. The discussion began with a case of an 80 year old male who presented for lumbar laminectomy, who was taking 260mg of Oxycontin and 600mg of gabapentin per day.

The patient had apparently been seen in the perioperative clinic prior to his surgery and his opioid dose noted, although no comments made. The surgery proceeded and there was significant problems controlling his pain in the post- operative period. He required PCA, ketamine, and ongoing Oxycontin treatment.

Carolyn raised the following issues:

- Inappropriateness of high dose opioids for non-cancer pain
- Difficulty verifying patient’s actual dose of opioid
- Problems with post-operative pain management of patients taking high dose opioid therapy
- The significant use of ketamine at JHH for management of pain in patients on high dose opioids pre-operatively. Apparently our use of ketamine is much higher than other areas.

#### Discussion

- Inappropriate prescribing of opioids for non-cancer pain is commonly seen in the clinic.
- Often these patients have entrenched beliefs about opioid treatment, and are unwilling to alter treatment prior to surgery.
- Should surgery be delayed to allow a dose reduction in opioids to improve perioperative pain management? There was much debate on this topic.

#### Outcome

- This issue is obviously complex and involves many health care providers including GPs, surgeons and anaesthetists.
- High dose opioid therapy for non-cancer pain (oral morphine equivalent > 60mg/day) for extended periods of time does not reduce pain and makes perioperative pain management more challenging.
- Ideally change needs to occur at a system level whereby all health care providers reduce use of high dose opioid therapy for non-cancer pain.
- This has recently been addressed in the Quality Matters publication from Clinical Governance (see attached documents)