

Surgery

Susmit

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Contents

Deep Vein Thrombosis (DVT)	2
Virchow's triad	2
Factors	2
Common sites	3
Prevention	3
CABG	4
Investigations for IHD	4
Indications for surgery	4
Graft selection	4
Types	4
Blood transfusion	5
Indications	5
Complications	5
Single transfusion	5
Massive transfusion	5
Blood & blood products	5
Clinical factoids	6
Burns	7
Mechanism of fluid loss	7
Assessment	7
Fluid resuscitation	7
Indications	7
Principles	7
Definitive management	7
Superficial partial-thickness burns	7

Deep partial-thickness/full-thickness burns	8
Nanocrystalline silver dressing	8
Grafts and Flaps	9
Graft	9
Types of skin graft	9
Flap	9
Causes of graft failure	9
Important anticancer drugs	10
Varicose veins	11
Management principles	11
Deadly Dozen and ATLS	12
“Deadly dozen” of chest injury	12
Immediately life threatening	12
Potentially life threatening	12
Lung cancer	13
Types	13
Features	13

Deep Vein Thrombosis (DVT)

Formation of semisolid coagulum in a deep vein.

Virchow’s triad

- Abnormal surface (endothelial damage)
- Abnormal flow (stasis / turbulence)
- Abnormal blood (thrombophilia)

Factors

- Immobility
 - Age
 - Obesity
 - Prolonged surgery
 - Pregnancy
 - Puerperium
 - Varicosity (effect of immobility, the rest are causes)
- Hormone-replacement therapy (high oestrogen)
- Previous DVT / PE
- Thrombophilia

Common sites

- Popliteal vein
- Femoral "
- Iliac "

Prevention

- Early mobilization
- Hydration
- Compression stockings
- Prophylactic LMW heparin
- Calf pumps
- Minimal use of tourniquets

CABG

Investigations for IHD

- ECG (first line)
- Cardiac enzymes (in acute coronary syndrome)
- Exercise tolerance test
- Echo: Evaluate
 - ventricular function
 - regional wall motion abnormalities
 - valvular lesions
- **Coronary angiography: gold std**
 - Extent, severity and location of stenoses
 - 70% reduction of diameter (i.e. >90% reduction of cross-sec) => severe

Indications for surgery

- 50% stenosis of the left coronary artery (“*left main stem*”)
- 50% stenosis of the proximal *LAD*
- 2/3 main coronary arteries diseased (*RCA*, *LAD*, *LCx*)

Graft selection

Types

- **Venous:** long saphenous vein
- **Arterial:**
 - LIMA most common (left internal mammary / left internal thoracic artery)
 - Others
 - * RIMA
 - * Radial
 - * Gastroepiploic
 - * Inf epigastric

Blood transfusion

Indications

- Acute blood loss
- Periop anaemia
- Symptomatic chronic anaemia

Complications

Single transfusion

- Haemolysis (haemolytic transfusion reaction)
- Fever (febrile transfusion reaction)
- Allergic reaction
- Infections
 - Hep B, C
 - HIV
 - Malaria
 - Bacterial inf
- Air embolism
- Thrombophlebitis
- TRALI

Massive transfusion

- Coagulopathy
- Hypothermia
- Hypo-Ca
- Hypo-K
- Hyper-K

Blood & blood products

- Whole blood
- Components
 - Packed red cells
 - FFP
 - * Plasma stored at -40 to -50°C
 - * Rich in *coagulation factors*
 - * 2y shelf-life
 - Cryoprecipitate
 - * Supernatant of FFP
 - * Rich in *factor VIII* and *fibrinogen*
 - * Stored at -30°C
 - * 2y shelf-life
 - Platelet concentrate
 - Prothrombin complex concentrate

Clinical factoids

- Target Hb level: 10g/dL
- 1 unit transfusion = 1g/dL improvement

Burns

Mechanism of fluid loss

Intense inflammation in burnt areas \rightarrow \uparrow permeability \rightarrow leakage of fluid into extravascular compartment

Assessment

- Rule of 9:
 - First approx
 - Adult
 - * Head-neck \rightarrow 9%
 - * Each upper limb \rightarrow 9%
 - * Torso front 18%
 - * Torso back 18%
 - * Each lower limb 18%
 - * Perineum 1%
- Lund and Browder chart
 - More accurate
- For smaller burns, a piece of paper about the size of the hand to measure the burnt area directly. Size of hand \approx 1%.

Fluid resuscitation

Indications

- **If $>10\%$ TBSA in children or $>15\%$ TBSA in adults (B&L)**
- To correct hypovolaemia
- " " electrolyte imbalance
- To prevent shock
- To provide nutrition

Principles

- **Parkland formula:** $4 \cdot W \cdot A$ mL fluid for the 1st 24h
 - Infuse $\frac{1}{2}$ over 8h, $\frac{1}{2}$ over 16h
- First 12h \rightarrow crystalloid only (massive fluid shift to extravascular compartment takes protein out with it)
- Then add colloid (human albumin solution)
 - Provides necessary oncotic pressure for keeping infused fluid within the vascular compartment

Definitive management

Superficial partial-thickness burns

- Regular dressing
- Heal spontaneously within 2 wks without scar irrespective of choice of dressing

Deep partial-thickness/full-thickness burns

- Nanocrystalline silver dressing until surgery (to prevent colonisation)
- Escharotomy for circumferential full-thickness burns
- Debridement + split-skin grafting
- Without surgery, heal by hypertrophic scarring

Nanocrystalline silver dressing

- 1% silver sulfadiazine
- 0.5% silver nitrate
- Mafenide nitrate
- Silver sulfadiazine + cerium nitrate

Grafts and Flaps

Graft

- Tissue transferred *without its original blood supply*
- Need to revascularise in recipient site

Types of skin graft

- Split-thickness skin graft: epidermis + part of dermis
- Full-thickness skin graft: epidermis + whole dermis
- Composite skin graft: skin + cartilage, skin + fat etc.

Flap

- Tissue transferred *with its original blood supply*

Causes of graft failure

- Inadequate vascularity of recipient site: due to
 - residual pus
 - residual exudate
 - residual dead tissue
- Haematoma
- Shearing forces
- Group A β -haemolytic streptococcal infection
 - can destroy grafts completely
 - hence, contraindication to grafting

Important anticancer drugs

- **Mitosis interferers**
 1. Vincristine
 2. Vinblastine
 3. Taxanes (e.g. Paclitaxel)
- **Antimetabolites** (i.e. DNA synthesis inhibitors)
 1. Methotrexate
 2. 5-FU
- **DNA damagers**
 1. Platinum drugs
 - Cisplatin
 - Carboplatin
 - Oxaloplatin
 2. Cyclophosphamide
 3. Bleomycin
 4. Doxorubicin
 5. Etoposide
- **Hormones**
 1. Tamoxifen: ER blocker (Breast ca)
 2. Goserelin: GnRH analogue; downregulate ant. pituitary → ↓ testosterone (Prostate ca)
 3. Flutamide: Androgen antagonist (Prostate ca)
 4. Bromocriptine: D2 agonist; blocks ant. pituitary stimul (Pituitary tumour)

Varicose veins

Management principles

- Avoid prolonged standing
- Compression stockings
- **Endothermal ablation**
 - *Laser ablation*
 - *Radiofrequency ablation*
- US-guided sclerotherapy
 - Sclerosing agent: sodium tetradecyl sulfate
- Open surgery
 - Sapheno-femoral junction (SFJ) ligation + great saphenous vein (GSV) stripping (*Trendelenburg operation*)

Deadly Dozen and ATLS

“Deadly dozen” of chest injury

Immediately life threatening

Manage in 1^o survey

- Airway obstruction
- Tension pneumo
- Open pneumo
- Massive haemothorax
- Flail chest
- Pericardial tamponade

Potentially life threatening

Manage in 2^o survey

- Tracheobronchial injury
- Oesophageal injury
- Aortic injury
- Myocardial contusion
- Pulmonary contusion
- Diaphragm rupture

Lung cancer

Types

- Non-small cell (NSCLC)
 - Squamous
 - Adeno
 - Large cell
 - Carcinoid
- Small cell (SCLC)

Features

- Cough (esp. changing cough)
- Dyspnoea
- Haemoptysis
- Wt loss
- Chest pain
- Clubbing
- Pancoast → compress sympathetic trunk → *Horner's*
 - Miosis
 - Enophthalmos
 - Anhidrosis
 - Partial ptosis
- Paraneoplastic features (SCLC)
 - SIADH
 - Cushing
 - Lambert-Eaton