

- Symptoms may be obscured by concomitant carotid insufficiency.
- Spontaneous resolution of vertebrobasilar symptoms may be related to the establishment of extracranial collaterals to the subclavian circulation.

Etiology

- Most common atherosclerosis.
- Other causes include Takayasu's arteritis, tumor, history of aortic stenting/grafting for aneurysm, and previous surgery, as well as trauma.

- Rare causes include congenital atresia of first portion of left subclavian, hypoplastic arch with severe coarctation, or stenosis of left subclavian at old suture site of a coarctation repair, as well as Blalock-Taussig shunts.

Usual Treatment

- Surgical:
 - Common carotid to subclavian artery bypass graft

- Subclavian-to-subclavian artery bypass graft
- Axillary-to-axillary artery bypass graft
- Nonsurgical: Percutaneous transluminal angioplasty and stent placement

Assessment Points

System	Assessment by Hx	PE	Test
CV	Claudication	Bruit	Difference in brachial systolic BP of at least 20 mm Hg Diminished pulse in ipsilateral arm Bruit at base of neck or supraclavicular area on affected side (proximal subclavian artery) Reactive hyperemia: Temporary cuff inflation causes peripheral vasodilation distal to cuff, when released results in increased demand leading to neurologic symptoms Color Doppler ultrasound: Ipsilateral vertebral artery flow reversal with a parvus tardus waveform in the ipsilateral subclavian artery confirms the diagnosis of SSP Vascular structures well demonstrated by contrast-enhanced MRA Flow reversal well demonstrated by flow-encoded MRI
CNS	Vertigo Rarely cortical visual disturbances, ataxia, syncope, dysarthria		Retrograde cath Angiogram Transcranial Doppler
MS	Paresis/paresthesias		See CV

Key References: Wood RJ, Walmsley AJ: Subclavian artery stenosis and blood pressure control, *Anaesthesia* 61(4):409–410, 2006; Potter BJ, Pinto DS: Subclavian steal syndrome, *Circulation* 129(22):2320–2323, 2014.

Perioperative Implications

Preoperative Preparation

- Bilateral upper extremity BP in pts undergoing surgery is characterized by large variations in hemodynamic status or in pts with previous internal mammary-coronary bypass grafts.
- Neurologic evaluation prior to surgery.

Monitoring

- Consider arterial cath, since BP maintenance may be essential for cerebral perfusion.

- Consider CVP monitoring and/or PA cath if contributing factors in pt.

Maintenance

- Consider maintaining arterial BP and heart rate near preop levels to facilitate cerebral perfusion.

Extubation

- None

Postoperative Period

- Neurologic evaluation at end of surgery.

Anticipated Problems/Concerns

- Pts with internal mammary grafts may experience a similar syndrome of coronary-subclavian steal. There is a gradient in systolic brachial blood pressure of 60 mm Hg. In such situations, myocardial ischemia that is refractory to medical management may occur.

Subphrenic Abscess

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Risk

- Prior abdominal surgery, either open or laparoscopic
- Blunt or penetrating trauma
- GI perforation (malignancy, appendicitis, diverticulitis)
- Inflammatory bowel disease
- Immunocompromised pt

Perioperative Risks

- Developing sepsis

Worry About

- Respiratory compromise (pleural effusion, atelectasis, V/Q mismatching, ARDS)
 - Preop ileus/bowel obstruction; aspiration risk
 - Sepsis, including septic shock and associated renal failure and/or coagulopathy
 - Increased capillary permeability (hypovolemia)
 - High-output cardiac failure/LV dysfunction
- Lyte and acid-base disturbances

Overview

- Classic findings include fever, leukocytosis, and abdominal pain.
- Associated findings include atelectasis, pleural effusions, elevated diaphragm, ipsilateral shoulder pain, and/or hiccups secondary to diaphragmatic irritation.
- May be right- or left-sided, or both; above or below the liver or spleen.
- Fistulas may form to any abdominal or thoracic organ, including pericardium or bronchi.
- Disease severity ranges from mild to moribund.

Etiology

- Primary: Associated with perforated viscus such as duodenal ulcer, diverticulitis, appendicitis, primary liver abscess, immunocompromised state. (Pathogens include *Escherichia coli*, *Enterococcus* spp,

Bacteroides fragilis, *Clostridium* spp and are often polymicrobial.)

- Secondary: Following surgical intervention, critical illness, or blunt abd trauma. (Pathogens include *Candida* spp, *Enterococcus* spp, *Enterobacter* spp, *Staphylococcus epidermidis*, *E. coli* and are often polymicrobial with anaerobic bacteria outnumbering or equal to aerobic bacteria in all but postbiliary surgeries.)

Usual Treatment

- Broad-spectrum antibiotics ± antifungals. Narrow coverage after cultures obtained based on culture and sensitivity.
- Percutaneous or surgical abscess drainage (80–90% successful resolution).
- Supportive therapy: Appropriate monitoring, nutrition, oxygenation, hydration, vasopressors, as indicated using the surviving sepsis recommendations.

Assessment Points				
System	Effect	Assessment by Hx	PE	Test
CV	Early: Hyperdynamic state, high cardiac output assoc with low SVR Late: Septic shock, low output assoc with high SVR, LV dysfunction		Tachycardia Bounding pulses Warm, ruborous skin Tachycardia Diminished pulses Cool integument Peripheral cyanosis	ECG CVP Or PA cath ECHO
RESP	Atelectasis, elevated diaphragm, pleural effusion, abdominal distention, pain, or ARDS Decreased diaphragm excursion	Dyspnea Ipsilateral shoulder pain	Tachypnea Cyanosis Decreased or abnormal breath sounds, dullness to percussion	CXR, fluoroscopy ABG CT scan
HEME	Anemia due to suppressed marrow Coagulopathy associated with sepsis	Fatigue	Pallor Oozing around old incisions or IV sites Petechiae Ecchymoses	Hgb, Hct Plt count PT/APTT Fibrinogen, FSPs, D-dimer Thromboelastogram
GU	Decreased perfusion due to hypovolemia or sepsis	Decreased UO		BUN, Cr Lytes Acid-base balance
CNS	Mental status changes associated with sepsis		Range from mild confusion to coma	Must exclude other possible causes (e.g., CVA, CNS infection)

Key References: Singer M, Deutschman CS, Seymour CW, et al.: The third international consensus definitions for sepsis and septic shock (Sepsis-3), *JAMA* 315(8):801–810, 2016; Royal College of Anaesthetists: The first patient report of the national emergency laparotomy audit. Available at <www.nela.org.uk/reports>; 2015 (Accessed 11.07.16).

Perioperative Implications

Preoperative Preparation

- Appropriate broad-spectrum antibiotics.
- Restore intravascular volume.
- Optimize respiratory function: PEEP, bronchodilators, rarely thoracentesis.
- NG tube for ileus and/or obstruction.
- Tenuous CV status may require central venous access for monitoring/access or vasopressor and/or inotrope infusion.
- Assess coagulation status.

Monitoring

- Tailor to severity of illness.

Airway

- Rapid-sequence induction or awake fiberoptic intubation (aspiration risk)

Preinduction/Induction

- Titrate agents to severity of disease

Extubation

- Tenuous pulm status and/or septic deterioration may require prolonged mechanical ventilation.

Postoperative Period

- NPO until intestinal function returns.
- Analgesia important for adequate respiratory function.
- Monitor for postinterventional complications (transient sepsis, organ injury, hemorrhage, pneumothorax, peritonitis, wound dehiscence).

Anticipated Problems/Concerns

- Drainage will need to be prolonged (often greater than 10 d).

- Recurrent abscess formation or sepsis (57% in high-risk pts).
- At risk for MODS (respiratory/ARDS, renal, hepatic, GI bleed).
- High mortality rate (23–50%) in the presence of multiple organ dysfunction.
- Periop pneumonia/empyema/pleural effusion.
- Fistula formation.

Substance Abuse Disorder (Perioperative)

Lewis Fry | Robert A. Fry

Risk

- Incidence in USA (2013 estimation): 24.6 million (9.4% population)
- Marijuana 7.5%, heroin 0.27%, cocaine 0.6%, prescription drugs 2.5%, alcohol (heavy drinkers) 6.5%, tobacco products 25.2%
- Associations: Males, trauma, gunshot wounds, MVAs, falls, mental illness

Perioperative Risks

- Difficult airway and IV access
- Hemodynamic instability, autonomic dysfunction
- Opioid tolerance, achieving adequate analgesia, hyperalgesia/pain intolerance
- Systemic/blood borne infections (HIV, hepatitis B and C, TB, septic arthritis)
- Malnutrition, coagulopathy

Worry About

- Withdrawal (prevention and treatment)
- Pain management
- Acute psychosis (hallucinations, aggression, anxiety)
- Multiagent abuse, drug interactions, smoking, and drug-related lung disease
- Obstetrics: Lack of prenatal care, IUGR, 4× increased incidence of abdominal delivery, abruptio placenta, fetal abnormalities, drug effects that may mimic preeclampsia

Overview

- Chronic condition characterized by (1) impaired control of use, (2) social impairment, (3) risky use of substance, and (4) pharmacologic effects (tolerance, withdrawal)
- Physiologic and pathologic changes specific to drug class

Etiology

- Biopsychosocial disease: Possible genetic predisposition, susceptible premorbid personality types

Usual Treatment

- Team-oriented multimodal approach: Detoxification, psychiatric assessment, pharmacotherapy. Drug-specific pharmacotherapy may include naltrexone, slow-release morphine, buprenorphine, methadone, suboxone, disulfiram, acamprosate.
- Support group or special treatment facility; compliance 30–60%.