Problem Based Learning Scenarios For Obstetric Anaesthesia

Basic Scenarios 1 to 5

WoSOA

West of Scotland Obstetric Anaesthetists

Scenario 1(basic) PRMH 2004 - tick box when completed

You are the duty anaesthetist in the labour suite and have been informed by a midwife that "the lady in room 6 needs an epidural". From the board you can see that the lady in question is a p1+0 24 yr old at 5cm.

What further information are you looking to glean from casenotes/midwife/patient?

You are satisfied that there are no contraindications. The lady is in obvious distress with each contraction, and has had an epidural during her previous labour.

How do you consent this lady? What risks do you tell her about? What are your views on consent in this setting?

You begin preparations for the epidural

Describe in detail your technique. Justify what you do as far as possible.

You elect to use a low dose 0.1% bupivicaine/2mcg/ml fentanyl infusion regime

What are the theoretical advantages of this and what other techniques can be used to provide epidural analgesia.

20 minutes after the initial bolus the lady complains of slight dizziness

what actions do you take?

Your treatment is successful and you go away for coffee. 1 hour later you are asked to go back in as "it's not working on one side".

How do you assess this- what manoeuvres can you perform to improve the block?

Your actions again are successful and you are happy with the quality of block until some 3 hours later when the lady is beginning to complain of "pressure down below"

What do you do now?

You manage to improve matters, but a short time afterwards, the obstetricians tell you that they are not happy with the CTG trace and have decided to deliver by caesarean section.

How do you provide the anaesthesia for this?

You have decided to perform this under epidural, but midway through, the patient complains of visceral discomfort

What are your options?

The baby is born and the lady is immensely grateful and you go away with a satisfied feeling of a job well done.

Scenario 1

Suggested answers

It can be di icult gleaning in ormation rom a distressed labouring woman! and there can be pressures to "#ust get on with it$! but these should be resisted% & ew minutes are usuall' all that is re(uired to per orm a histor' similar to an' anaesthetic assessment)including airwa' assessment* using all sources o in ormation+ patient! notes! and the attending midwi e% &dditionall' 'ou would be interested in a histor' o back problems! and i an epidural had been used)success ull' or otherwise during her pre,ious pregnanc'%

&s well as describing what is going to happen! 'ou are also obliged to gi,e some risk assessment% I would alwa's in orm about risk o spinal headache and h'potension and sa' that there ma' be a risk o slowing labour and increased risk o instrumental deli,er'- although this is not certain% It is more common nowada's to mention the rare risks o ner,e damage! approx% - in .000 or minor/ temporar' and - in .0 000 or ma#or/permanent%

0onsent during labour is the method used in this hospital although it is ob,iousl' not ideal! howe,er tr'ing to consent people be orehand is e(uall' in,alid% 1he best compromise is to tr' and ensure good antenatal in ormation with a concise and rele,ant explanation at the time o insertion%

2 hate,er techni(ue is used I3 access is re(uired irst% 4therwise i it5s sa e and aseptic it5s acceptable% 6usti ication is re(uired or things like 74R to air%

&lternati,e techni(ues would include top ups with 0%- 8 bupi,icaine! with entan'l! in usions o ,arious solutions and patient controlled techni(ues with discussion o potential ad,antages and disad,antages o each e%g% less motor block

9i::iness is ob,iousl' a potential sign o h'potension! management being mo,ing to a lateral position on a lat bed! i, luids! ox'gen! bp measurement and ephedrine as appropriate as well as ascertaining degree o block to exclude intrathecal in#ection%

&ssessment o block is designed to establish -% 1hat some epidural blockade exists! and 2% 1o de ine whether there is too low a block height! unilateral block or missed segment% 1reatment options include urther top up with 7& with patient on the e ected side! withdrawing catheter! using entan'l and resiting as appropriate%

Rectal pressure is a classic problem late in labour and is o ten partiall' relie,ed b' entan'l%

;mergenc' section in this case would most likel' be per ormed under epidural! with lignocaine and adrenaline being recommended in our protocols or this% 1here should be some discussion about the di erences between lignocaine and bupi,icaine and o the toxic dose ranges in,ol,ed%

3isceral discom ort during epidural section is not uncommon and depending on circumstances ma' be managed b' reassurance! more 7&! <entan'l epidurall' or I3! &l entanil I3! supplemental =itrous 4xide! and con,ersion to >& or an' combination o the abo,e% Importantl' >& should be o ered earl' when other supplementation is not ull' e ecti,e! and all actions documented%

Scenario 2(basic) PRMH2004- tick box when completed

A 32 year old p0+1 has been booked for an elective caesarean section for breech lie at 38 weeks gestation. She has arrived from home this morning.

What preparation should this lady have received prior to admission? What are the potential problems and benefits of admitting such patients on the day of section.

You go to assess the lady prior to going to theatre.

What assessment do you make? What anaesthetic advice do you give? How do you consent this lady?

You are now in theatre. The lady is fit and healthy 5 foot 4 inches tall and 77 kg. You have decided on a spinal anaesthetic

Describe your technique. What needle do you use and why? What other needles are there? How do you calculate your dose of anaesthetic?

You have decided to add diamorphine to your spinal injection.

What are the potential advantages/ disadvantages of this? What alternative drugs could be added?

The spinal injection is in without too much difficulty.

How do you manage the patient now?

4 minutes after injection the lady complains of a "terrible sick feeling"

What do you do now?

The systolic BP is low (80 mmHg) despite your initial management.

What do you do now?

At 10 minutes you are back in control

How do you assess the block?

The surgery is under way. At delivery the patient complains of some visceral discomfort.

What drugs do you give at delivery? If the discomfort continues how can you improve this?

Your management has been reasonably successful and the operation is now over. The lady is pleased with the outcome.

What are the options for post-operative analgesia here?

Suggested answers

1. 1he woman should ha,e completed an anaesthetic assessment orm at the antenatal clinic the pre,ious week% I an' potential anaesthetic or obstetric problems had been identi ied! discussions should ha,e taken place regarding easibilit' o morning admission % She should ha,e recei,ed ad,ice about antacid proph'laxis and been gi,en 2 ? -.0mg doses ranitidine to take the night be ore and morning o surger'%
2. @ene its to the patient include a more rest ul night at home rather than at night in hospital% Howe,er i there are problems which ha,e not been identi ied! this ma' dela' surger'% In addition women can orget to take antacid proph'laxis! ma' orget to ast and o ten are late! or are dela'ed at the admissions desk! all o which can dela' surger'% @lood has to be sent or group and sa,e or cross match on admission%
3. Asual anaesthetic! including airwa'! assessment should be made% Some in ormation will be a,ailable on the assessment orm% &d,ice should be gi,en regarding t'pes o anaesthesia% Man' women ha,e heard o epidurals! and the di erence with a spinal anaesthetic should be emphasised% 2 omen who wish a general anaesthetic should ha,e the pros and cons o spinal and general explained% Maternal re usal is a contraindication to spinal anaesthesia! but women should be making an in ormed choice% It is important the' understand the risks to themsel,es and bab' o >&%
4. It is essential to discuss certain complications related to spinal anaesthesia! and document that 'ou ha,e done so! either on the anaesthetic orm or in the case notes% &t present we recommend 'ou explain there is a -8 headache risk ! a risk o h'potension and nausea! and a risk o eeling pushing/ pulling in the abdomen during section under spinal anaesthesia% 2 hile it is important to suggest that pain ma' be elt! this should be done tact ull' e%g% B'ou will eel some pushing and pulling! but i 'ou eel uncom ortable or sore let me know5%
5. -C--4 g I3 cannula should be inserted! and Hartmann5s solution running% 1he bene its o a luid pre-load in pre,enting h'potension are contro,ersial D but our patients usuall' recei,e -litre during spinal insertion% 2 ith the woman either sitting or in the right lateral position the spinal is inserted% & 24g Sprotte or 2 hitacre needle used% 0utting edge needles are ne,er used D headache rates up to 208 with 2Cg needles%
6. 1here is a *rough* correlation with maternal height and height o sensor' block% Asuall' 2%.ml 0%.8 h'perbaric bupi,acaine is used% 1his ma' be reduced i the mother is unusuall' small! less than . eet! or has a multiple pregnanc'! or has se,ere pol'-h'dramnios)0S; ma' be used in these circumstances*% 2e ma' increase the dose i the mother is E . oot F inches! or has a pre-term bab' and/or se,ere IA>R%)&gain 0S; ma' be the best choice*%
7. **Diamorphine** appears to impro,e the (ualit' o spinal block and reduce the need or ad#u,ants%)G00 micrograms*! and when compared to entan'l pro,ides much extended post-op pain relie % 9isad,antages include the need to draw up another drug! and the ampoule is non-sterile and made o glass% &lwa's use the ilter needle! but lush a ter as there is (uite a big dead space in the needle% Some women experience itching! but this is normall' mild! and ma' be re,ersible with nalbuphine% 1here is potential or respirator' depression! but we gi,e a modest dose! other opioids are rarel' gi,en and the women are 'oung%
8. 1he woman should lie lat! and the table is tilted 20 degrees to the le t% ;nsure the lateral support is in place or someone stands at the side o the mother to pre,ent her rolling o the table% @P should be assessed e,er' minute% Maternal 42 therap' has been shown to reduce the se,erit' o nausea! but is not essential i the mother dislikes it% Pulse oximetr' and ;0> should be used% ;arl' use o ephedrine or modest alls in @P usuall' pre,ents se,ere h'potension%
9. =ausea is almost alwa's associated with h'potension at this time% Incremental doses o ephedrine can be used! though an in usion ma' be commenced i there is earl'/se,ere alls in pressure%

10. Resistant h'potension should be treated b' turning the woman ull' onto her side! and ensuring surgical deli,er' is hastened% <urther ephedrine should be gi,en%
11. @lock height **for surgery** is commonl' assessed b' loss o sensation to pin prick in published studies% In practice howe,er there remains debate o,er the optimum modalit'+ light touch and temperature also being used% 1he ideal upper height is 14 D at nipple le,el% 0omplete loss o sensation to pinprick is o ten a ew segments below the le,el at which the mother eels the pinprick sharp rather than blunt! which can be some segments below loss o cold sensation% &dditionall' complete motor block at the hips and some e,idence o s'mpathetic blockade should be con irmed be ore starting surger'%9ocument upper and lower block height on chart%
12. 3isceral discom ort can occur despite adu(uate block height% 1he astest wa' to resol,e it is to gi,e incremental doses)2.0mcg* o al entanil% 4ther techni(ues include gi,ing epidural entan'l)i using 0S;*! or other opioids! e%g%morphine! but these are slower acting% =24H42 can be gi,en ! but is less e ecti,e% 0on,ersion to >& is rarel' re(uired i the block height has been at 14 at the start% Howe,er! i the mother is distressed and 'ou cannot relie,e pain! a >& should be o ered! and gi,en% ***Rarely***, i 'ou reall' eel the distress is caused b' anxiet' rather than pain! then mida:olam increment can be gi,en! I the mother is sore! and mida:olam is gi,en! it is likel' to worsen her distress%
13. Post-op analgesia is usuall' a combination o non-steroidals and opioids% P0& morphine is recommended b' =I0;! but sc morphine or oral opiates are commonl' used where intrathecal diamorphine has been gi,en% Most women recei,e a diclo enac suppositor' at the end o surger'H these can be written up Fhourl' post-op% 0ontraindications include se,ere asthma or aspirin/=S&I9 intolerance%

Scenario 3(basic) PRMH2004- tick box when completed

A 35-year-old primigravid comes into pre-natal for induction of labour. She has gone to NCT classes during her pregnancy and is keen to have a low intervention labour. She has agreed to be induced because she is now at term +10 days.

What non-pharmacological methods of pain relief are available?

She has some prostin gel PV and uses her TENS machine and then asks for some additional analgesia.

How does TENS work? What additional analgesia should she be offered?

She is now suitable for ARM and syntocinon and reluctantly has an IV inserted and asks for more analgesia. She is not keen to have an epidural.

Which opiates can be given and how can they be administered? Would you consider inhalational analgesia for this lady?

Two hours after the syntocinon has started she asks for an epidural. You go through the usual procedures and explanations.

What drugs do you give through the epidural and how do you give them?

She is very happy with her epidural and progresses in labour with her partner for support and relaxation tapes playing in the background. Unfortunately she is very slow to progress and 12 hours after syntocinon started the decision is made that she requires a caesarean section.

How would you top up this patient's epidural for section?

The section proceeds with no hitches and towards the end of the section she asks you what you are going to give her for pain relief.

What do you tell her and what other methods could you use?

She tells you at the end that it wasn't what she had planned but she is very happy with the outcome.

SCENARIO 3

Suggested answers%

-% & patient who has been to =01 classes will be armed with a great deal o in ormation on this sub#ect% 1he method we are most amiliar with is the 1;=S machine which is use ul in earl' labour and or induction o labour% <or pain relie in labour the electrodes are taped to the back abo,e the pain transmitting a erent ner,es which enter the posterior column o the spinal cord + one pair abo,e both sides o the spinal processes rom 1-0 to 7- or the irst stage in labour and one pair abo,e the spinal processes S2-S4 or the second stage in labour% 1he best pain relie achie,ed is or backache% 1here is a contra indication to its use i the patient has a pace- maker% 4ther methods include h'pnosis which needs se,eral training sessions and a skilled h'pnotist! acupuncture used b' onl' a ew dedicated people and ne,er interestingl' used in 0hinese culture! and ps'choproph'laxis and preparation or antenatal classes where an attempt is made to prepare the woman and partner or labour% "0ommon sense$ measures such as mobilising and warm baths should not be orgotten%

2% 1he pain experienced a ter prostin is ,er' ,ariable% Most women would be gi,en paracetomol or cocodamol orall' and o ten i priming is taking place o,ernight the' would be gi,en some tema:epam as well% 1he' would then be o ered some diamorphine! I%.mg I%M% i the' are a primigra,id and .mg i the' are parous% Asuall' the' would be examined be ore urther analgesia would be gi,en%

G% & ter &RM and s'ntocinon has commenced the woman could be gi,en urther diamorphine i re(uired% Maternal side e ects o opiods are respirator' depression which is ,er' unlikel' in this situation! dela'ed gastric empt'ing which is well recognised in this situation and ob,iousl' placental trans er o drug to the etus% 4ther obstetric units use pethidine which midwi,es ha,e been able to prescribe since the -J.0s% Asuall' both these drugs are gi,en I%M% but this can take up to G0 minutes to be e ecti,e% & small I%3% amount o the drug can be use ul i the patient is ,er' distressed% P%0%&%s ha,e been used in labour where an epidural is contra indicated or not a,ailable% 1he drugs used recentl' or P%0%&%s are entan'l and al entanil but as with the other opiods there will be placental trans er o the drug% ;ntonox can be use ul !but success depends on the mother being properl' instructed and the skill o the midwi e encouraging the right techni(ue% =itrous oxide has a low solubilit')-%4* and a low blood gas partition coe icient)0%4I* so that there is rapid e(uilibration between inspired and brain concentrations% &bout .08 o labouring women deri,e some bene it rom entonox%

4. 0%2.8 bupi,acaine is commonl' used to establish a block% 1he test dose is G-.mls% 1his is ollowed b' -0--2mls to extend the block or labour% 1his can then be topped up b' a suitabl' trained midwi e with -0mls 0%2.8 bupi,acaine% &nother method is to start an in usion with 0%-8 bupi,acaine and 2µg/ml o entan'l to run at C--2mls/hour% I the mother is keen to ambulate the epidural should be established with -.mls o 0%-8 bupi,acaine and 2µg/ml o entan'l and that mixture should be gi,en or the top ups% <entan'l is use ul i the mother complains o rectal pressure% .0µg in either -0mls 0%J8 saline or 0%2.8 bupi,acaine o ten relie,es troublesome backache or rectal pressure% P%0%;%&% is another method which can be use ul% 1he epidural is established with 0%2.8 bupi,acaine and then the P%0%&% is illed with 0%2.8 bupi,acaine with no background! bolus o 4mls and a lockout o 20 minutes%

;ither 0%.8 bupi,acaine or 28 lignocaine with adrenaline -÷200000 can be used to top up an epidural or section% 9iamorphine 2 to G mg can be gi,en epidurall'! pro,ided the

patient is not clinicall' "o,er-opiatised$ as this can supplement the intra-op block and pro,ide good post-op analgesia%

S0 morphine as hospital protocol with ,oltarol is the method o choice at this hospital% P%0%&% morphine is used when axial opiates ha,e not been gi,en% Make sure that ,oltarol is de inatel' contra indicated i the patient has asthma or example because it makes a substantial di erence post operati,el'% I%M% analgesia is used in other units and again with ,oltarol P%R% at time o section and gi,en regularl' works reasonabl' well% <entan'l in the epidural space reduces the amount o analgesia re(uired post section or onl' the irst G-4 hours% It is possible to use 7%&% top ups post operati,el' but this can con ine the patient to bed when she would rather be up and about and ob,iousl' needs the same monitoring that an' epidural re(uires%

Scenario 4(basic) PRMH2004- tick box when completed

A 23 yr old p 0+0 with no epidural has had an ARM in the labour suite, but unfortunately sustains a cord prolapse as a result of the procedure

What immediate management are the midwifery/obstetric staff going to do, and what implication does this situation have for you as the anaesthetist?

The lady is rushed to theatre. The obstetricians are requesting immediate delivery

What anaesthetic options do you have?

You prepare this lady for a General anaesthetic

What assessment do you make of the patient bearing in mind time is short? How can the airway be assessed and how reliable is this assessment? What prophylactic manoeuvres do you employ and why?

You begin your anaesthetic

Describe in detail your technique including drug doses and timing. In general terms, why are we more worried about a GA in this setting than a similar induction for a patient with an acute abdomen? What are the key safety features of your technique?

Having initially at laryngoscopy identified the arytenoids only, you fail to intubate at the first attempt and lose your view

What are you going to do now?

The obstetricians are desperate to get on. You decide to try again, and think this time you have succeeded

How do you proceed from here? Imagine you are unable to intubate at this point, how would you proceed?

You are convinced intubation is satisfactory, and allow the obstetricians to start

What settings do you use on your anaesthetic machine and ventilator pre delivery and why? What do you do at delivery?

The operation proceeds uneventfully, a healthy- though "sleepy" baby is delivered

How do you manage the extubation?

Your own tachycardia has settled down, and you have time to reflect on events. You have succeeded in your aims of providing rapid, safe anaesthesia.

What do you think is the single most important adverse event to avoid during a situation like this? Are you familiar with all the equipment on our airway trolleys? What other indications for GA section can you think off?

Scenario 4- suggested answers

1he signi icance o this situation is an immediate serious threat to the li e o the etus as a cord exposed to cold air will ,asoconstrict% 1he midwi er' sta ha,e a number o manoeu,res to attempt to "bu' time$ which include manuall' pre,enting an' urther prolapsing and putting the patient in the Hands and knees position% 1his is one o the situations that re(uire immediate deli,er'% >eneral anaesthetic would normall' be the onl' option%

&ssessment is o necessit' limited and will take the orm o rapid (uestioning whilst 'ou are preparing or the >&% Important considerations include pre,ious >& histor'! PMH! drugs! allergies! asting status! dentition! as well as an assessment o the airwa'% &lthough it should be used! Mallampati testing tends to pro,ide 'ou with little extra use ul in ormation as it lacks speci icit' and sensiti,it'%

Proph'lactic measures are+ -%H2 antagonist-usuall' ranitidine .0mg im or diluted I3- but it is important to appreciate that this is not going to ha,e an' signi icant protecti,e e ect during induction within this sort o timescale! although ma' help at extubation% 2% =a 0itrate G0ml o 0%G M taken orall' immediatel' be ore induction designed to immediatel' raise gastric pH% G% Pre-ox'genation! 4% 0ricoid pressure% In other centres => tubes are used to reduce gastric ,olume! but we do not routinel' practice this%

1his is a standard 0ontrolled rapid se(uence induction with ull monitoring! and the addition o le t lateral tilt% It is important not to loose sight o the act that this is almost exactl' the same as a 0RSI or something such as an appendicectom' that 'ou ha,e done man' times be ore%

2 e tend to be more concerned because o the gra,id uterus causing increased gastric pressure and decreased <R0! as well as reduced oesophageal sphincter tone% In addition gastric empt'ing ma' ha,e been urther reduced b' opiates% Howe,er >astric pH is probabl' no lower than normal%

1he ke' sa et' eatures are -%gastric acid proph'laxis! 2% Pre-ox'genation! G% 0ricoid pressure%

2 e use 1hiopentone in an ade(uate does to ensure anaesthesia! historicall' limited doses were used but this is no longer acceptable% 1his means a dose o around .mg per Kg% 1his is ollowed b' Suxamethonium at -mg per Kg% 0ricoid pressure is applied at the time o loss o consciousness%

Scenario 5(basic) PRMH 2004 – **tick box when completed**

A 32 year old para 1+0 has been admitted to labour ward in established labour having had vaginal bleeding at home. Your first involvement is 1 hour later when she requires an urgent Caesarean section because the CTG trace is not good.

How would you assess this lady? What information do you require to decide on the appropriate anaesthetic for her C/S?

On the basis of your assessment you decide to insert a spinal anaesthetic for C/S. Anaesthesia and surgery proceed uneventfully and a 10lb baby is delivered. The lady returns to recovery, where 45 minutes later you are asked to review her. Her BP is 80/40, heart rate 125/minute and she is not looking well!

What is your immediate course of action? What are the most likely diagnoses?

A diagnosis of atonic uterus is made on clinical grounds.

What lines of conservative management may be used to treat this? What potential complications do these treatments have?

None of the above manoeuvres are successful and the decision is made to take the patient to theatre.

How are you going to manage and anaesthetise this lady? What surgical procedures may be performed?

Unfortunately a hysterectomy is required to control this patient's bleeding. Estimated total blood loss is 4,500ml.

What further problems might you anticipate with this lady? Outline your plans for intra-operative management.

What decisions are you going to have to make at the end of the operation, and what would your post-op management be?

Scenario 5 – Suggested answers

-% In addition to 'our usual pre-op assessment 'ou need to ascertain the signi icance o this lad'5s earlier ,aginal bleeding% How much blood did she loseL)this is o ten di icult to elucidate clearl'*! has it happened be oreL)it ma' ha,e been in,estigated D check or AS reports*! has it continued since admissionL @leeding around the onset o labour ma' be "show$! which is due the dislodging o cer,ical mucus and will not pose an ongoing problem% 1here are man' causes o signi icant ante-partum haemorrhage but the two commonest are placental abruption)which classicall' causes abdominal pain* and placenta prae,ia)which classicall' presents with painless ,aginal bleeding*% 1he latter can be con irmed b' AS scan% It is important to assess the patient clinicall' as ,isible bleeding ma' not re lect total loss and there ma' be considerable concealed loss! especiall' with a placental abruption)beware the patient with a tach'cardiaM*% 0oagulopath' is a potential problem with a ma#or abruption and torrential bleeding ma' occur at 0aesarean section with a placenta prae,ia% & patient who has signi icant acti,e bleeding will re(uire general anaesthesia or 0/S% Patients with a diagnosis o placenta prae,ia or minor abruption who are stable and not bleeding ma' be anaesthetised with a regional techni(ue! but this should be discussed with a senior anaesthetist% <ortunatel' this lad'5s bleeding had stopped and was presumed to be due to show% She was haemod'namicall' stable thus the decision to proceed with spinal anaesthesia%

2% 1he patient5s ,ital signs suggest that she is bleeding and 'our immediate action should be to speed up the I3I! gi,e ox'gen b' acemask and insert a second large bore I3 cannula% & sample o blood should be sent awa' or <@0 N coagulation screen and at least C units o cross-matched blood should be re(uested% &t PRMH an "acute obstetric haemorrhage pack$ can be ordered at an' time without the need or blood results% &s she was deli,ered b' 0/S bleeding ma' be related to surger' or to an atonic uterus% In the case o the latter examination will re,eal either bleeding per ,aginum or a high undus)due to cer,ical clot* with a poorl' contracted uterus% =@% & ter ,aginal deli,er' cer,ical and ,aginal lacerations ma' cause bleeding% @leeding ma' also be due to a de ect o coagulation rather than a structural lesion%

G% 1he irst manoeu,re to be per ormed is usuall' uterine massage and /or bimanual compression%
S'ntocinon . iu b' I3 bolus ma' be used% Haemod'namic e ects o this include reduced total peripheral resistance and mean arterial pressure! and increased heart rate and cardiac output% 1hese rarel' re(uire inter,ention! but patients re(uentl' become lushed and complain o a pounding headache a ter administration o s'ntocinon% 4nset o action is about G minutes! but the duration o action is onl' about -. D 20 minutes! so an I3 in usion)20 iu / .00ml Hartmann5s solution titrated to e ect* ma' be re(uired% ;rgometrine is usuall' the next drug to be used% It is an ergot deri,ati,e and ma' be gi,en IM or I3 in doses o up to .00mcg% It is a potent arterial and ,enous ,asoconstrictor causing increased peripheral resistance! increased arterial blood pressure and reduced ,enous capacitance% Its use should be a,oided in those patients with h'pertension)pregnanc' related or essential* or heart disease and care should be taken as marked increases in blood pressure ma' occur i it is gi,en with ephedrine or methoxamine%
Prostaglandin <2alpha ma' be gi,en IM in a dose o 2.0mcg% It has also been used b' direct intram'ometrial in#ection but ma' be rapidl' absorbed b' this route%

It causes s'stemic ,asodilatation! pulmonar' arteriolar constriction and increased heart rate cardiac output and arterial blood pressure ma' all dramaticall'% It ma' also cause bronchospasm and should be used with care in asthmatics%

G% 1his lad' is acti,el' bleeding and will re(uire a general anaesthetic or explorator' surger'% 3igorous luid resuscitation should be gi,en D the le,el - blood warmer can literall' be a li esa,er in these and similar circumstances% It ma' be necessar' to gi,e group speci ic! uncross-matched blood or 4 Rh% negati,e blood be ore ull' cross-matched blood is a,ailable% >eneral anaesthesia should ollow the standard guidelines or 0/S sodium citrate should be gi,en pre-induction as the patient is still at risk o aspiration% I bleeding is torrential resuscitation and anaesthesia ma' ha,e to go hand in hand! and a smaller dose o I3 induction agent should be used% 9on5t orget to call or senior help

Possible surgical procedures include+

)a* ;xploration o the uterus or retained placenta and uterine packing%

)b* 7igation o the internal iliac arteries%

)c* >ra,id h'sterectom'%

.% & central ,enous line will both aid luid replacement and gi,e urther ,enous access! and should be sited when the patient is asleep% 0onsideration should be gi,en to using an arterial line% & urinar' catheter will almost certainl' ha,e alread' been inserted preoperati,el'%

1his patient is at risk o the problems o massi,e blood loss+

)a* H'pothermia% Ase a blood warmer! oil hat! and a warm air blanket i a,ailable)i not! wrap up as much o the patient as 'ou can* and monitor their temperature% I not using the circle s'stem! use an HM; ilter%

)b* 0oagulopath'% Send or blood products as clinicall' indicated or on the basis o <@0 and coag% screen results% 1he &cute obstetric haemorrhage pack contains+ F units o red cells! 4 units o <<P! and 4 units o platelets% 1hese will be t'pe speci ic i blood bank ha,e a group and sa,e sample! and 4 rh% negati,e i not%

)c*

Post-op 'ou ha,e to decide whether the patient can be wakened up and managed in H9A or re(uires I1A trans er% 1his will be a clinical #udgement taking into account the whole picture% 4 ten discussing the case earl' with the I1A consultant can be help ul%