Table 5-4

Inflammatory mediators of shock

PROINFLAMMATORY	ANTI-INFLAMMATORY
Interleukin-1α/β	Interleukin-4
Interleukin-2	Interleukin-10
Interleukin-6	Interleukin-13
Interleukin-8	Prostaglandin E_2
Interferon	TGFβ
TNF	
PAF	

PAF = platelet activating factor; TGFβ = transforming growth factor β; TNF = tumor necrosis factor.

Table 12-13

Inclusion criteria for the acute respiratory distress syndrome

Acute onset
Predisposing condition
Pao_2:Fio_2 <200 (regardless of positive end-expiratory pressure)
Bilateral infiltrates
Pulmonary artery occlusion pressure <18 mmHg
No clinical evidence of right heart failure

Fio_2 = fraction of inspired oxygen; Pao_2 = partial pressure of arterial oxygen.

Table 12-18

Inclusion criteria for the systemic inflammatory response syndrome

Temperature >38°C or <36°C (>100.4°F or <96.8°F)
Heart rate >90 beats/min
Respiratory rate >20 breaths/min or $Paco_2$ <32 mmHg
White blood cell count <4000 or >12,000 cells/mm^3 or >10% immature forms

$Paco_2$ = partial pressure of arterial carbon dioxide.

Table 6-1

Criteria for systemic inflammatory response syndrome (SIRS)

General variables
- Fever (core temp >38.3°C)
- Hypothermia (core temp <36°C)
- Heart rate >90 bpm
- Tachypnea
- Altered mental status
- Significant edema or positive fluid balance (>20 mL/kg over 24 hours)
- Hyperglycemia in the absence of diabetes

Inflammatory variables
- Leukocytosis (WBC >12,000)
- Leukopenia (WBC <4,000)
- Bandemia (>10% band forms)
- Plasma C-reactive protein >2 s.d. above normal value
- Plasma procalcitonin >2 s.d. above normal value

Hemodynamic variables
- Arterial hypotension (SBP <90 mmHg, MAP <70, or SBP decrease >40 mmHg)

Organ dysfunction variables
- Arterial hypoxemia
- Acute oliguria
- Creatinine increase
- Coagulation abnormalities
- Ileus
- Thrombocytopenia
- Hyperbilirubinemia

Tissue perfusion variables
- Hyperlactatemia
- Decreased capillary filling

bpm = beats per minute; MAP = mean arterial pressure; SBP = systolic blood pressure; s.d. = standard deviations; SvO_2 = venous oxygen saturation; WBC = white blood cell count.

Table 2-1

Clinical spectrum of infection and systemic inflammatory response syndrome (SIRS)

TERM	DEFINITION
Infection	Identifiable source of microbial insult
SIRS	Two or more of following criteria are met: Temperature ≥38°C (100.4°F) or ≤36°C (96.8°F) Heart rate ≥90 beats per minute Respiratory rate ≥20 breaths per minute or $Paco_2$ ≤ 32 mmHg or mechanical ventilation Abnormal white blood cell count (≥12,000/μL or ≤4000/μL or ≥10% immature band forms)
Sepsis	Identifiable source of infection + SIRS
Severe sepsis	Sepsis + organ dysfunction
Septic shock	Sepsis + cardiovascular collapse (requiring vasopressor support)

$Paco_2$ = partial pressure of arterial carbon dioxide.

Table 3-14

Treatment of symptomatic hyperkalemia

Potassium removal

- Kayexalate
  - Oral administration is 15–30 g in 50–100 mL of 20% sorbitol
  - Rectal administration is 50 g in 200 mL of 20% sorbitol
- Dialysis

Shift potassium

- Glucose 1 ampule of D_{50} and regular insulin 5–10 units IV
- Bicarbonate 1 ampule IV

Counteract cardiac effects

- Calcium gluconate 5–10 mL of 10% solution

D_{50} = 50% dextrose.

Table 12-15

Urinary electrolytes associated with acute renal failure and their possible etiologies

	FE_{Na}	OSMOLARITY	UR_{Na}	ETIOLOGY
Prerenal	<1	>500	<20	CHF, cirrhosis
Intrinsic failure	>1	<350	>40	Sepsis, shock

CHF = congestive heart failure; FE_{Na} = fractional excretion of sodium; UR_{Na} = urinary excretion of sodium.

Table 6-6

Prophylactic use of antibiotics

SITE	ANTIBIOTIC	ALTERNATIVE (E.G., PENICILLIN ALLERGIC)
Cardiovascular surgery	Cefazolin, cefuroxime	Vancomycin, clindamycin
Gastroduodenal area Small intestine, nonobstructed	Cefazolin	Clindamycin or vancomycin + aminoglycoside or aztreonem or fluoroquinolone
Biliary tract: open procedure, laparoscopic high risk	Cefazolin, cefoxitin, cefotetan, ceftriaxone, ampicillin-sulbactam	Clindamycin or vancomycin + aminoglycoside or aztreonem or fluoroquinolone Metronidazole + aminoglycoside or fluoroquinolone
Biliary tract: laparoscopic low risk	None	None
Appendectomy, uncomplicated	Cefoxitin, cefotetan, cefazolin + metronidazole	Clindamycin + aminoglycoside or aztreonem or fluoroquinolone Metronidazole + aminoglycoside or fluoroquinolone
Colorectal surgery, obstructed small intestine	Cefazolin or ceftriaxone plus metronidazole, ertapenem, cefoxitin, cefotetan, ampicillin-sulbactam	Clindamycin + aminoglycoside or aztreonem or fluoroquinolone, metronidazole + aminoglycoside or fluoroquinolone
Head and neck; clean contaminated	Cefazolin or cefuroxime + metronidazole, ampicillin-sulbactam	Clindamycin
Neurosurgical procedures	Cefazolin	Clindamycin, vancomycin
Orthopedic surgery	Cefazolin, ceftriaxone	Clindamycin, vancomycin
Breast, hernia	Cefazolin	Clindamycin, vancomycin

Data from Pieracci FM, Barie PS. Management of severe sepsis of abdominal origin, *Scand J Surg*. 2007;96(3):184-196.

Table 11-3

Summary of the main immunosuppressive drugs

DRUG	MECHANISM OF ACTION	ADVERSE EFFECTS	CLINICAL USES	DOSAGE
Cyclosporine (CSA)	Binds to cyclophilin Inhibits calcineurin and IL-2 synthesis	Nephrotoxicity Tremor Hypertension Hirsutism	Improved bioavailability of microemulsion form	Oral dose 5 mg/kg per day (given in two divided doses)
Tacrolimus (FK506)	Binds to FKBP Inhibits calcineurin and IL-2 synthesis	Nephrotoxicity Hypertension Neurotoxicity GI toxicity (nausea, diarrhea)	Improved patient and graft survival in (liver) primary immunosuppression and rescue therapy Used as mainstay of maintenance protocols	IV 0.015 mg/kg per day as continuous infusion PO 0.05 mg/kg per day (given every 12 h)
Mycophenolate mofetil	Antimetabolite Inhibits enzyme necessary for de novo purine synthesis	Leukopenia GI toxicity	Effective for primary immunosuppression in combination with tacrolimus	1 g bid PO
Sirolimus	Inhibits lymphocyte effects driven by IL-2 receptor	Thrombocytopenia Increased serum cholesterol/LDL Poor wound healing	May allow early withdrawal of steroids and decreased calcineurin doses	2–4 mg/d, adjusted to trough drug levels
Corticosteroids	Multiple actions Anti-inflammatory Inhibits lymphokine production	Cushingoid state Glucose intolerance Osteoporosis	Used in induction, maintenance, and treatment of acute rejection	Varies from milligrams to several grams per day Maintenance doses, 5–10 mg/d
Azathioprine	Antimetabolite Interferes with DNA and RNA synthesis	Thrombocytopenia Neutropenia Liver dysfunction	Used in maintenance protocols or if intolerance to mycophenolate mofetil	1–3 mg/kg per day for maintenance
Belatacept	T-cell blocker	Increased risk of bacterial infections	New drug for maintenance immunosuppression in renal transplants only	5–10 mg/kg per day infusion

FKBP = FK506-binding protein; GI = gastrointestinal; IL = interleukin; IV = intravenous; LDL = low-density lipoprotein; PO = oral

Table 6-8

Wound class, representative procedures, and expected infection rates

WOUND CLASS	EXAMPLES OF CASES	EXPECTED INFECTION RATES
Clean (class I)	Hernia repair, breast biopsy	1–2%
Clean/ contaminated (class II)	Cholecystectomy, elective GI surgery (not colon)	2.1–9.5%
Clean/ contaminated (class II)	Colorectal surgery	4–14%
Contaminated (class III)	Penetrating abdominal trauma, large tissue injury, enterotomy during bowel obstruction	3.4–13.2%
Dirty (class IV)	Perforated diverticulitis, necrotizing soft tissue infections	3.1–12.8%

Table 6-7

Risk factors for development of surgical site infections

Patient factors
- Older age
- Immunosuppression
- Obesity
- Diabetes mellitus
- Chronic inflammatory process
- Malnutrition
- Smoking
- Renal failure
- Peripheral vascular disease
- Anemia
- Radiation
- Chronic skin disease
- Carrier state (e.g., chronic *Staphylococcus* carriage)
- Recent operation

Local factors
- Open compared to laparoscopic surgery
- Poor skin preparation
- Contamination of instruments
- Inadequate antibiotic prophylaxis
- Prolonged procedure
- Local tissue necrosis
- Blood transfusion
- Hypoxia, hypothermia

Microbial factors
- Prolonged hospitalization (leading to nosocomial organisms)
- Toxin secretion
- Resistance to clearance (e.g., capsule formation)

Table 7-10

Indications for operative treatment of thoracic injuries

- Initial tube thoracostomy drainage of >1000 mL (penetrating injury) or >1500 mL (blunt injury)
- Ongoing tube thoracostomy drainage of >200 mL/h for 3 consecutive hours in noncoagulopathic patients
- Caked hemothorax despite placement of two chest tubes
- Great vessel injury (endovascular techniques may be used in selected patients)
- Pericardial tamponade
- Cardiac herniation
- Massive air leak from the chest tube with inadequate ventilation
- Tracheal or main stem bronchial injury diagnosed by endoscopy or imaging
- Open pneumothorax
- Esophageal perforation
- Air embolism

Table 7-2

Current indications and contraindications for emergency department thoracotomy

Indications

Salvageable postinjury cardiac arrest:

Patients sustaining witnessed penetrating trauma to the torso with <15 min of prehospital CPR

Patients sustaining witnessed blunt trauma with <10 min of prehospital CPR

Patients sustaining witnessed penetrating trauma to the neck or extremities with <5 min of prehospital CPR

Persistent severe postinjury hypotension (SBP ≤60 mmHg) due to:

Cardiac tamponade

Hemorrhage—intrathoracic, intra-abdominal, extremity, cervical

Air embolism

Contraindications

Penetrating trauma: CPR >15 min and no signs of life (pupillary response, respiratory effort, motor activity)

Blunt trauma: CPR >10 min and no signs of life or asystole without associated tamponade

CPR = cardiopulmonary resuscitation; SBP = systolic blood pressure.

Table 9-8

Characteristics of keloids and hypertrophic scars

	KELOID	HYPERTROPHIC SCAR
Incidence	Rare	Frequent
Ethnic groups	African American, Asian, Hispanic	No predilection
Prior injury	Yes	Yes
Site predilection	Neck, chest, ear lobes, shoulders, upper back	Anywhere
Genetics	Autosomal dominant with incomplete penetration	No
Timing	Symptom-free interval; may appear years after injury	4–6 weeks post injury
Symptoms	Pain, pruritus, hyperesthesia, growth beyond wound margins	Raised, some pruritus, respects wound confines
Regression	No	Frequent spontaneous
Contracture	Rare	Frequent
Histology	Hypocellular, thick, wavy collagen fibers in random orientation	Parallel orientation of collagen fibers

Table 4-4

Medications that can alter warfarin dosing

↓ warfarin effect ↑ warfarin requirements	Barbiturates, oral contraceptives, estrogen-containing compounds, corticosteroids, adrenocorticotropic hormone
↑ warfarin effect ↓ warfarin requirements	Phenylbutazone, clofibrate, anabolic steroids, L-thyroxine, glucagons, amiodarone, quinidine, cephalosporins

Table 7-4

Signs and symptoms of advancing stages of hemorrhagic shock

	CLASS I	CLASS II	CLASS III	CLASS IV
Blood loss (mL)	Up to 750	750–1500	1500–2000	>2000
Blood loss (% BV)	Up to 15%	15%–30%	30%–40%	>40%
Pulse rate	<100	>100	>120	>140
Blood pressure	Normal	Normal	Decreased	Decreased
Pulse pressure (mmHg)	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
CNS/mental status	Slightly anxious	Mildly anxious	Anxious and confused	Confused and lethargic

BV = blood volume; CNS = central nervous system.

Table 5-2

Hemodynamic responses to different types of shock

TYPE OF SHOCK	CARDIAC INDEX	SVR	VENOUS CAPACITANCE	CVP/PCWP	Svo_2	CELLULAR/METABOLIC EFFECTS
Hypovolemic	↓	↑	↓	↓	↓	Effect
Septic	↑↑	↓	↑	↑↓	↑↓	Cause
Cardiogenic	↓↓	↑↑	→	↑	↓	Effect
Neurogenic	↑	↓	→	↓	↓	Effect

The hemodynamic responses are indicated by arrows to show an increase (↑), severe increase (↑↑), decrease (↓), severe decrease (↓↓), varied response (↑↓), or little effect →). CVP = central venous pressure; PCWP = pulmonary capillary wedge pressure; Svo_2 = mixed venous oxygen saturation; SVR = systemic vascular resistance.

Table 5-6

Causes of septic and vasodilatory shock

Systemic response to infection
Noninfectious systemic inflammation
    Pancreatitis
    Burns
Anaphylaxis
Acute adrenal insufficiency
Prolonged, severe hypotension
    Hemorrhagic shock
    Cardiogenic shock
    Cardiopulmonary bypass
Metabolic
    Hypoxic lactic acidosis
    Carbon monoxide poisoning

Table 5-8

Causes of cardiogenic shock

Acute myocardial infarction
Pump failure
Mechanical complications
    Acute mitral regurgitation
    Acute ventricular septal defect
    Free wall rupture
    Pericardial tamponade
Arrhythmia
End-stage cardiomyopathy
Myocarditis
Severe myocardial contusion
Left ventricular outflow obstruction
    Aortic stenosis
    Hypertrophic obstructive cardiomyopathy
Obstruction to left ventricular filling
    Mitral stenosis
    Left atrial myxoma
Acute mitral regurgitation
Acute aortic insufficiency
Metabolic
Drug reactions

Table 5-9

Causes of obstructive shock

- Pericardial tamponade
- Pulmonary embolus
- Tension pneumothorax
- IVC obstruction
  - Deep venous thrombosis
  - Gravid uterus on IVC
  - Neoplasm
- Increased intrathoracic pressure
  - Excess positive end-expiratory pressure
  - Neoplasm

IVC = inferior vena cava.

Table 5-10

Causes of neurogenic shock

Spinal cord trauma
Spinal cord neoplasm
Spinal/epidural anesthetic

Table 5-11

Endpoints in resuscitation

Systemic/global
- Lactate
- Base deficit
- Cardiac output
- Oxygen delivery and consumption

Tissue specific
- Gastric tonometry
- Tissue pH, oxygen, carbon dioxide levels
- Near infrared spectroscopy

Cellular
- Membrane potential
- Adenosine triphosphate

Table 12-7

Surgical "never events"

- Surgery performed on the wrong body part
- Surgery performed on the wrong patient
- Wrong surgical procedure performed on a patient
- Unintended retention of a foreign object in a patient after surgery or other procedure
- Intraoperative or immediately postoperative death in an ASA Class 1 patient

ASA = American Society of Anesthesiologists.

Reproduced with permission from Serious Reportable Events in Healthcare 2011 Update: A Consensus Report. *Washington, DC*: National Quality Forum; 2011.

Table 12-9

Risk factors for retained surgical sponges

- Emergency surgery
- Unplanned changes in procedure
- Patient with higher body mass index
- Multiple surgeons involved in same operation
- Multiple procedures performed on same patient
- Involvement of multiple operating room nurses/staff members
- Case duration covers multiple nursing “shifts”

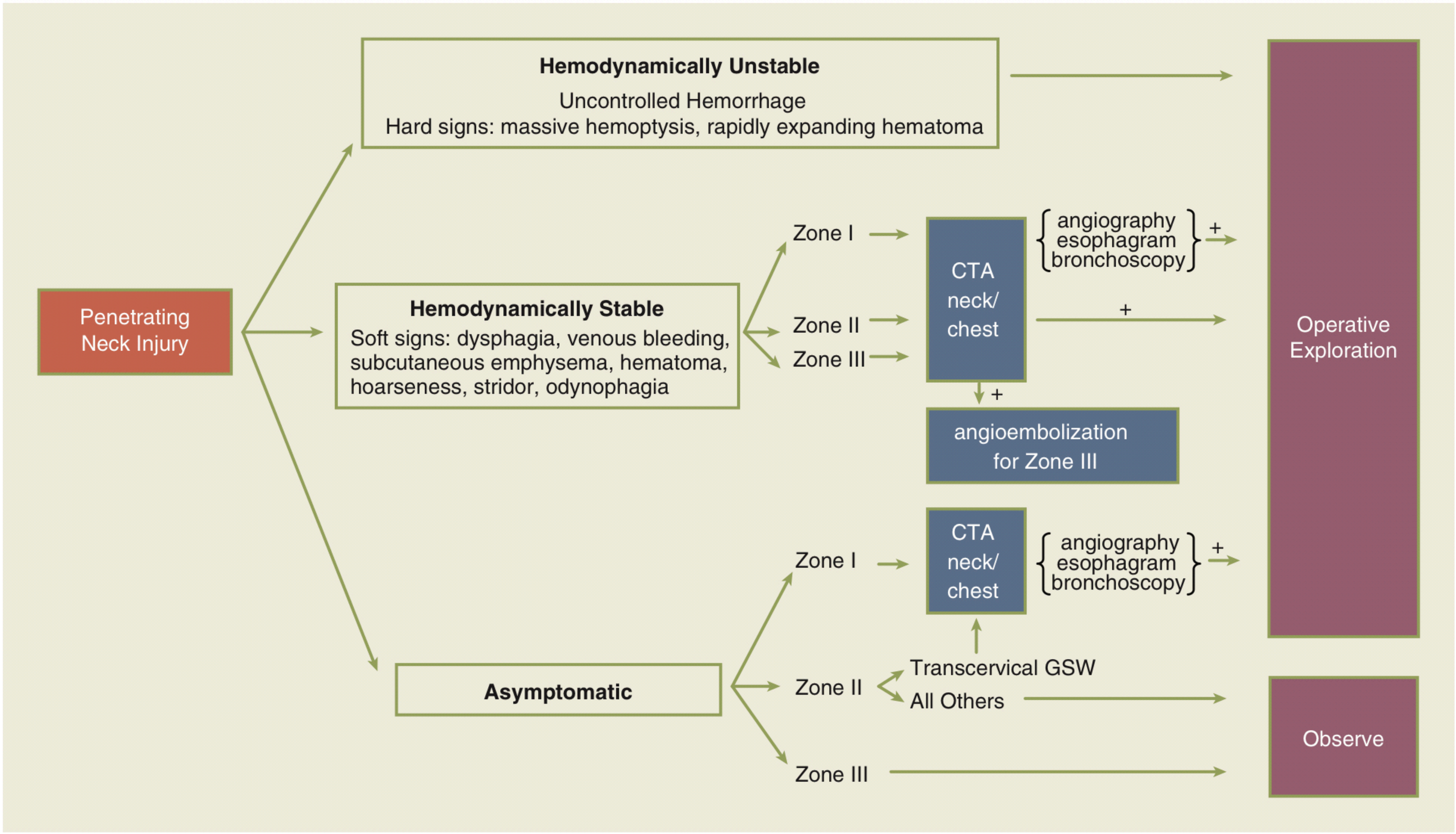

Figure 7-19. Algorithm for the management of penetrating neck injuries. CTA = computed tomographic angiography; GSW = gunshot wound.

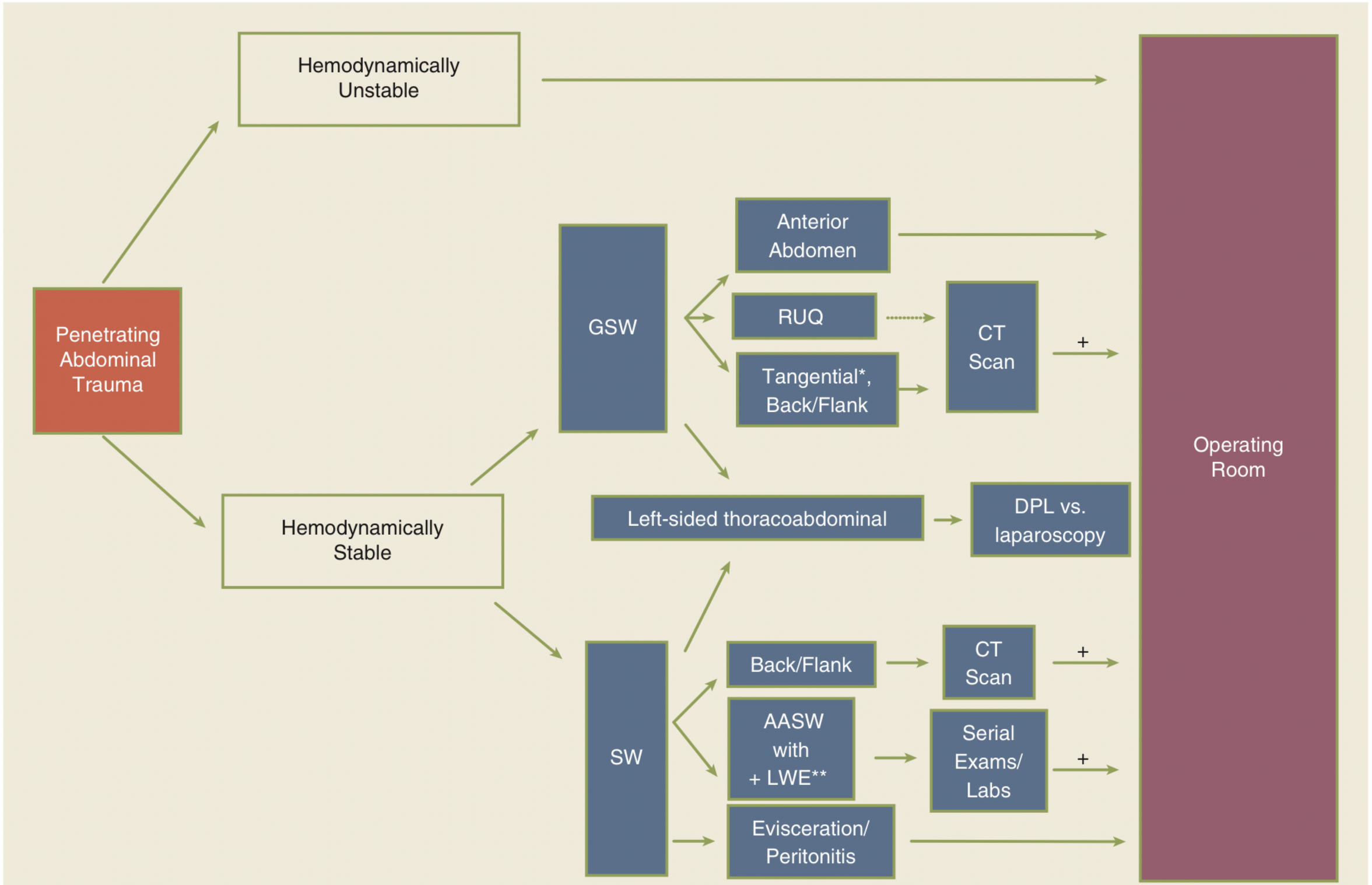

Figure 7-25. Algorithm for the evaluation of penetrating abdominal injuries. AASW = anterior abdominal stab wound; CT = computed tomography; DPL = diagnostic peritoneal lavage; GSW = gunshot wound; LWE = local wound exploration; RUQ = right upper quadrant; SW = stab wound.

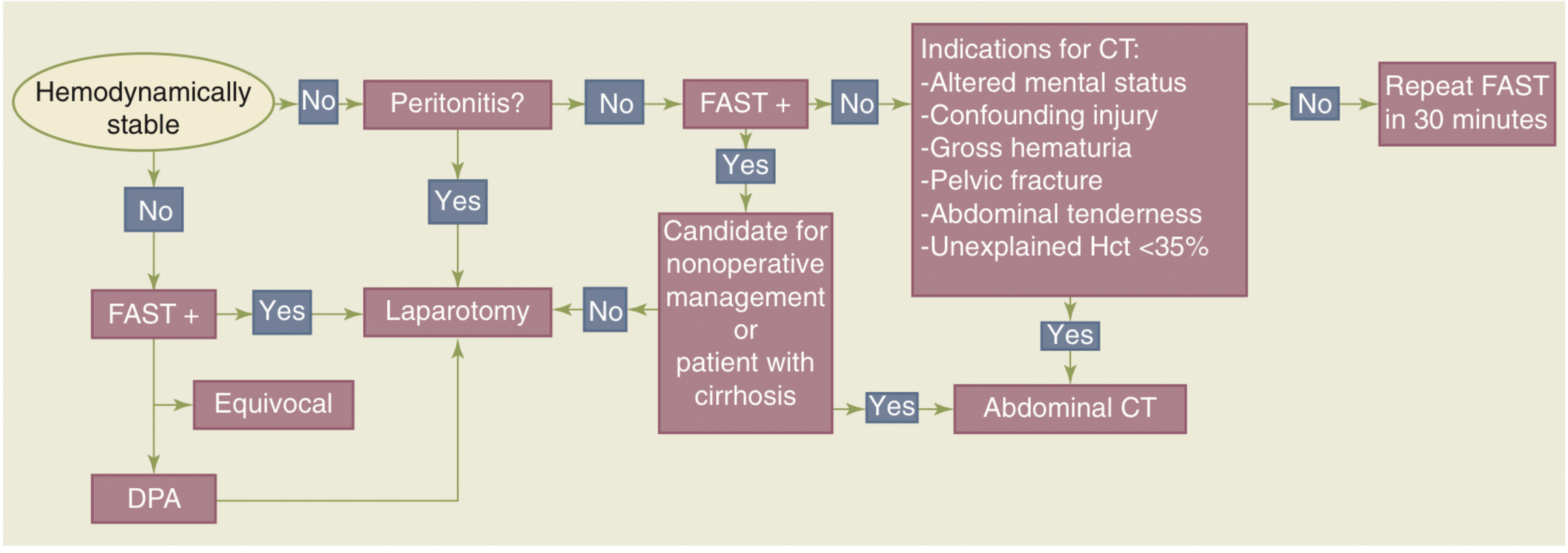

Figure 7-26. Algorithm for the initial evaluation of a patient with suspected blunt abdominal trauma. CT = computed tomography; DPA = diagnostic peritoneal aspiration; FAST = focused abdominal sonography for trauma; Hct = hematocrit.

TABLE 1 Advanced Burn Life Support (ABLS) burn center referral criteria

- Partial-thickness burns >10% of total body surface area
- Burns on face, hands, feet, genitalia, perineum, or major joints
- Third-degree burns in any age group
- Electrical burns, including lightning burns
- Chemical burns
- Inhalation burns
- Burn injury in patients with preexisting medical conditions that could complicate management, prolong recovery, or affect mortality
- Any patient with burns and concomitant trauma (eg, fractures) in which the burn injury poses the greater risk of morbidity or mortality. If trauma poses the greater immediate risk, the patient may be stabilized in a trauma center before transfer to a burn unit. Physician judgment in these cases should reflect the regional medical control plan and triage protocols.
- Children with burns in hospitals without qualified personnel or equipment for pediatric care
- Burn injury in patients who will require social, emotional, or rehabilitative interventions

Adapted from American Burn Association.[3]

TABLE 2 Clinical presentation of burns based on burn depth

Burn depth	Clinical presentation
First degree	• Damage to the epidermal layer only • Painful, erythematous • Heals spontaneously within several days • No scarring
Second degree/ partial thickness	• Damage to the dermis • Erythematous, painful • Blisters • Pink/red/shiny to pale/mottled • Heals by reepithelialization from structures within dermis • May lead to (significant) scarring based on level of dermal involvement
Third degree/ full thickness	• Damage through the dermis • Hard, dry eschar • Painless • Heals by skin grafting surgery • Significant scarring
Fourth degree	• Damage to structures and tissue below the skin

Gallagher JJ, et al.[4]

TABLE 3 Wound care options

Wound care agent	Indication	Frequency of application	Advantages	Disadvantages
Silver sulfadiazine (SSD)	• Middermal to full-thickness burns with necrosis • Areas distant from mucous membranes	Twice daily until reepithelialization achieved or skin grafting performed	• Allows frequent viewing of wound for signs of healing or complications • Commonly available at community pharmacies • Painless when applied to wound • Cost effective • Delivers continuous antimicrobial therapy	• Requires frequent dressing applications, which can be painful • Cannot be used on areas near mucous membranes • Contraindicated in patients with sulfa allergies and other sensitivities • Should be discontinued upon signs of reepithelialization
Bacitracin, neomycin, polymyxin B	• Superficial burns • Facial burns • Burns proximal to mucous membranes	Twice daily until reepithelialization achieved	• Allows frequent viewing of wound for signs of healing • Commonly available at community pharmacies • Painless when applied to wound • Cost effective • Delivers continuous antimicrobial therapy	• Not indicated for deeper burns • Narrower spectrum of antimicrobial coverage than SSD
Adherent dressings (eg, Duoderm and Opsite)	Superficial burns	As needed, up to several days as indicated	• Cost effective • Flexible dressing moves with patient's movements	• Does not provide antimicrobial therapy • Not indicated for deeper burns
Multiday antimicrobial dressings (eg, Mepilex Ag, Aquacel Ag, Acticoat)	Superficial to middermal burns	Can be used for multiple days per manufacturer's recommendations	• Minimizes frequency of dressing changes • Delivers continuous antimicrobial therapy • Flexible dressing moves with patient's movements	• Costly • Requires prescription and possibly use of additional bandages to cover dressings • May not be available in many community pharmacies

As with all medications and treatments, therapy choices must consider patient allergies, concurrent illness or injury, accessibility to care, pain management, and other factors. This list is not exhaustive of all treatment options but presents those commonly used.

Gallagher JJ, et al[4]; Hartford CE[5]; Gallagher JJ, et al.[7]

Tetanus-Prone Wounds

Previous Tetanus Toxoid Administration	Tetanus Toxoid	Tetanus Immunoglobulin
Less than three doses	Yes	Yes
Three or more doses	No; yes, if the last dose was prior to more than 5 years	No

Clean Wounds

Previous Tetanus Toxoid Administration	Tetanus Toxoid	Tetanus Immunoglobulin
Less than three doses	Yes	No
Three or more doses	No; yes, if the last dose was prior to more than 10 years	No

TABLE 13.1 Recommended Margins for Wide Local Excision of the Primary Site

Thickness	Margin	Note
Melanoma in situ	5 mm	Head and neck: consider preoperative margin assessment
Melanoma < 1 mm	1 cm	
Melanoma 1 to 4 mm	2 cm	1 cm acceptable in limited anatomic locations
Melanoma > 4 mm	2 cm	Consider 3 cm if easily obtained

TABLE 17.1 Management Options for Hypercalcemic Crisis

Treatment	Onset	Advantages	Disadvantages
Saline hydration	Hours	These patients are usually dehydrated	Volume overload in cardiac-sensitive patients
Diuretics	Hours	Rapid action	Should not be started if the patient is severely volume depleted
Bisphosphonates	1 to 2 days	High potency	Medications may be tolerated poorly in some patients
Calcitonin	Hours	Rapid onset	Rapid tachyphylaxis
Intravenous phosphate	Hours	Rapid action, useful in patients with cardiac and/or renal decompensation	Can cause renal damage or fatal hypocalcemia
Glucocorticoids	Days	Oral therapy, good for chronic management	Side effects of glucocorticoids
Dialysis	Hours	Especially useful in patients with renal failure, immediate reversal of life-threatening hypercalcemia	Invasive

TABLE 22A.1 Extraintestinal Manifestations of Crohn's Disease

Skin	Eyes	Joints	Blood	Liver	Kidneys	Pancreas	General
Erythema multiforme	Iritis	Peripheral arthritis	Anemia	Nonspecific triad inflammation	Nephrotic syndrome	Pancreatitis	Amyloidosis
Erythema nodosum	Uveitis	Ankylosing spondylitis	Thrombocytosis	Sclerosing cholangitis	Amyloidosis		
Pyoderma gangrenosum	Conjunctivitis		Phlebothrombosis				
			Arterial thrombosis				

Tapered and Pulsed Vancomycin Dosing for Recurrent *C. difficile* Infection

Tapered dosing: 125 mg four times daily for 10 to 14 days, followed by 125 mg twice daily for 7 days, and then 125 mg daily for 7 days

Pulse dosing (after completion of the taper): 125 mg every 2 to 3 days for 2 to 8 weeks

Annexure 18

INVESTIGATION OF CHOICE

Investigation of Choice	
Barium swallow	Hiatus hernia[Q] Zenkers diverticula[Q] Leiomyoma[Q]
Barium meal	Gastric diverticula[Q]
Barium meal follow-through	Small bowel diverticula[Q]
Enteroclysis	Crohn's disease[Q]
Barium enema	Colonic diverticula[Q]
CECT	Divericulitis[Q] GIST[Q] Mesenteric cyst[Q] GI tuberculosis[Q] Acute pancreatitis[Q] Chronic pancreatitis[Q] Carcinoma pancreas[Q] Pancreatic pseudocyst[Q] Carcinoma gall bladder[Q] Hepatocellular carcinoma[Q] (Triple phase CT) Renal cell carcinoma[Q] Retroperitoneal fibrosis[Q] Retroperitoneal sarcoma[Q] Renal tuberculosis[Q] ADPKD[Q]
MRI	Brain tumors[Q] Spinal cord tumors[Q] Pancoast tumor[Q] Soft tissue sarcoma[Q] Staging of carcinoma penis[Q]
Endoscopy with biopsy	Barrett's esophagus[Q] Carcinoma esophagus[Q] Carcinoma stomach[Q]
Colonoscopy with biopsy	Carcinoma colon[Q]
Sigmoidoscopy with bioopsy	Carcinoma rectum[Q]
Proctoscopy with biopsy	Carcinoma anal canal[Q]
Cystoscopy with biopsy	Carcinoma bladder[Q]
FNAC	Carcinoma breast[Q] Parotid tumors[Q] Thyroid malignanies[Q]
Biopsy	Skin malignancies[Q] Carcinoma penis[Q] Oral cavity malignancies[Q]
Manometry	Achalasia cardia[Q] Diffuse esophageal spasm[Q] Nutcrackers esophagus[Q]
24-hours pH monitoring	GERD[Q]
Somatostatin receptor scintigraphy (IOC for localization)	All neuroendocrine tumors of pancreas except insulinoma[Q] Carcinoid tumors[Q]
Ultrasound	Gallstones[Q] Acute cholecystitis[Q] Chronic cholecystitis[Q]

Investigation of Choice	
Acute mesenteric ischemia	• Angiography[Q]
Mesenteric venous thrombosis	• CECT[Q]
Chronic mesenteric ischemia	• Aortography[Q]

Investigation of Choice	
ADPKD Retroperitoneal Fibrosis	CT scan[Q]
Medullary Sponge Kidney	IVP[Q]
VUR	MCU[Q]
Retrocaval ureter	MRI[Q]
PUJ Obstruction	DTPA scan[Q]
Renal structure or surface	DMSA scan[Q]

Annexure 7

MOST COMMON SITES

Important Most Common Sites	
• **Gastric ulcer**[Q]	**Lesser curvature (near incisura angularis)**
• **Peptic ulcer**[Q] • **Gastric outlet obstruction**[Q]	**1st part of duodenum**
• **Small bowel**[Q] **adenocarcinoma** • **Atresia**[Q]	**Duodenum**
• **Polyps** in **PJS**[Q] • **Pneumatosis intestinalis**[Q]	**Jejunum**
• **Crohn's** disease[Q] • **Fistula, perforation** and **carcinoma in Crohn's** disease[Q] • **Typhoid** ulcer[Q] • **Tubercular** ulcer[Q] • **Small intestinal lymphoma**[Q] • **Gallstone ileus**[Q]	**Terminal Ileum**
• **Amebic colitis**[Q] • Bleeding in **angiodysplasia**[Q] • **Bleeding** in **colonic diverticula**[Q]	**Cecum and ascending colon**
• **Ischemic colitis**[Q]	**Splenic flexure**
• **Colonic diverticula**[Q] • **Stricture** after **ischemic colitis**[Q] • **Volvulus**[Q]	**Sigmoid**
• **Ulcerative colitis**[Q] • **Colorectal cancer**[Q] • **Hirschprung's disease**[Q]	**Rectum**

Annexure 15

MOST COMMON TYPE OF STONES

Most Common Type of Stones	
Gall bladder	**Cholesterol**[Q] (**Mixed** if given in the option)
Pancreas	**Calcium carbonate**[Q]
Kidney	**Calcium oxalate**[Q]
Primary Bladder Stone	**Ammonium urate**[Q]
Secondary Bladder Stone	**Uric acid >Struvite**[Q]
Prostate	**Calcium phospahte**[Q]
Salivary gland (Submandibular)	**Calcium carbonate**[Q]

Annexure 17

IDEAL TIME FOR TREATMENT

Ideal time for Treatment	
Undesended testis	6 months[Q]
Hypospadias	6–12 months[Q]
Umbilical hernia	5 years[Q]
Cleft lip	3–6 months[Q]
Cleft palate	6–18 months[Q]

Complications after Renal Trauma

- **Complication rate** after renal trauma is **3–10%**[Q]
- **Urinoma** is the **MC complication**[Q] after renal trauma
- **Delayed bleeding** usually occurs **within 1–2 weeks**[Q] after injury

Early Complications	Late complications
• Urinoma, delayed bleeding • Urinary fistula, abscess • Hypertension	• Hydronephrosis, pyonephrosis • Stone formation, AV fistula • Delayed hypertension

Enteral Nutrition

- **Enteral feeding** means **delivery of nutrients into** the **GIT**[Q].
- The **alimentary tract** should be **used** whenever **possible**[Q].
- This can be achieved with oral supplements (sip feeding) or with a variety of **tube-feeding techniques delivering food into** the **stomach, duodenum** or **jejunum**[Q].

Advantages of Enteral route over Parenteral Route	
• **Maintains integrity** of **gastrointestinal tract**[Q] • **Reduces translocation of gut bacteria**[Q] that may lead to infection.	• **Reduces** the **levels of pro inflammatory cytokines**[Q] generated by the gut that contribute to hypermetabolism.

Enteral Nutrition

Indications	Contraindications
• **Protein-energy malnutrition** with **inadequate oral intake**[Q] • **Dysphagia** except for fluids[Q] • **Major trauma** (or **surgery**[Q]) when return to required dietary intake is prolonged • **Inflammatory bowel disease**[Q] • **Distal, low-output** (<200 ml/day) **enterocutaneous fistula**[Q] • To enhance adaptation after massive enterectomy	• **Small bowel obstruction or ileus**[Q] • **Severe diarrhea**[Q] • **Proximal small intestinal fistula**[Q] • **Severe pancreatitis**[Q]

- **Neuroblastoma** is the **MC extracranial solid tumor** in **childhood**
- **Neuroblastoma** is the **2nd MC solid malignancy** of childhood **after brain tumors**.
- **MC solid tumor** in **childhood: Brain tumors**[Q]
- **MC intra abdominal solid tumor** in **childhood**: **Neuroblastoma**[Q]

Feature	Neuroblastoma	Wilm's Tumor
Common tumor	**MC intra-abdominal solid tumor** in **children**[Q]	**MC renal tumor** in **children**
At the time of diagnosis	Already **metastatic** in **>50% of patients**[Q]	Generally **confined to** the **kidney**
Lung Metastasis	**Rare**[Q]	**Common**
Encasement of Aorta	**Characteristic**[Q]	Uncommon
Calcification	**Common (Stippled calcification**[Q]**)**	Rare

Pediatric Tumors	
• **MC malignant** tumor of **infancy** • **MC extracranial solid** tumor in **children** • **MC abdominal** malignancy in **children**	Neuroblastoma[Q]
• **MC primary malignant renal** tumor of **childhood**	Wilm's tumor[Q]
• **MC renal tumor** of **infancy**	Congenital mesoblastic nephroma[Q]
• **MC soft tissue** tumor in **infants** and **children**	Rhabdomyosarcoma[Q]
• **MC solid tumor** of **childhood**	Brain tumor[Q]
• **MC cancer of childhood**	**Leukemia[Q]** (30%) **>Brain tumors[Q]** (22%)

• **MC cancer** in **males** (**PLC**): **Prostate >Lung >Colorectal[Q]**
• **MC cancer** in **females** (**BLC**): **Breast >Lung >Colorectal[Q]**
• **Cancer deaths** in **males** (**LPC**): **Lung >Prostate >Colorectal[Q]**
• **Cancer deaths** in **females** (**LBC**): **Lung >Breast >Colorectal[Q]**

- **MC site of primary** for **bone metastasis**: **CA Breast > CA prostate > RCC > CA lung > CA thyroid > CA bladder**
- **MC cause** of **osteoblastic secondaries** in **males**: **CA Prostate**[Q]
- **MC cause** of **osteoblastic secondaries** in **females**: **CA Breast**[Q]
- **MC tumor metastasize to bone** in **females: CA Breast**[Q]
- **Lytic expansile metastasis is seen in: RCC follicular carcinoma thyroid**
- **MC site of bone metastasis: Dorsal spine**

In Radiotherapy

- **Most radiosensitive tissue** of body: **Bone marrow**[Q]
- **Least** radiosensitive tissue of body: **Nervous tissue / Brain**[Q]
- **Most radiosensitive blood cell: Lymphocyte**[Q] (That's why Lymphocytic predominant Hodgkins lymphoma has best prognosis)
- **Least radiosensitive blood cell**: **Platelet**[Q]
- **Most common organ** to be affected by radiation: **Skin**[Q] (**Erythema earliest change, layer most commonly affected stratum basalis)**
- Sebaceous gland function doesn't recover after radiotherapy.
- **Pinna** and **axillae** are common sites of **radionecrosis** i.e. for skin doses.
- Most **radio resistant** organ: **Vagina**
- Most common **mucosa** to be affected by radiation: **Intestinal mucosa**[Q] (**Earliest symptom** is **diarrhea**)
- **Most sensitive abdominal organ**: **Kidney**

Most radiosensitive ovarian tumor	• **Dysgerminoma**[Q]
Most radiosensitive **brain** tumor	• **Medulloblastoma**[Q]
Most radiosensitive **testicular** tumor	• **Seminoma**[Q]
Most radiosensitive **lung** tumor	• **Small cell CA**[Q]
Most radiosensitive **kidney** tumor	• **Wilms tumor**[Q]
Most radiosensitive **bone** tumor	• **Ewing's Sarcoma**[Q] and **Multiple myeloma**[Q]

Condition	Seen in
Necrolytic erythema migrans	• **Glucagonoma**
Erythema chronicum migrans	• **Lyme's disease**
Erythema infectiosum (fifth disease)	• **Parvovirus B19**
Erythema marginatum	• **Acute rheumatic fever**

Screening Immunohistochemistry
• **Epithelial Markers**: **Cytokeratin** (positive in **carcinomas**)[Q]
• **Lymphoid Markers**: **CD-45** (positive in **lymphoma**)[Q]
• **Melanocytic Markers**: **S-100** (positive in **melanoma**)[Q]
• **Mesenchymal Markers**: **Vimentin** (positive in **sarcoma**)[Q]
• **Neuroendocrine Markers**: **Chromagranin** and **neuron specific enolase**[Q]

New Recommendations
• **Aspirin need not be stopped before surgery**[Q] • **Thyroid medications** should be **continued**[Q] • **Anti-hypertensives** should be **continued** (even losartan)[Q] • **OCPs** should be **continued till day of surgery**[Q] • **Anti-depressants, anti-epileptics, anti-psychotics** should be **continued except TCA**, which should be **stopped 3 weeks before surgery** due to risk of **intra operative arrhythmia**[Q] • **Ticlopidine: 14 days** before surgery[Q] • **Clopidogrel: 7 days** before surgery[Q] • **Warfarin: 3 days** before surgery[Q] • **LMWH: 12 hours** before surgery[Q]

Important Lymph Nodes	
Rotter's nodes[Q]	• **Interpectoral** nodes (**CA breast**)[Q]
Rouvier nodes[Q]	• **Retropharyngeal** nodes (**CA Nasopharynx**)[Q]
Delphian nodes[Q]	• **Pre-cricoid/Pre-tracheal/Pre-laryngeal** lymph nodes[Q]
Irish nodes[Q]	• Nodes in **left axilla** (**CA stomach**)[Q]
Sister Mary Joseph nodes[Q]	• **Periumbilical metastatic cutaneous** nodules
Virchow nodes[Q]	• **Left supraclavicular** node[Q]
Cloquet node[Q]	• **Femoral canal** node[Q]
LN of **Lund**[Q]	• **Cystic** lymph node[Q]
Krouse Lymph node	• **Jugular fossa** lymph node[Q]

Most Common Symptom	
CA Esophagus	• **Dysphagia** >weight loss[Q]
CA stomach	• **Abdominal pain** >weight loss[Q]
Periampullary carcinoma (including **CA head** of **pancreas**)	• **Jaundice**[Q]
HCC	• **Abdominal pain** >weight loss[Q]
Cholangiocarcinoma	• **Painless progressive jaundice**[Q]
CA Gallbladder	• **Biliary colic**[Q]
CA small bowel	• **Abdominal pain**[Q]
CA colon	• **Abdominal pain**[Q]
CA rectum	• **Bleeding PR**[Q]
CA anal canal	• **Bleeding PR**[Q]

TREATMENT OF CHOICE

Condition	Treatment of Choice
Duodenal Atresia	Duodenoduodenostomty[Q]
Annular pancreas	Duodenoduodenostomty[Q]
Superior mesenteric artery syndrome	Duodenojejunostomy[Q]

Enucleation is treatment of choice in
1. **Hemangioma liver[Q]**
2. **Leiomyoma esophagus[Q]**
3. **Chylolypmhatic cyst[Q]**
4. **Insulinoma involving head of pancreas[Q]**

Characteristics of Selected Blood Components			
Component	**Volume (mL)**	**Content**	**Clinical Response**
Whole Blood	**450 ml ± 45**	• No elements removed • Contains **RBCs, WBCs, plasma** and **platelets** (**WBCs** and **platelets** may be **non-functional**[Q])	• Not for routine use • Used for **acute massive bleeding, open heart surgery** and neonatal total exchange
Packed RBCs	**180–200**	• **RBCs** with variable **leukocyte** content and **small** amount of **plasma**	• Increase **Hb 1 gm/dL** and **hematocrit 3%**[Q]
Platelets	**50–70**	• 5.5 x 10^{10}/RD unit	• Increase platelet count **5000–10,000/µL**[Q]
FFP	**200–250**	• **Plasma proteins**: **Coagulation factors,** proteins **C and S, antithrombin**[Q]	• Increases **coagulation factors about 2%**
Cryoprecipitate	**10–15**	• Cold-insoluble plasma proteins, **fibrinogen, factor VIII, vWF**[Q]	• Topical fibrin glue, also **80 IU factor VIII**[Q]

Metabolic Complications of Massive Transfusion

General

- **Fluid overload**[Q]
- **Hypothermia**[Q]
- **Impaired oxygen delivery capacity of Hb**[Q] (decreased 2, 3-DPG)

Electrolyte

- **Hyperkalemia**[Q]
- **Hypocalcemia**[Q]
- **Hypomagnesemia**[Q]
- **Metabolic alkalosis**[Q]
- **Metabolic acidosis (rare)**[Q]

Complications of Blood Transfusion

Reactions

- Febrile non-hemolytic transfusion reaction (**FNHTR**): **MC**[Q]
- Allergic
- **Delayed hemolytic**[Q]
- Transfusion-related acute lung injury (**TRALI**)[Q]
- **Acute hemolytic**[Q]
- Fatal hemolytic
- Anaphylactic

Infections

- Hepatitis **B** and **C**[Q]
- Hepatitis **G**[Q]
- **HIV-1 and -2**[Q]
- **HTLV-I and -II**[Q]
- **Malaria**[Q]
- **West Nile virus**[Q]
- **Parvovirus B-19**[Q]
- **HHV-8**[Q]
- **CMV**[Q]

Other Complications

- RBC allosensitization[Q]
- HLA allosensitization[Q]
- Graft-versus-host disease

Platelet Concentrates

- **Volume**: **50 ml**[Q]
- Platelets are the **only blood products** which are **stored at room temperature, 20-24**^{0} **C**[Q] **(survival is 4-5 days)**[Q].
- **1 unit of platelet** increases the count by **5000-10000**[Q].

  - The **threshold for prophylactic platelet transfusion** is **10,000/μL**[Q]**.**
  - **For invasive procedures**, **50,000/μL** platelets is the usual target level.
  - Platelet count should be **1,00,000/μL** before accepting the patient **for surgery**.

- **Transfused platelets** generally **survive for 2-7 days** following transfusion.
- **ABO compatibility** is desirable but **not necessary**.

  - **Blood platelets in stored blood** are **non-functional after 24 hours**[Q].

Techniques of Sterilization	
Steam (121°C for **15 minutes)**	• Surgical instruments[Q]
Ethylene oxide	• **Heart lung machine**[Q], respirators, dental labs
Hot air oven	• **Glass syringe**[Q]**, test tubes, flasks**[Q], cutting instruments
Irradiation **(gamma rays)**	• **Industrial packaging**[Q]
Paracetic acid (STERIS)	• **Flexible endoscopes**[Q]
Isopropyl alcohol	• **Clinical thermometer**[Q]
Beta propiolactone >Formaldehyde	• **Fumigation of OT, labs, wards**[Q]
2% Glutaraldehyde	• **Endoscope (cystoscope, bronchoscope)**[Q]
Autoclaving	• **Culture media, suture materials except catgut**[Q]

Total Body Water

Approximately 50%–75% of body weight is **water**.

- In **males**, 60% (±15%) of body weight is water.
- In **females**, 50% (±15%) of body weight is water.

Body water is divided into three functional compartments :-

- ***The ICF compartment*** (accounting for 40% of total body weight) is contained mostly within skeletal muscles.

- The principal intracellular cations are potassium and magnesium.
- Where as the principal intracellular anions are proteins and phosphates.

- ***The ECF compartment*** (20% of body weight), which is further subdivided into :-
- ***The interstitial*** (extravascular) (15% of body weight).
- ***The intravascular*** (plasma) (5% of body weight) fluid compartments.

- The principal cation is sodium.
- Where as the principal anions are chloride and bicarbonate.

The plasma volume constitutes **one fourth** of the total extracellular fluid volume.

Newborn infants have **the greatest proportion** of total body water.

Total body water **decreases** steadily with age.

The normal daily **insensible water loss** is 600 to 900 ml.

In normal humans, urine represents **the greatest source** of daily water loss.

Printed by: Dr. Mohammed S. M. Al-Musawi

Pediatric Surgery

The most common malignant neoplasm of infancy is:
- **Neuroblastoma.**

The most common inherited malignancy is:
- **Retinoblastoma.**

The most common cancers of children is:
- **Leukemia.**

The most common brain tumors in children is:
- **Medulloblastomas.**

The most common renal tumor of infancy is:
- **Congenital mesoblastic nephroma.**

The most common tumor of the kidney in children is:
- **Wilms tumor.**

The most common solid tumor in children younger than 2 years is:
- **Neuroblastoma.**

In children older than 2 years, the most common solid tumor is:
- **Wilms tumor.**

The most common thyroid cancer in children is:
- **Papillary thyroid cancer.**

The most common primary lung tumor in infants and children is:
- **Endobronchial carcinoid.**

The most common liver tumor of childhood is:
- **Hepatoblastoma.**

The most common cause of pyogenic liver abscess in children is:
- **chronic granulomatous disease (40%).**
- **Immunocompromised host (30%)** (most commonly leukemia)

The most common shock in children is:
- **Hypovolemic shock**

The most common cause of acute pancreatitis in childhood is:
- **Trauma.**

The most common solid organ injured by blunt trauma in children is:
- **The spleen.**

The most common cause of neonatal hydronephrosis is:
- **congenital ureteropelvic junction obstruction.**

The most common soft tissue tumor in infants and children is:
- **Rhabdomyosarcoma.**

What are the common sites of neuroblastoma metastasized:
- **Regional lymph nodes**
- **Bone marrow**
- **Cortical bone** (poor prognostic indicator)

The most common pathogen in neonatal sepsis is:
- ***Staphylococcus epidermidis.***

The organisms frequently responsible for bacterial peritonitis in children include:-
- ***Escherichia coli***
- ***Klebsiella pneumoniae***
- ***Pseudomonas species***

The most frequent dangerous complication of laparoscopy in infants is:
- **Hypothermia.**

Which of the following are typical causes of neonatal intestinal obstruction:
- **Meconium ileus**
- **Hirschsprung's disease**
- **Incarcerated hernia**

Which is the most likely cause of hemodynamically significant lower gastrointestinal bleeding in a 6 month old male child?
- **Meckel diverticulum**
- **Intussusception**

At what age is surgical orchiopexy recommended for a child with a unilateral undescended testis?
- **1 year.**

The medical indications for circumcision include which of the following?
- **Infants with a history of urinary tract infection**
- **Phimosis**
- **Vesicoureteral reflux**

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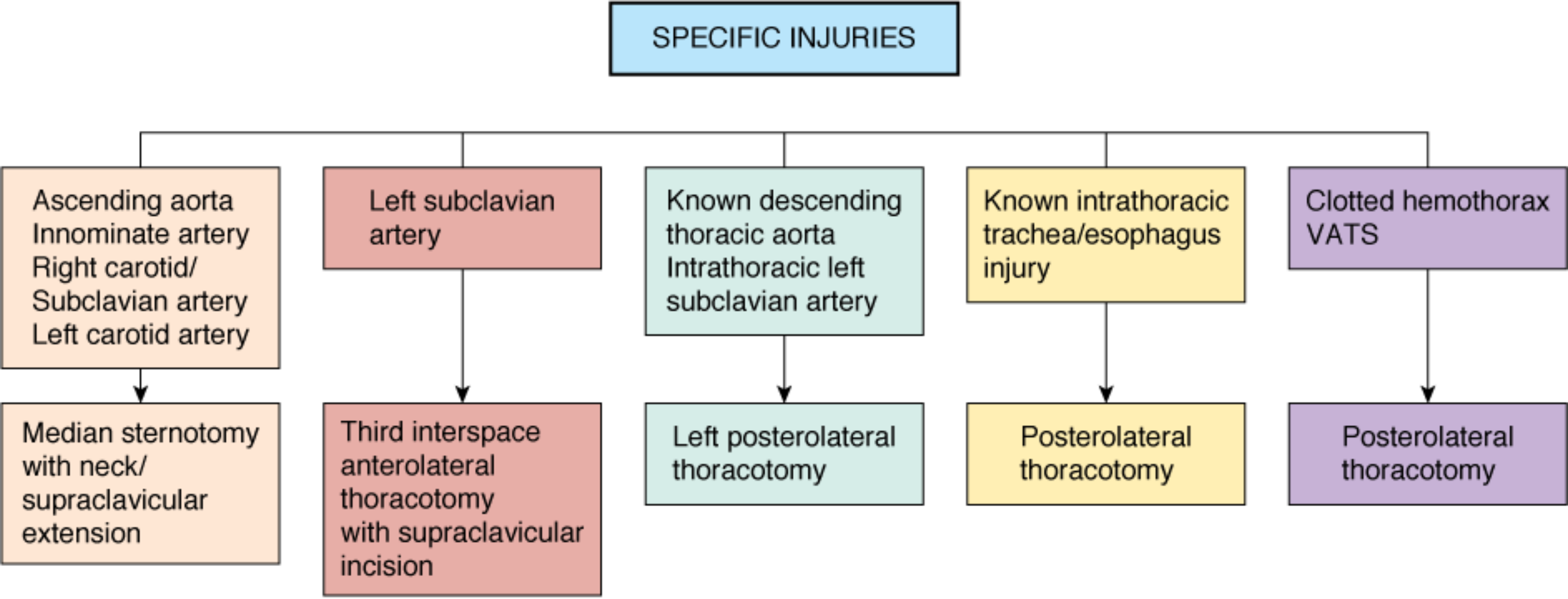

Source: Mattox KL, Moore EE, Feliciano DV: *Trauma, 7th Edition:*
www.accesspharmacy.com

Drug	Receptor Site Alpha-1: +Vasoconstriction Beta-1: +HR & +Inotropy Beta-2: +Vasodilation & + Bronchodilator	Suggested Clinical Uses
Norepinephrine	Mainly Alpha-1 Effects Some Beta-1 Effects	Septic Shock (Considered 1st Agent in Adult Septic Shock) Cardiogenic Shock (SOAP II Trail) Vasodilatory Shock
Epinephrine	Low Doses (<0.1mcg/kg/min): Beta-1 & Beta-2 Effects High Doses (>0.1 - 0.2mcg/kg/min and greater): Alpha-1 Effects Predominate	Cardiac Arrest Septic Shock (Typically 1st Agent in Pediatric Septic Shock) Cardiogenic Shock
Phenylephrine	Alpha-1 Effects	Vasodilatory Shock
Dobutamine	Beta-1 & Beta-2 Effects	Cardiogenic Shock Inotropic Support in Treatment of RV Failure Additional Inotropic Support During Septic Shock
Dopamine	1 - 5 mcg/kg/min: DA Effects 5 - 10 mcg/kg/min: Beta-1 & Beta-2 Effects 10- 20 mcg/kg/min: Alpha-1 Effects Predominate	Shock with Bradycardia

Post-Splenectomy Sepsis

- Commonest Organisms causing Infections / Sepsis in Asplenic Patients → Encapsulated Bacteria
- Commonest Organism causing Post-Splenectomy Sepsis → Streptococcus Pneumoniae

  (Accounts for >50% of Septic Episodes in most series)

- The Decreasing Order of Frequency Organisms a/w Infection after Splenectomy
  1. S.Pneumoniae
  2. H.Influenza
  3. N. Meningitidis
  4. Beta hemolytic Streptococcus
  5. Staphylococcus Aureus
  6. Escherichia Coli
  7. Pseudomonas sp

- Sabiston Textbook of Surgery, 18/e, chapter 56
- Greenfield's Surgery-Scientific Principles and Practice, 5/e, 1218/p
- Harrison's Principles of Internal Medicine, 19/e, 147/chap, 781/p

Dr. Areej Khan

- Current General Guidelines for prevention of Post-Splenectomy Sepsis
  - Vaccinate with Pentavalent pneumococcal vaccine at least 10-14 days prior to Elective Splenectomy
  - If Splenectomy is URGENT → Wait until 14 days post-procedure to Vaccinate
  - In High Risk pts (Immunocompromized & Child < 10yrs) → Also give Meningococcal & HiB Vaccine
  - Antibiotic prophylaxis in all Children <5yrs

النتيجة : ناجح

اللّٰهُمَّ حقق هذه الأمنية لجميع الطلاب

by:tia/أكتب لتلك العينين