2014

每週案例選粹 -201413

十七歲男性，車禍後上唇撕裂傷及腹痛

臺大醫院急診醫學部/NTUH-ED

LSH
NTUH
2014/4/11

臺大醫院急診醫學部每週線上案例討論會 – 201413

【主訴】

十七歲男性，車禍後上唇撕裂傷及腹痛。

【現病史】

十七歲男性，無特別過去病史。主訴為車禍後上唇撕裂傷及腹痛。病患和同學共乘機車，因與另外一輛摩托車擦撞發生車禍。同學(駕駛者)無明顯外傷，活動自如。病患戴安全帽從摩托車上飛出導致腹部撞擊，當時沒有意識喪失的現象，也沒有噁心嘔吐的症狀。病患臉部有些微擦傷，上唇撕裂傷，但感到腹部明顯疼痛。除此之外，病患對於問題回答自如，四肢活動正常，無感覺異常；按壓頸部，脊椎，胸廓亦沒有疼痛感；無大小便失禁的問題。車禍後經由 119 送往本院急診處理。。

【門診用藥】

無。

【生命徵象及理學檢查】

Consciousness: Clear, E4V5M6

Vital signs: BP: 98/77mmHg, BT: 35.9℃, PR: 93/min, RR: 18/min,

Head/Scalp: Normal

Pupils: Isocoric, with prompt light reflex: (+)

Conjunctiva: Not Pale; Sclera: Anicteric

Upper lip 2cm laceration wound without active bleeding

Neck: Supple Jugular Vein Engorgement: (-) Lymphadenopathy: (-)

Tracheal deviation: (-); Subcutaneous emphysema: (-)

Chest: Symmetric expansion, Breath sounds: Clear

Heart: Regular Heart Beats, Murmur: (-)

Abdomen: Bowel sounds: Normal

Diffuse tenderness (+) and rebounding pain(+)

Cutaneous ecchymosis: (-); Cullen's sign: (-); Grey-Turner's sign: (-)

Extremities: Freely movable.

臺大醫院急診醫學部每週線上案例討論會 – 201413

【急診檢驗報告】

CBC/DC:

CBC+PLT BLOOD

CBC+PLT(1/2)	WBC(K/μL)	RBC(M/μL)	HB(g/dL)	HCT(%)	MCV(fL)	MCH(pg)	MCHC(g/dL)	PLT(K/μL)
2013/12/03 23:41	14.75	4.64	13.8	40.0	86.2	29.7	34.5	281

CBC+PLT(2/2)	PS()
2013/12/03 23:41	-

WBC Classification BLOOD

WBC Classification(1/2)	Blast(%)	Promyl.(%)	Myelo.(%)	Meta(%)	Band(%)	Seg(%)	Eos.(%)	Baso.(%)
2013/12/03 23:41	0.0	0.0	0.0	0.0	0.0	67.2	1.4	0.2

WBC Classification(2/2)	Mono.(%)	Lym.(%)	Aty.Lym.(%)	PlasmaCell(%)	Normobl.()	PS()
2013/12/03 23:41	2.9	28.3	0.0	0.0	0	-

BCS+e⁻:

Biochemistry BLOOD

Biochemistry(1/1)	CRE(mg/dL)	Na(mmol/L)	K(mmol/L)
2013/12/03 23:41	1.0	136	3.4

General BioChemistry BLOOD

General BioChemistry (1/1)	ALT(U/L)
2013/12/03 23:41	13

Coagulation profile:

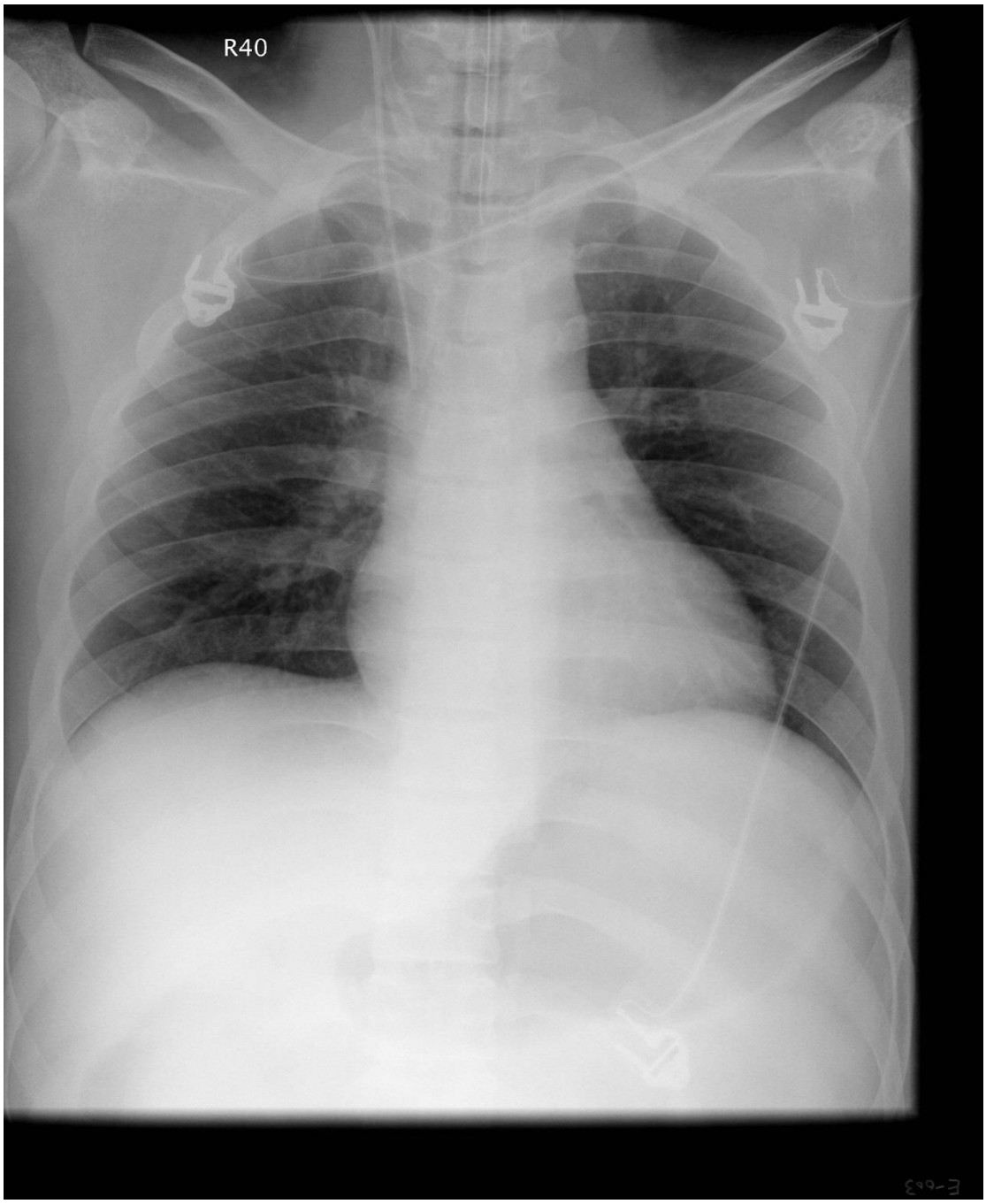
Coagulation BLOOD

Coagulation(1/1)	PT(sec)	PTT(sec)	PT INR()
2013/12/03 23:41	11.0	23.5	1.03

Blood sugar:

(1/1)	Sugar(One touch)(*)
2013/12/03 23:34	178

【影像學檢查】
胸部 X 光



關鍵腹部顯影劑注射之電腦斷層影像: (請參考臨床問題釐清第 4 點)

【心電圖】

17 年
男

室:
位置:12

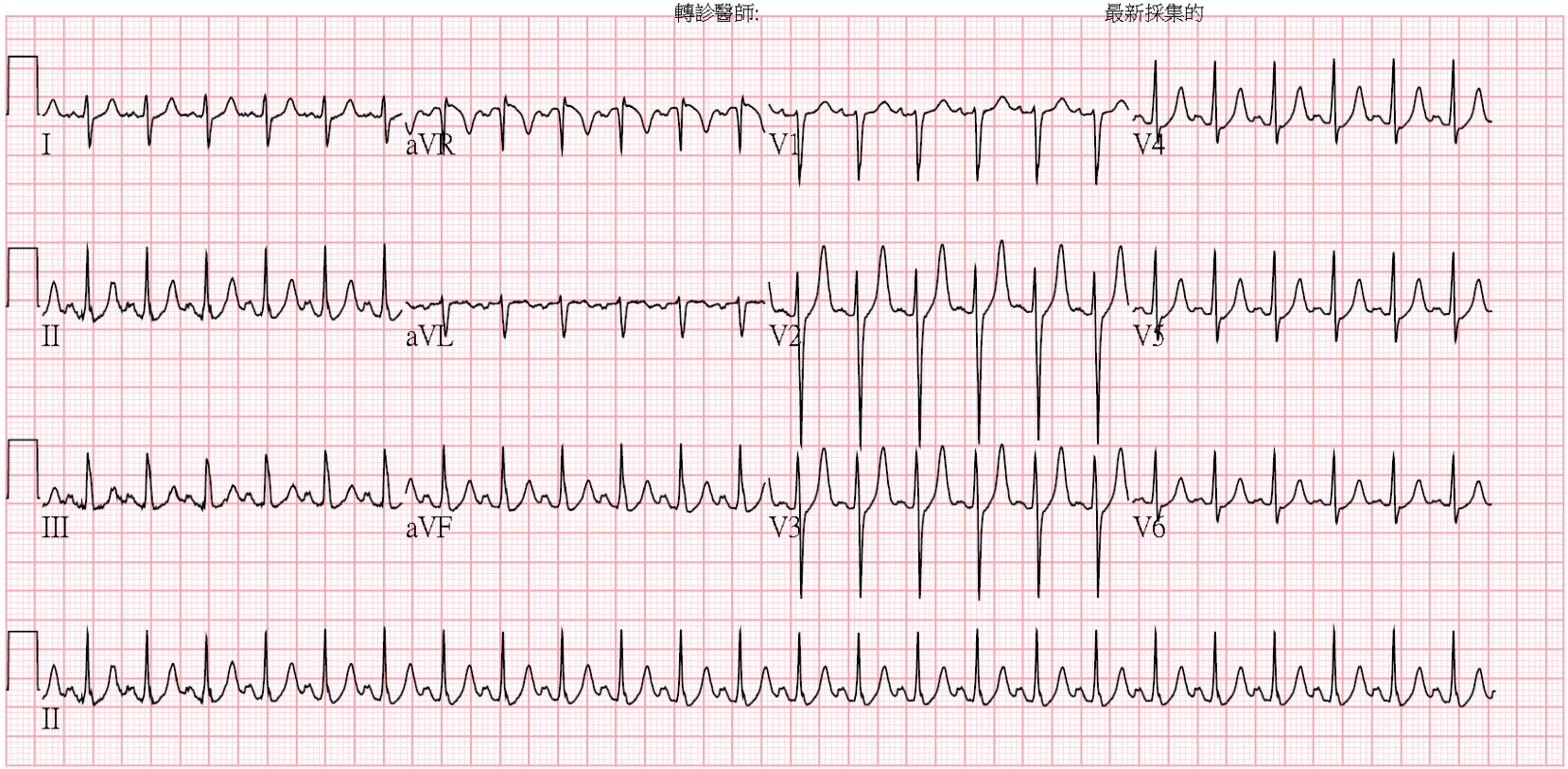
室率	147	BPM
PR 間期	114	ms
QRS 持續時間	78	ms
QT/QTc	280/438	ms
P-R-T 軸	79 91	62

Sinus tachycardia
Rightward axis
Borderline ECG

技術員:
檢查原因:

轉診醫師:

最新採集的



25mm/s 10mm/mV 150Hz 7.1.1 12SL 239 CID: 1

EID:新近測得的 EDT: 預約:

【臨床問題釐清】

1. 針對病人的檢查及處理，請問下一步的處置為何?

首先針對病患進行初級評估(primary survey) (A, B, C, D, E)，由於病人意識清楚，可正確回答問題，所以判斷病人在初級評估上應該沒有太大的問題。同時在此階段可以給予病患連續性心電圖、血壓、及血氧監測，同時插上鼻胃管及導尿管。

在次級評估(secondary survey)方面，包括創傷機制及病史詢問，以及進行從頭到腳的理學檢查(head-to-toe physical examination)(表一)。病人在理學檢查顯示腹部有明顯壓痛及反彈痛，顯示有內出血(internal bleeding)或中空器官穿孔(hallow organ perforation)的可能性，因為血液及胃酸對腹膜都是很強的化學性刺激物，可以立即引發強烈的腹膜炎表現。此時第一時間我們可以做創傷焦點式超音波評估(focused assessment with sonography for trauma, FAST)，看看有沒有腹腔積血(hemoperitoneum)的情形。在沒有超音波機器的狀況下，可以考慮實行診斷性腹膜沖洗(diagnostic peritoneal lavage, DPL)。同時打上大管徑的靜脈導針，給予晶體輸液(crystalloid hydration)如生理食鹽水等。

在生命徵象初步穩定之後，病患應考慮儘快進行顯影劑注射的腹部及骨盆腔電腦斷層檢查，以便找出受傷或出血的器官[1]。

表一:

Item to assess	Establishes / Identifies	Assess	Finding	Confirm by
Level of Consciousness	• Severity of head injury	• GCS Score	• ≤ 8, Severe head injury • 9~12, Moderate head • 13~15, Mild head injury	• CT
Pupils	• Type of head injury • Presence of eye injury	• Size • Shape • Reactivity	• mass effect • Diffuse brain injury • Ophthalmic injury	• CT
Head	• Scalp injury • Skull injury	• Inspect for laceration and skull fractures • Palpable defects	• Scalp laceration • Depressed skull fracture • Basilar skull fracture	• CT
Maxillofacial	• Soft-tissue injury • Bone injury • Nerve injury • Teeth/mouth injury	• Visual deformity • Malocclusion • Palpation fo crepitus	• Facial fracture • Soft-tissue injury	• Facial bone X-ray • Facial bone CT
Neck	• Laryngeal injury • C-spine injury • Vascular injury • Esophageal injury • Neurologic deficit	• Visual inspection • Palpation • Auscultation	• Laryngeal deformity • Subcutaneous • Hematoma • bruit • platysmal penetration • Pain, tenderness of C-spine	• C-spine X-ray • Angiography/Duplex exam • Esophagoscopy • Laryngoscopy
Thorax	• Thoracic wall injury • Subcutaneous emphysema • Bronchial injury • Pulmonary contusion • Thoracic aortic disruption	• Visual inspection • Palpation • Auscultation	• Bruising, Deformity, paradoxical motion • Chest wall tenderness, crepitus • Diminished breath sounds • Muffled heart tones • Mediastinal crepitus • Severe back pain	• Chest X-ray • CT • Tube thoracostomy • Pericardiocentesis • Bronchoscopy • Angiography • TE ultrasound
Abdomen/Flank	• Abdominal wall injury • Intraperitoneal injury • Retroperitoneal injury	• Visual inspection • Palpation • Auscultation • Determine path of penetration	• Abdominal wall pain/tenderness • Peritoneal irritation • Visceral injury • Retroperioneal organ injury	• DPL/Ultrasound • CT • celiotomy • Contrast GI x-ray • Angiography

表一:(續)

Item to assess	Establishes / Identifies	Assess	Finding	Confirm by
Pelvis	• GU tract injuries • Pelvic fracture	• Palpate symphysis pubis for widening • Palpate bony pelvis for tenderness • Determine pelvic stability only once • Inspect perineum • Rectal/Vaginal exam	• GU tract injury (hematuria) • Pelvic fracture • Rectal, vaginal, and/or perineal injury	• Pelvic X-ray • GU contrast studies • Urethrogram • Cystogram • IVP • Contrast-enhanced CT
Spinal Cord	• Cranial injury • Cord injury • Peripheral nerve injury	• Motor response • Pain response	• Unilateral cranial mass effect • Quadriplegia • Paraplegia • Nerve root injury	• Plain spine x-rays • MRI
Vertebral column	• Column injury • Vertebral instability • Nerve injury	• Verbal response to pain, lateralizing signs • Palpate for tenderness • Deformity	• Fracture vs dislocation	• Plain x-rays • CT
Extremities	• Soft-tissue injury • Bony deformities • Joint abnormalities • Neurovascular defects	• Visual inspection • Palpation	• Swelling, bruising, pallor • Malalignment • Pain, tenderness, crepitus • Absent/diminished pulses • Tense muscular compartments • Neurologic deficits	• Specific x-rays • Doppler examination • Compartment pressures • Angiography

2. 病人在剛做完無顯影劑注射的電腦斷層檢查後，電腦斷層室的同事打電話過來說：病人突然躁動不安，無法配合後續的顯影劑注射之電腦斷層檢查。請問病人可能發生什麼事，此時該如何處置?

第一時間應考慮病人的出血狀況可能變得更嚴重，導致血壓下降後腦部血液灌流不足，因而使得病患意識出現改變（表二）。此時應該重新進行初級評估，並測量生命徵象。如果病患意識沒有反應、呼吸型態異常、或摸不到脈搏時，應該馬上進行求救及心肺復甦術，同時中止未完成之電腦斷層檢查，並立即將病患送回重症區進行急救。

另外其他的可能性如各種顱內出血等也不能排除，因此可以先就已完成的無顯影劑注射之電腦斷層檢查影像，判讀是否有顱內出血之情形。

表二:

	Class I	Class II	Class III	Class IV
Blood loss(mL)	<750	750~1,500	1,500~2,000	>2,000
Blood loss(%)	<15	15~30	30~40	>40
Pulse rate	<100	>100	>120	>140
Blood pressure	Normal	Normal	Decreased	Decreased
Pulse pressure	Normal or Increased	Decreased	Decreased	Decreased
Respiratory rate	14~20	20~30	30~40	>35
Urine output (mL/h)	>30	20~30	5~15	Negligible
Mental status	Slightly anxious	Mildly anxious	Anxious, confused	Confused, lethargic
Fluid replacement	Crystalloid	Crystalloid	Crystalloid and Blood	Crystalloid and Blood

3. 將病人拉回重症區，發現病人心跳大於 160 下，血壓量不到，請問接著該怎麼做?需要照會哪些科別醫師來共同處理?

立即重新開始初級評估:

A- Definite airway protection

B- Adequate ventilation (表三)

C- Fluid resuscitation

D- Check GCS, pupil size, posturing

E- Prevent hypothermia

根據心電圖監視器顯示此時病患是竇性頻脈，可能是次發於出血所造成的低血容性休克，因此要積極給予輸液急救。而由生命徵象及意識可以得知，此時出血量應該是Class IV，預估失血大於2,000 mL，需要大量輸血。根據"Damage Control Resuscitation (DCR)"的觀念，我們應做到:

(1). Hypotensive resuscitation

(2). Rapid surgical control

(3). Prevention and treatment of acidosis, hypothermia and hypocalcemia

(4). Avoidance of hemodilution

(5). Hemostatic resuscitation with transfusion of red blood cells, plasma and platelets in a 1:1:1 unit ratio

(6). Appropriate use of coagulation factors such as rFVIIa and fibrinogen-containing products

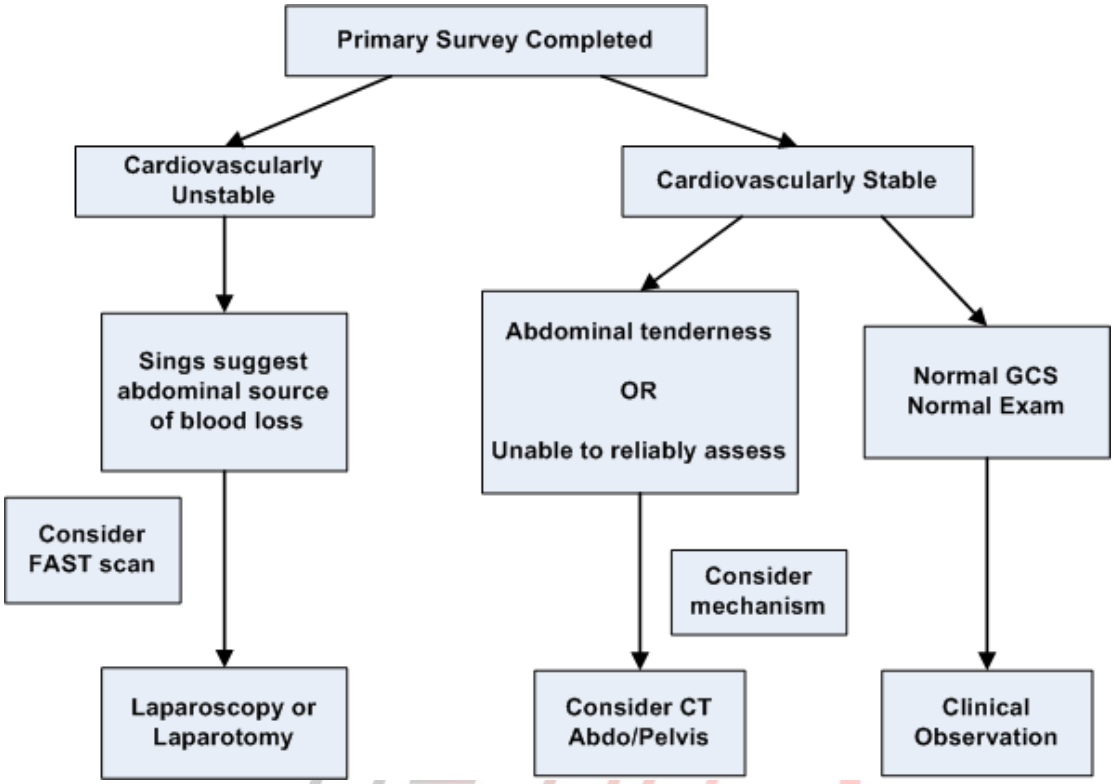
所以我們要set up large-bore catheters，早期給予紅血球、血漿及血小板，並且盡量減少生理食鹽水的給予，可以降低病人的死亡率[2]。

同時我們要儘早通知創傷科醫師，此時需要立刻進行剖腹探查手術，以期做到止血的動作（流程建議）。

表三:

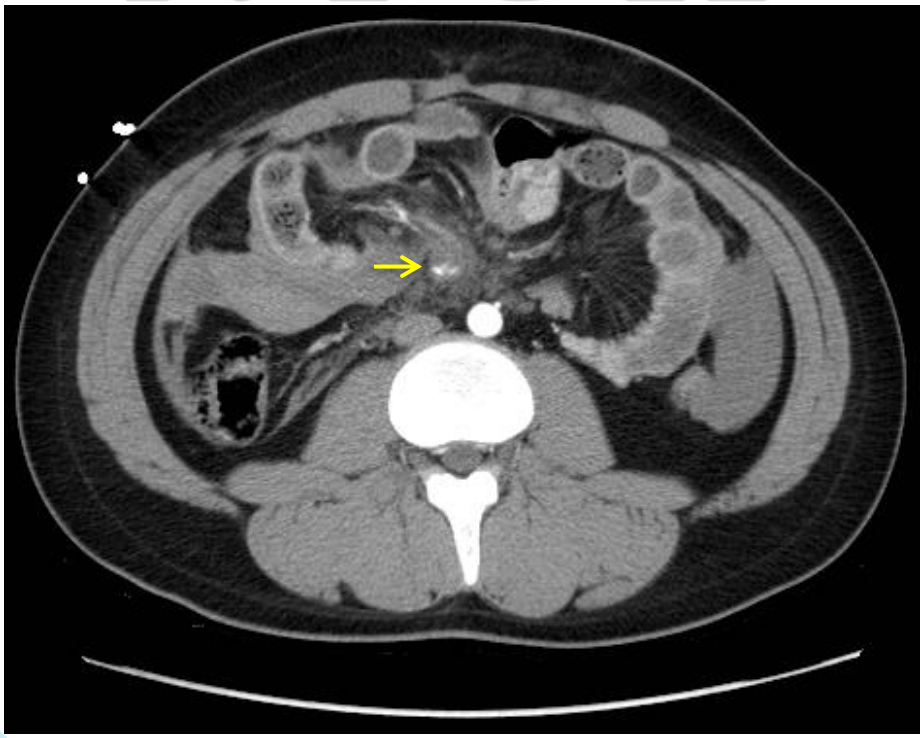
Need For Airway Protection	Need For Ventilation
Unconscious	Apnea • Neuromuscular paralysis • Unconscious
Severe maxillofacial fractures	Inadequate respiratory efforts • Tachypnea • Hypoxia • Hypercarbia • Cyanosis
Risk for aspiration • Bleeding • Vomiting	Severe, closed head injury with need for brief hyperventilation if acute neurologic deterioration occurs
Risk for obstruction • Neck hematoma • Laryngeal, tracheal injury • Stridor	

流程建議

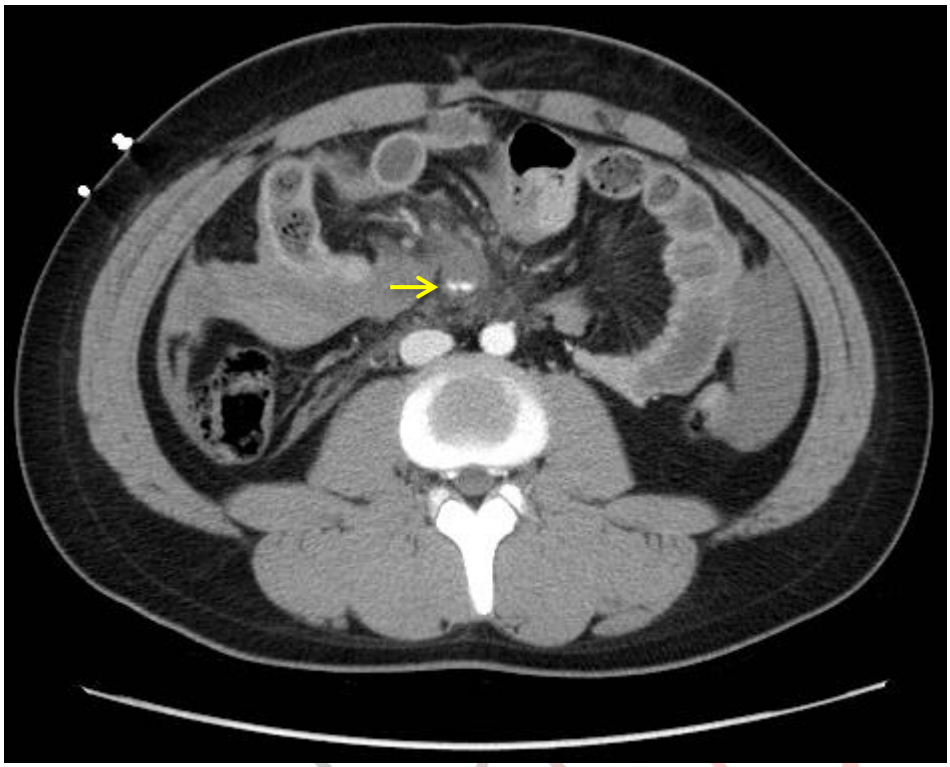


4. 病患後來在初步穩定後接受顯影劑注射電腦斷層檢查，請問您對腹部部位的電腦斷層影像的判讀為何?

關鍵影像一: (Arterial phase)



關鍵影像二: (Venous phase)



上圖可以看到箭頭處不管是在 arterial or venous-phase，在 SMA 與 SMV 的分支並行處的外圍都有一包血腫並且有 active extravasation 的現象。再比較上下序列的影像之後，可以判斷為 SMA or SMV branch injury 造成腹腔內大量出血。

其餘判讀結果如下：

(1). No definite pleural effusion, nor pneumothorax
(2). No definite hematoma in the mediastinum. No definite traumatic aortic injury
(3). A branch of SMA or SMV injury with active contrast extravasation and bloody ascites
(4). A segmental small bowel hypo-enhancement, rule out bowel ischemic
(5). No definite pneumoperitoneum
(6). Unremarkable liver, spleen, pancreas, adrenals, kidneys, gallbladder
(7). Placement of a foley catheter. Placement of a right femoral venous double lumen catheter

【後續病程】

病患進入外科加護病房後，由於腹腔內出血導致低血容性休克合併腹內壓升高 (Intra-abdominal pressure = 32cmH2O = 23.5 mmHg (>12mmHg))(abdominal compartment syndrome，腹腔腔室症候群)，所以安排了第一次手術探查，手術發現如下：

(1). Large amount of intra-abdominal hematoma, about 7000cc, with active bleeder at distal secondary branch of small bowel mesentery

(2). Three mesenteric defect: 5cm from ileocecal valve, 50cm from ileocecal valve and 100cm from ileocecal valve, with intestinal serosal tears3. Whole small bowel length: 350cm, moderate ischemic appearance from 200cm below Treiz ligament to ileocecal valve

兩天後安排第二次手術，手術發現如下：

(1). About 100cm ischemic change of ileum from 5cm above ileocecal valve. Previous mesenteric defect with ischemic part at 100~150 cm above ICV was identified as rescued bowel.

(2). No active bleeder after small bowel resection3. A huge subcutaneous hematoma about 8*10 cm was evacuated and cleaned after fascial closure.

住院之初因為血液灌流不好，有一段時間需要進行血液透析，但在出院前腎臟功能恢復良好，已經可以自行排尿。後續有段時間慢性腹瀉併低血鉀，現在也恢復正常。

【最後診斷】

腹部創傷導致腹腔內出血合併腹部腔室症候群及缺血性腸壞死

Abdominal blunt injury resulting intra-abdominal bleeding from mesenteric vessel, complicated by abdominal compartment syndrome and ischemic bowel

【本週案例學習重點】

1. 創傷病人在病情有所變化時，一定要記得反覆重新進行”Primary & Secondary Survey”，並做出相對應的處理，有順序系統地處理病人，才不會有所遺漏。

2. 熟記 hemorrhagic shock 的分級，了解”Damage Control Resuscitation (DCR)”的觀念，應做到”Hypotensive resuscitation”, ”Rapid surgical control”, “Prevention and treatment of acidosis, hypothermia and hypocalcemia”, “Avoidance of hemodilution”, “Hemostatic resuscitation with transfusion of red blood cells, plasma and platelets in a 1:1:1 unit ratio” and the appropriate use of coagulation factors such as rFVIIa and fibrinogen-containing products[2]。

3. 創傷 ＋ 腹痛 ＋ 腹內出血 ＋ 不穩定生命徵象 ＝ 緊急剖腹探查手術！

【參考文獻】

1. Advanced Trauma Life Support, ninth edition.
2. Resuscitation and Transfusion Principles for Traumatic Hemorrhagic Shock; Philip C. Spinella; John B. Holcomb.