

## Surgical Critical Care in Septic Patients: Patient Preparation and Operation

**Suriya Punchai, MD.**

Advanced Laparoscopic and Bariatric Surgery  
Department of Surgery, Faculty of Medicine, Khon Kaen University,  
Khon Kaen, Thailand

### Surgical sepsis

- Septic conditions need surgical treatment

### Surgical sepsis

- Soft tissue infection:
  - Necrotizing fasciitis, Pyomyositis
  - Gas gangrene, Fournier's gangrene
- Intra-abdominal collection/ abscess
- Hollow viscus organ perforation: stomach, intestine and gall bladder
- Mycotic aneurysm

### Pitfalls

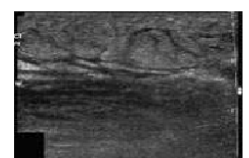
- Diagnosis: Early diagnosis
- Preoperative preparation: Correct metabolic problems and control underlying diseases
- Treatment: Early treatment and re-evaluation

## Diagnosis

- **Cellulitis:** -inflammation of the skin and subcutaneous tissues, not involve fascia or muscles
  - characterized by localized pain, swelling, tenderness, erythema, and warmth.
- **Necrotizing fasciitis:** rapid and severe infection
  - involve fascia, may be not tenderness
  - clinical sepsis

## Diagnosis

- Necrotizing fasciitis:



## Diagnosis:

- **Fournier's gangrene:**
  - a type of necrotizing infection or gangrene usually affecting the perineum
  - not involve testes

## Diagnosis

- Fournier's gangrene:

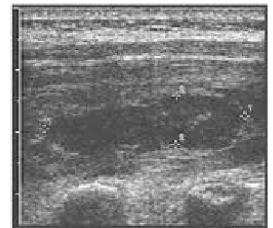


## Diagnosis

- **Pyomyositis:** a purulent infection of skeletal muscle that arises from hematogenous spread, usually with abscess formation
- **Gas gangrene:** a subset of necrotizing myositis
  - spore-forming clostridial species
  - rapid onset of myonecrosis with muscle swelling, severe pain, gas production, and sepsis

## Diagnosis

- Pyomyositis:



## Diagnosis

- Gas gangrene:

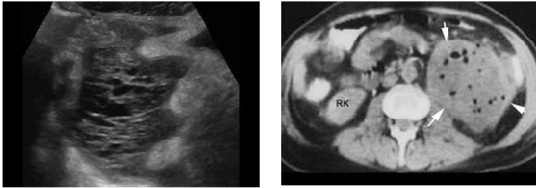


## Diagnosis

- **Intra-abdominal collection or abscess:**
  - an infected pocket of fluid and pus located inside the abdominal cavity.
  - following abdominal operation or inflammation
  - characterized by tenderness, distension, bowel ileus, diarrhea and sepsis

## Diagnosis

- Intra-abdominal collection/ abscess:

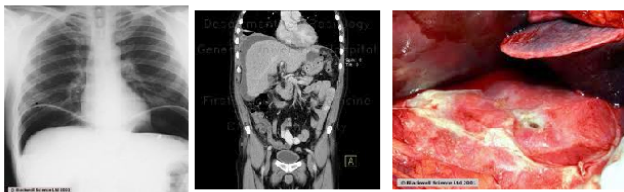


## Diagnosis

- **Hollow viscus organ perforation:**
  - stomach, intestinal and gall bladder perforation
  - spillage on contents into abdominal cavity
  - characterized by tenderness, distension, bowel ileus, collection, abscess and sepsis

## Diagnosis

- Hollow viscus organ perforation:

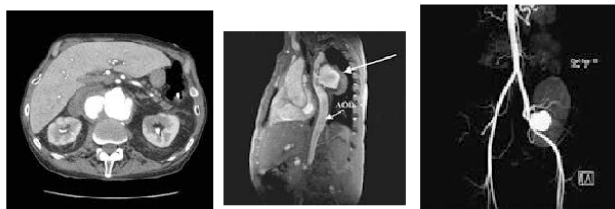


## Diagnosis

- **Mycotic aneurysm:**
  - abnormal localized dilatation of the wall of an artery (aneurysm) cause by infection process (bacteria, fungi)
  - saccular aneurysm and high risk of rupture

## Diagnosis

- Mycotic aneurysm:



## Preoperative problems

- Septic shock, Hypovolemic shock
- Renal failure and electrolyte imbalance
- Coagulopathy
- Respiratory failure

## Preoperative problems

- **Septic shock, Hypovolemic shock:**
  - fluid resuscitation: crystalloid(NSS), colloid
  - fluid challenge over 30 min (300-500 ml)
  - vascular access (internal jugular, cut down)
  - vasopressor drugs(dopamine, norepinephrine, adrenaline) if appropriate fluid challenge fails to restore adequate blood pressure and organ perfusion
  - empiric intravenous antibiotic (broad spectrum)

## Preoperative problems

- **Goals of therapy within first 6 hours are:**
  - Central Venous Pressure 8-12 mmHg
  - Mean arterial pressure > 60 mmHg
  - Urine output > 0.5 mL/kg/hr
  - ScvO<sub>2</sub> ≥ 70% or SvO<sub>2</sub> ≥ 65%

### Preoperative problems

- **Renal failure and electrolyte imbalance:**
  - cause by shock, toxin
  - improve by resuscitation
  - dialysis when indicated
  - corrected electrolyte imbalance: hyponatremia, hypo/hyperkalemia, hypocalcemia and hypomagnesemia
  - need nephrologist

### Preoperative problems

- **Coagulopathy:**
  - underlying liver disease
  - renal failure, uremia (platelet dysfunction)
  - DIC
- Corrected by blood transfusion (FFP, platelet concentration and cryoprecipitated)

### Preoperative problems

- **Respiratory failure:**
  - need respiratory support
  - appropriate mechanical ventilator support

### Treatment: Early management

- Debridement of infected necrotic tissue
- Drainage of an abscess or local focus of infection
- Definitive control of a source of microbial contamination (repair perforated site, remove mycotic aneurysm and repair aorta)
- Adjusted antibiotic treatment

## Treatment

- **Necrotizing fasciitis, Gas gangrene and Fournier's gangrene:**

- debridement of infected necrotic tissue
- gas gangrene may need amputation



FIGURE 6

## Treatment

- **Pyomyositis:**

- drainage abscess and necrotic tissue



## Treatment

- **Intra-abdominal abscess:**

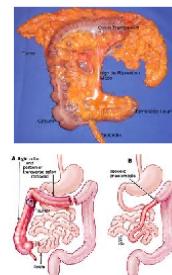
- Drainage abscess (percutaneous or opened drainage)



## Treatment

- **Hollow viscus organ perforation:**

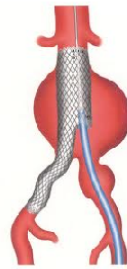
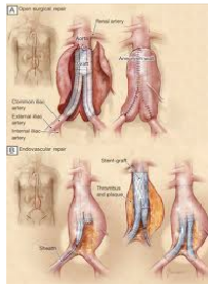
- suture repair or resection



## Treatment

- **Mycotic aneurysm:**

-opened repair with graft or endovascular stent



## Important for surgical sepsis

- Early diagnosis and identified source of infection
- Appropriate and quick preparation/resuscitation, antibiotic administration and team consultant
- Early and adequate treatment
- Re-evaluated infected source and antibiotic response

Thank you for attention