

FINAL SOE	
Category	Long

Information given to candidate:

An 18 year old male with a history of testicular teratoma requires elective robotic-assisted radical pelvic lymph node dissection. He has cerebral metastases, possible lung metastases which have responded well to recent bleomycin chemotherapy. He is asthmatic, and frequently smokes recreational cannabis but not cigarettes.

Supporting information:

Height 1.75 m, Weight 70 kg, BMI 23

Medications: Beclomethasone and Salbutamol inhalers, Codeine Phosphate 30-60 mg qds, Paracetamol prn

Bloods: Hb 113

ECG: normal.

CXR: normal

PFTs: FEV₁ / FVC: 3.4/4.2, ratio 0.81

A: Assessment

Why is he anaemic? Candidate should ask for FBC: normochromic normocytic profile, possible anaemia chronic disease, renal failure, uncommon effect bleomycin Rx. Show candidate U&Es: normal except slightly raised glucose, why? (good candidate may guess possible recent steroid Rx)

Does chronic cannabis smoking affect anaesthesia? Lung function impairment similar to tobacco smoking, possible post-op withdrawal effects, a/w oropharyngitis & uvular oedema which may increase risk acute airway obstruction in pts receiving GA.

PFTs: candidate should recognise higher than expected FEV₁ / FVC ratio in an asthmatic patient, why? (= restrictive lung disease, ? effect pulmonary metastases or bleomycin-induced pulmonary fibrosis)

Patient has cerebral metastases. **Symptoms & signs of raised ICP?** Headache, vomiting, visual disturbances, altered GCS or personality change, cranial nerve palsies (III, IV, VI), back pain, papilloedema. Show candidate CT head, shows ventricular lesion no evidence mass effect

Any other investigations required? LFTs & coagulation screen (tell candidate both normal).

What position will patient be in for robot-assisted pelvic surgery? Steep 30-45°

Trendelenburg, arms adducted, large robot over patient's abdomen & chest rigidly fixed to port insertion sites. What are **practical problems** of this position – firmly secure patient to table with bindings to prevent gravity slippage, limited intra-op access to peripheral lines, meticulous padding pressure points / peripheral nerves, eye protection, cannot quickly move patient with robot trocars in situ (impediment to CPR).

B: Management

Outline your peri-operative plan:

ETT & IPPV. Continuous intra-op total patient immobility required so must use NMB.

Prolonged intra-op CO₂ pneumoperitoneum so need to adjust vent settings to maintain both normocarbida and acceptable Paw. Risk endobronchial intubation in steep Trendelenburg position. Oro-gastric tube.

Standard AAGBI monitoring. Arterial line probably indicated due to raised ICP risk. CVC need debatable. Interpretation intra-op CO monitoring w/ intra-vascular device limited in presence of pneumoperitoneum, but may consider ODM. NMB monitoring difficult

due to access problems

TIVA vs. volatile. No proven advantage (volatile may increase incidence of recurrence).

Desflurane maintenance probably preferable to other VAAs. BIS monitoring if TIVA.

Remifentanyl TCI may be advantageous.

What intra-op FIO₂ would you choose? Trendelenburg + pneumoperitoneum a/w increased V/Q mismatch so need moderately raised FIO₂. Good candidates: bleomycin Rx + high intra-op FIO₂ a/w risk post-op resp failure. Effects high peri-op FIO₂ on long-term cancer outcomes – controversial, ? may promote metastasis.

Normothermia: prolonged dry cold gas pneumoperitoneum promotes hypothermia. Active warming strategies: forced-air warming device, i.v. fluid warming, increasing operating room temperature.

VTE prophylaxis: calf compression stockings. Intermittent pneumatic calf compression e.g. Flowtron but consider rare risk lower-limb ischaemia in prolonged steep Trendelenburg position.

Post-Op Analgesia? Robotic pelvic surgery less pain than standard laparoscopic approach. Likely low analgesic requirement after 24 hr, oral route available early, WHO ladder. Avoid NSAID in asthmatic. Neuraxial analgesia: probably not indicated in view of risk of dural puncture on CNS hydrostatics in this patient. So paracetamol, codeine, oral opioid / tramadol, possible short-term opioid PCA

One hour into surgery there's a sudden increase in airway pressure. Possible causes?

Coughing / straining 2° to light anaesthesia or NMB, blocked or kinked ETT or circuit, endobronchial intubation, gastric aspiration, pneumothorax.

Management? 100% O₂, call for help, immediately alert surgical team to remove all robotic arms from patient (takes up to 60s) and decompress pneumoperitoneum, oro-pharyngeal & ETT suction. If significant signs of aspiration consider manual IPPV, patient head-down lateral once robot disengaged. Consider abandoning surgery if patient unstable (e.g. high Paw or low SpO₂ despite above measures).

Guidance for examiners: This case is about candidates' understanding about adult robotic pelvic surgery, intra-op pneumoperitoneum, pre-op chemotherapy for cancer, raised ICP, and associated practical & physiological consequences. The case also addresses anaesthetic implications of chronic cannabis use.

Curriculum Mapping: GU_IK_02, GU_IS_06, PB_IK_23, PB_IK_28, AM_IK_02, AM_IK_03

Haematology: FBC

		Units	Normal Range
Hb	113	g/l	130 - 180 M adult
			115 - 165 F adult
WBC	7.9	10 ⁹ /l	4.0 - 11.0
Platelets	208	10 ⁹ /l	150 - 450
HCT	0.36	l/l	0.40 - 0.54 M adult
			0.37 - 0.47 F adult
MCV	85	fl	80 - 100
MCHC	30	pg	27 - 32
Reticulocytes	0.2	%	0.2 - 2.0 Adult
ESR		mm/hr	1 - 10
HbA1c	39	mmol/mol	20 - 42

Haematology: Coagulation

		Units	Normal Range
PT		s	10.5 - 14.5
INR	1.1		
APTT	27.0	s	24.0 - 35.0
APTT ratio			
Fibrinogen		g/l	1.50 - 4.50

Biochemistry: Plasma Renal & Glucose

		Units	Normal Range
Sodium	141	mmol/l	136 - 145
Potassium	4.2	mmol/l	3.6 - 5.4
Urea	6.7	mmol/l	2.5 - 7.5
Creatinine	110	μmol/l	58 - 110
Glucose	7.8	mmol/l	3.0 - 7.7

Biochemistry: Serum Liver

		Units	Normal Range
Bilirubin		μmol/l	0 - 22
ALT		IU/l	3 - 53
Alk Phos		IU/l	30 - 130
Albumin		g/l	35 - 50
Gamma-GT		IU/l	0 - 65