



核心課程編號：F12

婦產科手術後常見併發症及其處理

第五版

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學習目標

PGY	UGY
<p><u>知識</u></p> <ol style="list-style-type: none">1. 認識手術傷口感染。2. 認識術後抗生素之使用時機。3. 認識婦科手術後常見併發症。	<p><u>知識</u></p> <ol style="list-style-type: none">1. 認識麻醉病情分類。2. 認識手術傷口無菌程度分類。3. 認識預防性抗生素之使用時機。
<p><u>技能</u></p> <ol style="list-style-type: none">1. 術後傷口換藥及癒合程度之評估。2. 術後感染傷口之換藥及照顧。3. 術後感染及抗生素選擇。4. 術後身體狀況評估及理學檢查。5. 輸入及輸出液失衡之判斷及處置。	<p><u>技能</u></p> <ol style="list-style-type: none">1. 皮膚剃毛技術。2. 術前胸部X光及檢驗數續判讀。3. 手術部位之標示。4. 婦女病患導尿管置入。5. 術後傷口換藥。6. 輸入及輸出液平衡之計算。
<p><u>態度與專業素養</u></p> <ol style="list-style-type: none">1. 能以醫療專業評估病患之不適。2. 能細心確實執行完整理學檢查。	<p><u>態度與專業素養</u></p> <ol style="list-style-type: none">1. 能以同理心體諒病患術前及術後之緊張、擔憂心情。2. 能細心確實交班。



常見之手術後併發症

- ❖ Wound
- ❖ Thermal regulation
- ❖ GI disturbance
- ❖ DVT and Pulmonary Embolism
- ❖ Infection and fever
- ❖ Pulmonary event
- ❖ Renal problem
- ❖ Cardiovascular problem
- ❖ Neurological problem
- ❖ Other comorbidity related



認識手術傷口無菌程度分類

Table 1

Classification of surgical procedures according to infection risk⁶

Type of surgery	Definition	Examples	Indication for surgical antibiotic prophylaxis
Clean surgery	Healthy skin incised Mucosa of respiratory, alimentary, genitourinary tract and oropharyngeal cavity not traversed	Hemiorrhaphy, mastectomy, cosmetic surgery	Not recommended
	Insertion of prosthesis or artificial device	Hip replacement, heart valve	Recommended
Clean-contaminated	Respiratory, alimentary or genitourinary tract is penetrated under controlled conditions without unusual contamination	Laryngectomy, uncomplicated appendectomy, cholecystectomy, transurethral resection of prostate gland	Recommended
Contaminated	Macroscopic soiling of operative field	Large bowel resection, biliary or genitourinary tract surgery with infected bile or urine	Strongly recommended



認識預防性抗生素之使用時機

Table 2 Prophylactic antibiotic recommendations for different procedures

Procedure	Antimicrobial Agent	Dose	Timing	Duration
Dental	Cephalexin, cephradine, amoxicillin	2 gm PO	1 hour prior to procedure	Discontinued within 24 hours of the procedure. For most outpatient/office-based procedures a single pre-procedure dose is sufficient.
Ophthalmic	Gentamicin, tobramycin, ciprofloxacin, gatifloxacin, levofloxacin, moxifloxacin, ofloxacin, or meomycin-gramicidin-polymyxin B cefazolin	Multiple drops topically over 2 to 24 hours or 100 mg subconjunctivally	Consult ophthalmologist or pharmacist for dosing regimen	
Orthopaedic†	Cefazolin Cefuroxime OR Vancomycin	1-2 g IV 1.5 g IV 1 g IV	Begin dose 60 minutes prior to procedure	
Vascular	Cefazolin OR Vancomycin	1-2 g IV 1 g IV	Begin dose 60 minutes prior to procedure	
Gastrointestinal				
Esophageal, gastroduodenal	Cefazolin	1-2 g IV	Begin dose 60 minutes prior to procedure	
Biliary tract	Cefazolin	1-2 g IV	Dependent on time of procedure, consult with GI physician and/or pharmacist	
Colorectal	Neomycin + erythromycin base (oral) OR metronidazole (oral)	1 g 1 g		
Head and neck	Clindamycin + gentamicin OR cefazolin	600-900 mg IV 1.5 mg/kg IV 1-2 g IV	Begin dose 60 minutes prior to procedure	
Obstetric and gynecological	Cefoxitin, cefazolin Ampicillin/sulbactam	1-2 g IV 3 g IV	Begin dose 60 minutes prior to procedure	
Genitourinary	Ciprofloxacin	500 mg PO or 400 mg IV	1 hour prior to procedure Begin dose 60 minutes prior to procedure	

† If a tourniquet is used, the entire dose of antibiotic must be infused prior to its inflation



認識術後抗生素之使用時機

Procedure	Likely Pathogen(s)	Recommended Drug ^a	Alternative Regimen ^d
Cardiothoracic	<i>Staph epi</i> , <i>Staph aureus</i> , <i>Streptococcus</i> , <i>Corynebacteria</i> , enteric-Gram-negative bacilli	Cefazolin	Clindamycin
General Surgery			
• Appendectomy (non-perforated)	Enteric Gram(-) bacilli	Cefazolin + Metronidazole ^b	Clindamycin + Aminoglycoside
• Colorectal Surgery	Enteric Gram(-) bacilli, <i>Enterococcus</i> , anaerobes	Cefazolin + Metronidazole ^b	Clindamycin + Aminoglycoside
• High-risk esophageal ^c , gastroduodenal, or biliary surgery ³	Enteric Gram(-) bacilli, Gram(+) cocci	Cefazolin	Clindamycin + Aminoglycoside
• Penetrating abdominal trauma	Enteric Gram(-) bacilli, <i>Enterococcus</i> , anaerobes	Cefazolin + Metronidazole ^b	Clindamycin + Aminoglycoside
Gynecologic Surgery			Clindamycin + Aminoglycoside
• C-section (after cord-clamping)	<i>Staph epi</i> , <i>Staph aureus</i> , Group B <i>Strep</i> , <i>Enterococcus</i>	Cefazolin	Clindamycin + Aminoglycoside
• Hysterectomy	Enteric Gram(-) bacilli, Group B <i>Strep</i> , <i>Enterococcus</i>	Cefazolin	Clindamycin + Aminoglycoside
Head and Neck Surgery	Anaerobes, <i>Staph aureus</i> , Gram(-) bacilli	Clindamycin	Cefazolin + Metronidazole
Neurosurgery			
• Clean	<i>Staph aureus</i> , <i>Staph epi</i>	Cefazolin	Clindamycin
• Skull fracture, CSF leak	Anaerobes, <i>Staph epi</i> , <i>Staph aureus</i>	Cefazolin	Clindamycin
• Penetrating trauma	<i>Staph</i> , <i>strep</i> , Gram(-) bacilli, anaerobes	Ceftriaxone, Clindamycin	N/A
• Spine	<i>Staph aureus</i> , <i>Staph epi</i>	Cefazolin	Clindamycin
Orthopedic Surgery			
• Closed fracture	<i>Staph epi</i> , <i>Staph aureus</i>	Cefazolin	Clindamycin
• Open fracture	<i>Staph</i> , <i>strep</i> , Gram(-) bacilli, anaerobes	Cefazolin + Gentamicin	Clindamycin + Gentamicin
Urologic Surgery			
• Genitourinary (high risk only) ^e	Gram(-) bacilli, <i>Enterococcus</i>	Cefazolin	Ciprofloxacin
Vascular Surgery	<i>Staph epi</i> , <i>Staph aureus</i> , Gram(-) bacilli, <i>Enterococcus</i>	Cefazolin	Clindamycin

From: Department of Surgical Education, Orlando Regional Medical Center.



Wound Complications

- ❖ Seroma
- ❖ Hematoma
- ❖ Wound Dehiscence
- ❖ SSI (Surgical site infection)
- ❖ Chronic wound



Thermal Regulation

- ❖ Hypothermia
- ❖ Malignant Hyperthermia



Thermal Regulation

❖ Hypothermia

- ✓ A drop 2°C of body temperature
- ✓ Cool IV Fluids
- ✓ Wash with Cool fluids
- ✓ Low ambient temperature
- ✓ Exposure of extra-operative surface
- ✓ Advancing age
- ✓ Anesthesia



Thermal Regulation

❖ Hypothermia

- ✓ Placement of warm blankets
- ✓ Covering of patient's head
- ✓ IV fluid infusion through a warming device
- ✓ Peritoneal lavage with warmed fluids
- ✓ Heating and humidifying inhalational gases



Thermal Regulation

❖ Malignant Hyperthermia

- ✓ Gene mediated (Autosomal dominant)
- ✓ Cyanosis
- ✓ Raised body temperature
- ✓ Arrhythmias
- ✓ CHF
- ✓ Tachypnea
- ✓ Hypercapnia
- ✓ Hypotension



Thermal Regulation

❖ Malignant Hyperthermia

- ✓ Discontinued the triggering anesthetic
- ✓ Hyperventilate the patient with 100% oxygen
- ✓ Terminate surgery
- ✓ Give dantrolene 2.5 mg/kg as a bolus and repeat every 54 minutes
- ✓ Shift to ICU care



GI complications

- ❖ Post operative ileus
- ❖ Other specific to surgeries
 - ✓ Post OP GI bleeding
 - ✓ Abdominal compartment syndrome
 - ✓ Anastomotic leak
 - ✓ Complications related to stoma



GI complications

❖ Post operative ileus

✓ Within 30 days

Can be

✓ Primary or Functional or Post OP ileus

✓ Secondary



GI complications

❖ Post operative ileus

1. Prevention: less handling
2. Minimize injury
3. Avoid desiccation in air
4. Correct the electrolytes balance
5. Three steps approach
 - ✓ Resuscitate
 - ✓ Investigate
 - ✓ Surgery



DVT and Pulmonary Embolism

- ❖ Post operative immobilization / prolonged bed rest
- ❖ Usually occurs within 6 days post operatively
- ❖ Oedema, Warmth, Erythema, Dull aching calf pain, Low grade fever
- ❖ Homan's test/ Moses test
- ❖ Doppler sonography
- Bed rest, elevation of limbs, anticoagulants, surgery



Infection and fever

- ❖ Intra-operative fever
- ❖ Post-operative fever



Infection and fever

❖ Post-operative fever

✓ First 24 hours

Streptococcal or Clostridial infection

Aspiration pneumonitis

Pre-existing infection

✓ First 36 hours

Atelectasis

Intraperitoneal leakage

Soft tissue infection



Pulmonary Complications

- ❖ Atelectasis
- ❖ Pneumonia
- ❖ Aspiration pneumonitis
- ❖ Pulmonary edema, Acute lung injury and ARDS



Pulmonary Complications

- ❖ Past medical history taking
- ❖ Differential diagnosis of dyspnea
- ❖ CXR
- ❖ Pulse oximeter
- ❖ ECG
- ❖ CBC
- ❖ V/Q scan



Renal Complications

- ❖ Urinary retention
- ❖ Acute Renal failure



Cardiovascular Complications

- ❖ Myocardial ischemia and infarction
- ❖ Congestive heart failure
- ❖ Hypertension



Neurological Complications

- ❖ Peri-operative stroke
- ❖ Seizure
- ❖ Delirium



認識麻醉病情分類- ASA 分類

	Examples	Suitability for sedation
1 Healthy patient	Unremarkable past medical history	Excellent
2 Patient with mild systemic disease—no functional limitation	Mild asthma, controlled seizure disorder, anaemia, controlled diabetes mellitus	Generally good
3 Patient with severe systemic disease—definite functional limitation	Moderate to severe asthma, poorly controlled seizure disorder, pneumonia, poorly controlled diabetes mellitus, moderate obesity	Intermediate to poor: consider benefits relative to risks
4 Patient with severe systemic disease that is constant threat to life	Severe bronchopulmonary dysplasia, sepsis, advanced degrees of pulmonary, cardiac, hepatic, renal, or endocrine insufficiency	Poor: benefits rarely outweigh risks
5 Moribund patient who is not expected to survive without the operation	Septic shock, severe trauma	Extremely poor

Table 1: American Society of Anesthesiologist's physical status classification by class



認識婦科手術後常見併發症(剖腹手術)

- ❖ **術中** 出血，輸尿管受傷，膀胱受傷，腸臟器受傷
- ❖ **術後** 腹腔出血，腹腔感染，傷口感染，泌尿道感染，輸尿管或膀胱，下肢血栓靜脈炎，及日後腸臟器粘連，傷口部位腸疝氣



認識婦科手術後常見併發症(腹腔鏡手術)

- ❖ **術中** 出血，充氣過多造成腹壓過高及下腔靜脈壓迫或皮下氣腫，輸尿管受傷，膀胱受傷，腹穿孔或受傷，
- ❖ **術後** 腹腔出血，腹腔感染，傷口感染，泌尿道感染，輸尿管或膀胱，下肢血栓靜脈炎，及日後腸臟器粘連，傷口部位腸疝氣



認識婦科手術後常見併發症(陰道手術)

- ❖ **術中** 出血，尿道受傷，膀胱受傷，直腸受傷。
- ❖ **術後** 陰道出血，陰道血腫及感染。



術後傷口換藥及癒合程度之評估

Medscape

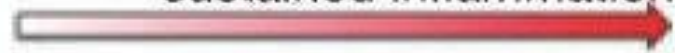
Tissue injury

Chronic wound



Inflammation

sustained inflammation



Neutrophils, macrophages, MMPs, ROS,
hydrogen peroxide, IL, TNF, VEGF, TGFβ, FGF, PDGF

Granulation and neoangiogenesis

Fibroblasts, macrophages, endothelial cells, MMPs,
prolyl hydroxylase, IL, TNF, TGFβ, VEGF, PDGF, KGF

Re-epithelialization

Keratinocytes, MMPs, EGF, KGF

Tissue remodelling

Fibroblasts, collagen fibre cross-
linking, MMPs, TGFβ

Time

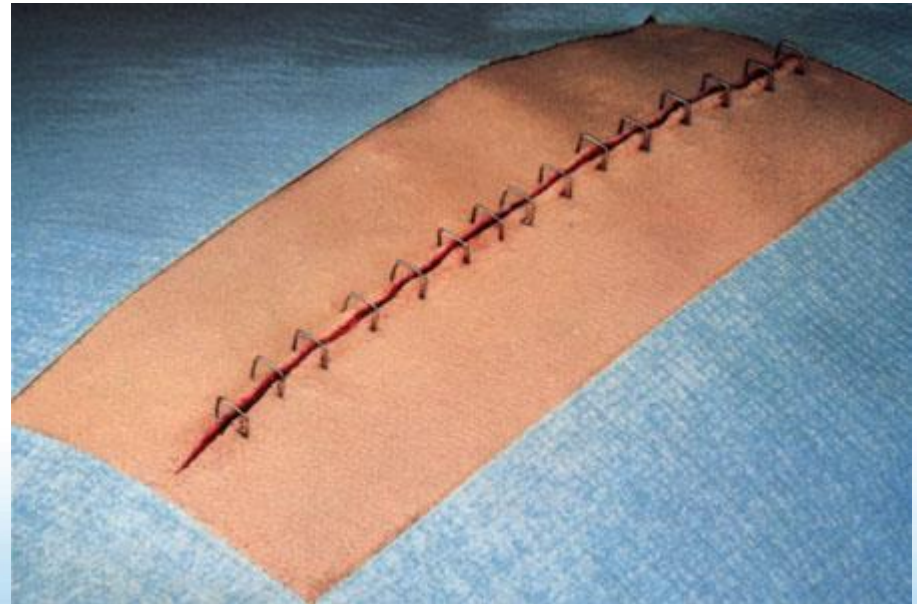


術後感染傷口之換藥及照顧

- ❖ Skin closure
- ❖ Change dressing every day
- ❖ Wet dressing

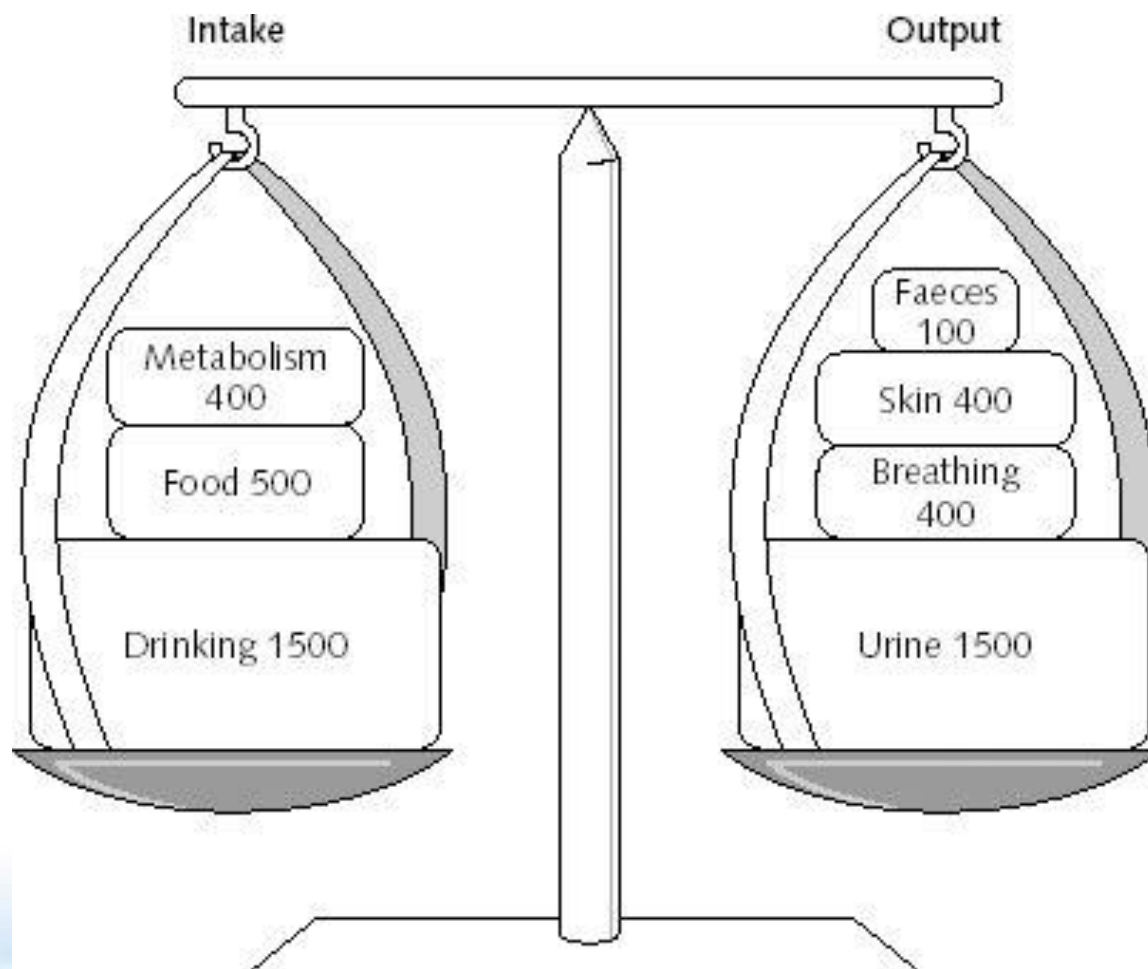


Bed sore of right gluteal region, wet dressing





輸入及輸出液失衡之判斷及處置





術後身體狀況評估及理學檢查

A. Brief summary of history (迅速之病史回顧)

- ❖ 包括接受手術種類？
- ❖ 手術時間？
- ❖ 目前病患主訴？
- ❖ 病患基本之生命跡象 (vital signs)

B. Physical examination (初步之理學檢查)

- ❖ 根據病患之主訴應首先進行之理學檢查，如確認傷口狀況，若為疼痛則確認疼痛部位，若有引流管或尿管，點滴等是否需確認管路狀態…。



手術併發症處理方式

- ❖ 剖腹產手術後大出血有可能需要施行兩側內腸骨動脈阻斷及子宮切除手術。
- ❖ 嚴重粘黏無法進行手術將採取保守處置。
- ❖ 傷口感染 - 傷口擴創及抗生素使用。
- ❖ 血管損傷 - 直接修補。
- ❖ 輸尿管損傷 - 直接修補如有需要將放置輸尿管導管。
- ❖ 因粘黏或因腫瘤侵犯，造成小腸大腸直腸損傷 - 直接修補如有必要將施行人工肛門手術
- ❖ 膀胱損傷 - 膀胱修補及尿管留置。
- ❖ 術中大出血 - 止血及輸血及引流管放置。



手術併發症處理方式

- ❖ 腸阻塞及骨盆粘黏 – 保守治療如有必要行粘黏分離手術。
- ❖ 神經損傷 – 直接修補與復健治療。
- ❖ 骨盆腔膿瘍及血腫 – 膿瘍及血腫引流及抗生素治療
- ❖ 子宮頸癌根除手術 – 可能造成膀胱功能損傷，將來可能需要留置尿管一到二個月，能否移除視膀胱功能恢復情形而定。
- ❖ 肌瘤切除手術 – 可能因為肌瘤的大小與位置或腺肌瘤，使得子宮無法保留將採取子宮切除手術。
- ❖ 卵巢囊腫切除手術 – 可能因為腫瘤侵犯過大以致無法保留將採取全卵巢切除手術。
- ❖ 肺臟可能會有一小部份塌陷失去功能，以致增加胸腔感染的機率，此時可能需要抗生素和呼吸治療。
- ❖ 腿部可能產生血管栓塞，並伴隨疼痛和腫脹。凝結之血塊可能會分散並進入肺臟，造成致命的危險，惟此種情況並不常見。
- ❖ 因心臟承受手術及麻醉之壓力，可能造成心臟病發作，也可能造成中風。



Reference

- ❖ Department of Surgical Education, Orlando Regional Medical Center
- ❖ American College of surgeons