The American Board of Plastic Surgery, Inc. ®

Written Examination and Maintenance of Certification Program Content Outline

(approved 5-6-16)

I. Core of Knowledge/General Plastic Surgical Principles and Techniques

A. Wound Repair -- Principles and Applications
1. Basic science of healing
   a. Anatomy, physiology, biochemistry, microbiology, immunology, pharmacology of wound healing
      1. Skin and soft tissue
      2. Tendon
      3. Bone (different types)
      4. Nerve
      5. Cartilage
2. Abnormal wound healing
   a. Delayed healing -- physiology and treatment
   b. Excessive healing (hypertrophic scars/keloids)
      1. Physiology
   c. Treatment of scars and keloids
      1. Surgical techniques (Z-plasty, W-plasty, etc.)
      2. Nonsurgical techniques
      3. Camouflage techniques
3. Nutrition as related to wound healing
   a. Diagnosis of deficiency
   b. Treatment of deficiency
4. Surgical incisions
   a. Selection in relation to skin lines
   b. Techniques for closure
   c. Suture materials -- types and uses
5. Principles of wound management
   a. Debridement to include mechanical, surgical, meds
   b. Use of splints, dressings, casts, topical agents
   c. VAC (vacuum assisted closure)
      1. Physiology
      2. Indications and treatment
      3. Complications and their management
6. Preservation of skin, bone, tendon, cartilage, nerve
   a. Principles and techniques
   b. Biologic substitutes

B. Flaps and Grafts
1. Physiology of flaps
   a. Types of flaps
   b. Flow characteristics
   c. “Delay” phenomenon
2. Pharmacology of flaps
3. Basic flap techniques
   a. Flap monitoring
   b. Treatment of ischemic flap to include all methods, eg, surgical, pharmacological
4. Physiology of grafts including skin, dermis, cartilage, bone, tendon, muscle, nerve, fat, fascia, combined tissue
5. Grafting techniques
   a. Instruments for harvesting grafts
   b. Graft preservation techniques
   c. Donor site management
   d. Recipient site management
   e. Special techniques

f. Tissue engineered skin substrates
6. Principles of choice between flaps and grafts

C. Microsurgery
1. Technical aspects of microsurgery
a. Microscopes -- principles, usage
b. Sutures -- types, indications
c. Suturing techniques
1. Vessels
2. Nerves
3. Other structures including lymphatics, etc.
2. Use of microsurgery for free tissue transfer
a. Physiology -- including the no-reflow phenomenon
b. Types of flaps to include all types, including fasciocutaneous, perforator, osseous
c. Commonly used flaps
1. Indications for selection
2. Donor-site/recipient-site relationships
3. Anatomy
d. Preoperative management for free tissue transfer
e. Postoperative management for free tissue transfer
1. Monitoring techniques
2. Treatment of the failing flap
3. Use of microsurgery for replantation of amputated parts and revascularization
a. Physiology
b. Indications for and contraindications to replantation and revascularization
c. Techniques for replantation
1. Sequence of repair
2. Stabilization
d. Preoperative management for replantation and revascularization
e. Postoperative management for replantation and revascularization
1. Monitoring techniques
2. Salvage techniques
4. Use of microsurgery in nerve repair
a. Physiology
b. Techniques
c. Monitoring techniques

D. Implants and Biomaterial
1. Bone
a. Autogenous graft repair
b. Cancellous versus cortical grafts
c. Local wound factors in bone graft healing
d. Common sources of non-vascularized bone autografts, their characteristics and healing
1. Rib
2. Iliac
3. Cranial
e. Common sources of vascularized autografts, their characteristics and healing
1. Periosteal
2. Nutrient
f. Immunology and antigenicity of bone
g. Bone allografts
h. Clinical applications
2. Cartilage
a. Autografts
b. Allografts
c. Immunology
d. Influences on warping
e. Clinical application
f. Resorption, incorporation

3. Alloplastic materials
   a. Biomaterial
      1. Silicone
      2. Methyl methacrylate
      3. Hydroxylapatite
      4. Tricalcium phosphate
      5. Proplast
      6. Other
   4. Breast implants
      a. Types
      b. Biologic characteristics
      c. Clinical choices
   5. Biologic material
      a. Fat
      b. Others to include cellular therapy and matrices, etc.
      c. Non-facial (for facial injectables, see IV.E.4.c.)
   6. Acellular dermal matrix
      a. Human
      b. Bovine
      c. Porcine
      d. Other
   7. Other biologic material

E. Special techniques
   1. Liposuction
      a. Principles (for aesthetic treatment of lipodystrophy, see VI.E.2.)
      b. Techniques and instrumentation
         1. SAL
         2. UAL
         3. Other techniques (eg, laser)
      c. Practical applications
      d. Complications and their treatment
   2. Tissue expansion
      a. Principles and physiology
      b. Devices and techniques
      c. Practical applications
      d. Complications and their treatment
   3. Dermabrasion and chemical peel
      a. Principles -- physiology and pathology
      b. Techniques
         1. Pharmacology of chemical peel
         2. Instrumentation and techniques of dermabrasion
      c. Applications -- choices between techniques
      d. Complications and their treatment
   4. Laser treatment
      a. Biophysics
      b. Instrumentation -- different types of lasers
      c. Practical applications -- use of different lasers
      d. Techniques, to include laser safety issues
      e. Complications and their management
   5. Other techniques (eg. Vaser, Thermage, cryolipolysis)

II. Plastic Surgical Aspects of Specific Related Disciplines

A. Medicolegal and Psychiatric Aspects of Plastic Surgery
1. Principles of informed consent
2. The medical record including electronic records
3. Evaluation of the patient for aesthetic surgery
4. Psychiatric aspects of plastic surgery
5. Management of the dissatisfied patient
6. Regulatory and Compliance issues (HIPAA)

B. Anesthesia and Critical Care
1. Common agents for local anesthesia (esters and amides), regional anesthesia and general anesthesia (intravenous agents, inhalation agents, muscle relaxants, antiemetics, liposomal bupivacaine, etc.)
   a. Mode of action
   b. Duration of action
   c. Dosage and toxicity
   d. Side effects
   e. Antidotes
2. Principles and techniques for administration of local anesthesia (eg, anesthetizing the nose, use versus non-use of epinephrine)
3. Principles and techniques for regional anesthesia
   a. Digital block
   b. Wrist block
   c. Brachial block
   d. Bier block
   e. Ankle block
   f. Spinal and epidural
4. Principles and techniques for general anesthesia using different anesthetic techniques
   a. Monitoring
   b. Airway management
   c. Preoperative medication
   d. Intravenous agents
   e. Inhalation agents
   f. Muscle relaxants
   g. Antiemetics
5. Indications for various modes of anesthesia due to
   a. Procedure
   b. Patient condition
6. Types and incidences of complications, morbidity and mortality, from various kinds of anesthesia
   a. Local anesthesia, to include tumescent anesthesia
   b. Regional anesthesia
   c. General anesthesia
   d. Hypotensive anesthesia
7. Critical care management/emergency management of burn and trauma patients
   a. Initial care, see III.C.2.
   b. Diagnosis
   c. Preparation for the operating room
8. ICU patients
   a. Monitoring
   b. Respiratory management
   c. Cardiovascular management
   d. Fluid management
   e. Management of infection and sepsis
   f. Management of nutrition
9. Perioperative patient management to include preoperative, intraoperative, and postoperative management
   a. Respiratory failure
   b. Cardiovascular problems (eg, arrhythmia)
   c. Sepsis

d. Bleeding, to include hematoma
e. DVT/PE (deep venous thrombosis/pulmonary embolus)
f. Maintenance of Normothermia

C. Transplantation and Immunology
1. Basic principles of immunology
a. Terminology
b. Physiology
2. Pharmacologic agents used in transplantation
a. Cyclosporine
b. Steroids
c. Imuran
d. Other agents
3. Immunology of tumors, including:
a. Melanoma
b. Basal cell carcinoma
c. Squamous cell carcinoma
4. Immunologic aspects of plastic surgery
a. "Autoimmune" diseases
b. Immunology of skin transplantation
c. Immunology of cartilage, bone, etc, for transplantation
1. Limb transplantation
2. Interrelationship of transplantation and microsurgery
5. Human immunodeficiency virus
a. AIDS, Kaposi sarcoma

D. Pharmacology and Therapeutics
1. Pharmacology and clinical use of
a. Antibiotics
b. Analgesics
c. Anti-inflammatory agents
d. Steroids
e. Chemotherapeutic agents applicable in plastic surgery
1. Complications and their management
2. Bacteriology of wounds
a. Skin infections
b. Breast infections
c. Surgical wound infections
d. Hand infections
e. Special problems
1. Animal bites, to include snake and insect bites
2. Human bites
3. Farm injuries

III. Plastic Surgery of the Integument

A. Anatomy, Physiology, and Embryology
   1. Normal anatomy, histology, and function of the skin
      a. Epidermis (four layers, types of cells)
      b. Dermis (fibroblasts, elastin, ground substance)
      c. Appendages
         1. Hairs
         2. Eccrine glands (sweat glands)
         3. Apocrine glands (axilla, anal-genital region, external ear, eyelid, breast)
         4. Sebaceous glands
   2. Anatomy and function of the nail
   3. The reaction of the skin to
      a. Heat
      b. Cold
      c. Mechanical trauma
      d. Microbial trauma
      e. UV light trauma
      f. Pharmacologic agents
      g. Smoking
   4. Embryologic origin of the skin

B. Benign and Malignant Skin Lesions
   1. Benign epithelial and adnexal tumors (nevi, papillomas, keratinous cysts, etc.)
      a. Pathology, biologic behavior
      b. Treatment, surgical and nonsurgical (for giant hairy nevus, see III.D.1.)
   2. Benign mesodermal tumors (hemangioma, vascular malformations, cystic hygroma, etc.)
      a. Pathology, biologic behavior
      b. Classification of vascular tumors
      c. Treatment, surgical and nonsurgical
   3. Generalized skin disorders
      a. Pathology, biologic behavior
      b. Treatment, surgical and nonsurgical
   4. Malignant cutaneous tumors, epithelial and mesodermal (basal cell carcinoma, squamous cell carcinoma, malignant melanoma, sarcomas)
      a. Pathology, biologic behavior
      b. Staging and treatment, surgical and nonsurgical
   5. Premalignant skin tumors (for giant hairy nevus, see III.D.1.)
      a. Pathology, biologic behavior
      b. Treatment, surgical and nonsurgical
   6. Miscellaneous
      a. Mohs micrographic surgery and other special techniques for tumor therapy
      b. Complications of surgical and nonsurgical treatment and their management

C. Burns and Trauma
   1. Physiology of burn injuries, including thermal, electrical, chemical, etc.
   2. Principles and techniques of burn resuscitation, see II.B.7.a.
   3. Burn wound management
      a. Excisional techniques
      b. Grafting
      c. Other wound management (dressings and perioperative wound management)
   4. Reconstruction of the burn patient
   5. Rehabilitation of the burn patient
   6. Radiation injury -- acute and chronic
      a. Physiology
      b. Treatment
   7. Cold injury -- physiology and treatment
   8. Extravasation injury

D. Congenital and Functional Problems
   1. Congenital disorders of the skin (eg, giant hairy nevus, xeroderma pigmentosa, Ehlers Danlos syndrome, albinism)

a. Classification
b. General principles of medical management
c. Details of surgical management

2. Physiology of the aging process
3. Sun effects on skin
   a. Physiology
   b. Pharmacologic agents for prevention
      1. Mechanism of action
      2. Patient management
4. Common generalized disorders of the skin (eg, scleroderma, dermatomyositis, lupus)
   a. Basic physiology
   b. Surgical aspects
5. Lipodystrophy (for aesthetic treatment of lipodystrophy, see VI.E.2.)
   a. Physiology of fat deposition and metabolism
   b. Localized lipodystrophy, such as Romberg's disease
      1. Physiology
      2. Surgical and ancillary techniques for treatment
6. Inflammatory processes of the skin
   a. Common bacterial skin disorders (impetigo, lymphangitis, necrotizing fascitis, gas gangrene, gangrene)
      1. Diagnosis
      2. Surgical treatment
      3. Medical treatment
   b. Hidradenitis suppurativa
      1. Diagnosis
      2. Surgical treatment
      3. Medical management
   c. Common viral and fungal skin disorders
      1. Diagnosis
      2. Surgical treatment
      3. Medical treatment
7. Lymphedema
   a. Physiology
   b. Diagnosis
   c. Treatment
      1. Surgical treatment
      2. Medical treatment

IV. Plastic Surgery of the Head and Neck

A. Anatomy, Physiology, and Embryology
   1. Anatomy of head and neck structures, with particular focus on
      a. Eye
      b. External ear
      c. Nose
      d. Pharynx
      e. Facial structures
      f. Skull and facial bones
      g. Salivary glands
      h. Thyroid gland
   2. Embryology of head and neck
   3. Physiology of head and neck structures, with particular focus on
      a. Eye
      b. Nose
      c. Pharynx
      d. Salivary glands
   4. Dental anatomy and development
   5. Cephalometrics and other forms of facial analysis

B. Congenital Disorders
   1. Cleft lip and palate
      a. Etiology and genetics
      b. Pathologic anatomy and classification
      c. Primary surgical treatment
      d. Secondary surgical treatment
      e. Nonsurgical treatment: prosthetics, orthodontics, speech therapy
   2. Velopharyngeal incompetence
      a. Diagnosis
      b. Treatment
   3. Craniofacial anomalies including, but not limited to, craniosynostosis, craniofacial microsomia, rare clefts, hypertrophy (hyperplasia, neoplasia), atrophy (hypoplasia), rare or unclassified syndromes
      a. Etiology and genetics
      b. Pathologic anatomy and classification
      c. Primary surgical treatment
      d. Secondary surgical treatment
      e. Nonsurgical treatment: prosthetics, orthodontics, speech therapy, psychology
   4. Auricular abnormalities: microtia, ear prominence, others
      a. Etiology and pathogenesis
      b. Treatment
   5. Eyebrow/eyelid abnormalities: colobomata, ptosis (for tumors, see IV.C.4.b.1.)
   6. Miscellaneous conditions of head and neck including, but not limited to: congenital tumors, choanal atresia, nasal agenesis, thyroglossal duct cyst and sinus, branchial cyst and sinus, Robin Sequence, vascular malformations
      a. Etiology and pathogenesis
      b. Treatment

C. Benign and Malignant Tumors
   1. Oropharyngeal tumors -- benign and malignant
      a. Diagnostic techniques
      b. Gross and microscopic evaluation
      c. Biologic behavior/staging
      d. Surgical treatment of benign and malignant tumors
         1. Primary management
         2. Role of neck dissection
         3. Treatment of complications of surgery, irradiation and/or chemotherapy
      e. Long-term follow-up
      f. Adjuvant therapy
         1. Chemotherapy
         2. Radiation therapy

2. Salivary gland tumors -- benign and malignant
    a. Diagnostic techniques
    b. Gross and microscopic evaluation
    c. Biologic behavior/staging
    d. Surgical treatment
        1. Primary management
        2. Role of neck dissection
        3. Treatment of complications of surgery, irradiation and/or chemotherapy
    e. Long-term follow-up
    f. Adjuvant therapy
        1. Chemotherapy
        2. Radiation therapy
    g. Inflammatory and other benign processes of the salivary glands
3. Tumors of bony and dental origin
    a. Benign lesions
    b. Malignant tumors
    c. Treatment, including surgical management and treatment of complications including osteoradionecrosis
4. Other head and neck tumors -- diagnosis and treatment
    a. Rhinophyma
    b. Tumors of
        1. Eyelid structures
        2. Lacrimal apparatus
        3. Ear
        4. Nasal cavity and paranasal sinuses
    c. Tumors of vascular and lymphatic origin
5. Infections of head and neck structures

D. Trauma
1. Facial fractures
    a. Diagnostic methods
    b. Biologic and bio-mechanical aspects of injury and healing
    c. Techniques of repair
    d. Management of specific facial fractures
        1. Maxillary
        2. Mandibular
        3. Orbital and nasal
        4. Complex and other
2. Facial nerve injury (for treatment of facial nerve paralysis/palsy-established, see IV.E.11.)
    a. Diagnosis
    b. Acute management
3. Injury to soft tissue structures
    a. Parotid gland and duct
    b. Lacrimal apparatus
    c. Other

E. Aesthetic and Functional Problems
1. Aesthetic principles of the face
2. Rhinoplasty
    a. Structural considerations
    b. Techniques
        1. Incisions
        2. Grafts
        3. Other techniques including tip sutures
    c. Primary rhinoplasty
    d. Secondary rhinoplasty
    e. Cleft lip nose
3. Airway obstruction
    a. Septoplasty and submucous resection
    b. Turbinate surgery

4. The aging face
    a. Principles and techniques (for physiology of aging, see III.D.2.)
        1. Rhytidectomy
        2. Brow lift
        3. Facial liposuction
        4. Other techniques, eg, suture suspension, mid-facelift, short scar technique, MAC
        5. Role of platysma and SMAS
    b. Complications -- prevention and management
    c. Ancillary techniques for the aging face
        1. Chemical peel
        2. Dermabrasion
        3. Injection of filling material such as hyaluronic acid, fat, synthetic materials and others
        4. Laser resurfacing
        5. Botulinum toxin injection
        6. Other including topical/pharmacological agents
    d. Pharmacology
    e. Nonsurgical treatment methods
        1. Retin A and topical agents
        2. Chemical peel, see I.E.3.
        3. Laser resurfacing
5. Alopecia/hair transplantation
6. Aesthetic and functional problems of the eyelid
    a. Evaluation and diagnosis
    b. Ptosis -- diagnosis and treatment
    c. Dermatochalasis and other aesthetic problems
        1. Blepharoplasty techniques
        2. Complications -- prevention and management (eg, dry eye, ectropion)
    d. Asian eyelid and other issues
7. Deformities of the ear -- diagnosis and treatment
8. Temporomandibular joint -- diagnosis, surgical and nonsurgical treatment
9. Orthognathic surgery -- principles and techniques
10. Other problems, including masseter hypertrophy
11. Facial nerve paralysis/palsy – established, diagnosis and treatment
    a. Static techniques
    b. Dynamic techniques
    c. Nerve grafts and free tissue transfers
    d. Medical treatment of facial nerve paralysis
12. Facial atrophy -- diagnosis and treatment
13. Facial hyperkinesia -- diagnosis and treatment

F. Reconstruction
1. Reconstruction of soft tissue defects
    a. Grafts
    b. Flaps
    c. Microsurgical techniques
2. Reconstruction of structural deficits
    a. Grafts
    b. Flaps
    c. Alloplastic material
    d. Microsurgical techniques
3. Reconstruction of specific structures
    a. Eyelid
    b. Nose
    c. Lacrimal apparatus
    d. Ear
    e. Lip and cheek
    f. Scalp
    g. Esophagus

h. Oropharynx
i. Skeletal reconstruction (including mandible, maxilla, skull)

4. Maxillofacial prosthetics
   a. Principles
   b. Techniques

V. Plastic Surgery of the Upper Extremity

A. Anatomy, Physiology and Embryology
   1. Anatomy of the upper extremity
   2. Biomechanics of the upper extremity
   3. Embryology of the upper extremity
   4. Examination of the hand and upper extremity
      a. Physical examination
      b. Diagnostic techniques
         1. Electrodiagnosis
         2. Imaging techniques
         3. Other

B. Congenital Disorders
   1. Diagnosis of congenital deformities of the upper extremity
      a. Classification
   2. Surgical treatment of specific deformities, including:
      a. Syndactyly
      b. Absences
      c. Lack of differentiation
      d. Duplication
      e. Gigantism
      f. Hypoplasia
      g. Congenital bands
      h. Other abnormalities
   3. Nonsurgical treatment of congenital deformities

C. Benign and Malignant Tumors
   1. Pathology of upper extremity tumors
      a. Epidemiology
      b. Etiologic factors
      c. Clinical manifestations
      d. Microscopic features
      e. Result of surgical and nonsurgical treatment
      f. Prognosis
   2. Knowledge of the principles and techniques of management of upper extremity tumors, including reconstruction after surgical removal of the tumor
   3. Specific tumors
      a. Vascular tumors
      b. Nerve tumors
      c. Benign deep soft tissue tumors
      d. Malignant deep soft tissue tumors
      e. Primary bone tumors
   4. Adjunctive modalities
      a. Radiation therapy
      b. Chemotherapy
      c. Other

D. Trauma
   1. Fractures and dislocation
      a. Diagnostic techniques
         1. X-ray diagnosis
         2. Other studies
      b. Acute management of fractures and dislocations

1. Surgical techniques
2. Nonsurgical modalities

c. Principles of casting and splinting

2. Nerve injury, including brachial plexus
   a. Anatomy, pathophysiology
   b. Mechanisms of injury
   c. Methods, goals of treatment
3. Major amputations and avulsions
   a. Types and mode of injury
   b. Acute and delayed management
   c. Elective amputation
   d. Wound coverage
   e. Goals of treatment
   f. Rehabilitation
   g. Prostheses -- types and uses
4. Joint injury (for Joint reconstruction or established joint deformity, see V.F.5.)
   a. Physiology
   b. Mechanisms of injury
   c. Goals and techniques of treatment
5. Tendon injury of the hand
   a. Anatomy
      1. Extensor relationships
      2. Flexor relationships
   b. Mechanisms of injury
   c. Principles of immediate and delayed treatment
      1. Surgical
      2. Nonoperative
      3. Alternate methods of management
6. Muscle and tendon injury of the upper extremity
   a. Anatomy of the arm
   b. Techniques of evaluation of upper extremity injuries
   c. Treatment modalities and goals of treatment
7. Volkmann's and other ischemic contractures
   a. Pathophysiology of ischemic contractures
   b. Diagnostic methods
   c. Management
   d. Implications of upper extremity muscular ischemia
8. Nail bed injuries
   a. Anatomy
   b. Pathophysiology
   c. Treatment
9. Infections
   a. Types and implications
   b. Management
   c. Follow-up care
10. Fingertip and other minor injuries
    a. Types of injury
    b. Management and treatment modalities for fingertip injuries
    c. Minor upper extremity injuries
11. Vascular injuries of the upper extremity

E. Functional Problems
1. Nerve compression and entrapment syndromes
   a. Pathophysiology
   b. Surgical and nonsurgical treatment of median, ulnar, and radial nerve compression neuropathies: thoracic outlet syndrome; brachial plexus neuritis, compression
2. Rheumatoid and non-specific arthritis
   a. Pathophysiology

b. Surgical and nonsurgical treatment of tenosynovitis, tendon ruptures, joint dysfunction

3. Circulatory disorders
   a. Pathophysiology
   b. Surgical and nonsurgical treatment of local arterial thromboses, upper extremity aneurysms, embolic disease, arteriovenous fistulae, vasospastic disease, scleroderma
   c. Management of upper extremity lymphedema
4. Deformities of the upper extremity (for upper extremity aesthetic surgery, see V.G.)
   a. Pathophysiology
   b. Surgical and nonsurgical management of nail bed deformities
5. Contractures
   a. Pathophysiology
   b. Surgical and nonsurgical treatment of small joint contractures, Dupuytren's disease
6. Hand and upper extremity rehabilitation
   a. Principles
   b. Techniques: splinting, prostheses, physical therapy, sensory re-education
7. Diagnosis and management of pain syndromes, reflex sympathetic dystrophy

F. Reconstruction
1. Tendon reconstruction
   a. Tendon repair
   b. Tendon grafting
      1. Indications
      2. Sources
      3. Techniques
      4. Prostheses
2. Reconstruction for nerve and muscle deficits
   a. Basic diagnostic principles
   b. Tendon transfers
   c. Nerve grafts and nerve transfers
   d. Flaps
3. Reconstruction of missing parts
   a. Thumb reconstruction
      1. Flaps; free tissue transfer
   b. Digital reconstruction
   c. Pollicization
4. Reconstruction of soft tissue deficit
   a. Grafts
   b. Flaps
   c. Free tissue transfer
5. Joint deformity
   a. Pathophysiology
   b. Repair and replacement techniques
   c. Biomaterial
6. Reconstruction of bony deficit
7. Reconstruction following brachial plexus injury
   a. Diagnostic methods
   b. Early and late surgical repair

G. Aesthetic Surgery
1. Liposuction of upper extremity
2. Brachioplasty
   a. Aesthetic
   b. Post-bariatric

VI. Plastic Surgery of the Trunk

A. Anatomy, Physiology and Embryology
   1. Embryology of the trunk and abdominal wall
   2. Internal anatomy of the trunk, anterior and posterior abdominal wall
      a. Muscles forming the abdominal wall
      b. Deep and superficial fascia of the abdominal wall
      c. Anatomy of trunk muscles as related to flaps for reconstructive purposes
      d. Fat distribution
      e. Innervation, blood supply and lymphatic drainage
   3. Surface anatomy of the trunk and abdominal wall
      a. Skin and its elastic quality
      b. The male and female escutcheon
      c. Innervation

B. Congenital Disorders
   1. Developmental chest wall deformities
      a. Embryology, growth and development, pathologic anatomy
      b. Surgical and nonsurgical treatment of pectus excavatum, pectus carinatum, bifid sternum, asymmetry
   2. Posterior trunk defects
      a. Embryology, growth and development, pathologic anatomy
      b. Surgical and nonsurgical treatment of meningomyelocele, sacrococcygeal, and spinal teratomas, dermal sinuses and post natal pits
   3. Abdominal wall defects
      a. Embryology, growth and development, pathologic anatomy
      b. Surgical and nonsurgical management of gastroschisis, omphalocele, urachal cysts and sinuses, prune belly syndrome, exstrophy of the bladder

C. Benign and malignant tumors of the trunk, thorax and abdominal wall

D. Trauma and Reconstruction of Trunk and Abdomen
   1. Thoracic and abdominal trauma
      a. Surgical management of chest injuries including pneumothorax and flail chest
      b. General principles of management of abdominal visceral injuries
   2. Thoracic reconstruction
      a. Skeletal
         1. Reconstruction following sternal dehiscence and/or infection
         2. Other
      b. Soft tissue -- including flaps and grafts
      c. Reconstruction of radiation injury of thorax and trunk
   3. Abdominal wall reconstruction
      a. Fascial reconstruction of the abdomen
      b. Principles of abdominal hernias
      c. Abdominal wound dehiscence; special considerations
   4. Pressure ulcers
      a. Etiology and staging
      b. Pathophysiology
      c. Prevention
      d. Nonsurgical considerations and management
      e. Surgical treatment
         1. Preoperative considerations
         2. Local flaps
         3. Muscle and musculocutaneous flaps
         4. Distant flaps
         5. Complications of surgery
         6. Rehabilitation
      f. Reconstruction of acquired back defects/deformities

E. Aesthetic and Functional Problems of the Trunk and Abdomen
   1. Dermatochalasis and post-obesity deformity
      a. Diagnosis
      b. Surgical treatment techniques

c. Indications and contraindications
d. Complications and their management

2. Aesthetic body contouring, see I.E.1.

VII. Plastic Surgery of the Lower Extremity

A. Anatomy, Physiology and Embryology
1. Anatomy of the lower extremity
a. Surface anatomy
b. Muscles
c. Nerves
d. Vascular supply
e. Bony structures
2. Anatomy as applied to specific lower extremity flaps
a. Skin flaps
b. Muscle and musculocutaneous flaps
c. Fascial and fasciocutaneous flaps
d. Sensate flaps
e. Osseous flaps
3. Embryology of the lower extremity
4. Biomechanics
a. Function of specific muscles and muscle groups
b. Gait
c. Functional consequences of use of specific muscles as flaps

B. Traumatic deformity of the lower extremity
1. Mechanisms of injury
2. Classification
3. Orthopedic management
4. Reconstruction
a. Principles
b. Techniques

C. Reconstruction of congenital deformities of the lower extremity
1. Major vascular lesion or injury
a. Diagnosis
b. Management
2. Major tendon or nerve injury
a. Diagnosis
b. Management
3. Leg ulcers
a. Pathophysiology
b. Diagnosis
c. Treatment -- nonsurgical
d. Treatment -- surgical
4. Lymphedema, see III.D.7.

D. Aesthetic deformities of the lower extremity
1. Classification of deformity
2. Management techniques
a. Excision methods
b. Liposuction, see I.E.1.

VIII. Plastic Surgery of the Genitourinary System

A. Anatomy and Embryology
   1. Anatomy of the male genitourinary system
   2. Anatomy of the female genitourinary system

B. Trauma, Reconstruction and Functional Disorders
   1. Developmental abnormalities of the vagina (etiology, associated syndromes, workup, reconstructive techniques)
   2. Management of acquired vaginal defects (from tumor, trauma, infection, etc.)
   3. Penile amputation (replantation, reconstruction)
   4. Transsexualism
      a. Diagnostic criteria
      b. Principles and techniques of male-to-female change
      c. Principles and techniques of female-to-male change
      d. Preoperative and postoperative care
   5. Reconstruction of the perineum

IX. The Practice of Plastic Surgery

A. Patient and Office Management
   1. Outpatient office/clinic management
   2. ICD-10 coding
   3. CPT coding
   4. Medical photography
   5. Outpatient operating facility
      a. Equipment
      b. Laboratory testing
      c. Patient records
      d. Patient monitoring
      e. Accreditation
   6. Risk management

B. Research

C. Ethics and Professionalism

X. Plastic Surgery of the Breast

A. Anatomy of the breasts
   1. Anatomy of the breasts
      a. Location on the chest wall
      b. Underlying structures
      c. Glandular structure: lobes, lobules, alveoli/histology
      d. The nipple and ductal elements
      e. Variations in anatomy: polymastia, polythelia
      f. Vasculature, innervation and lymphatic drainage
   2. Breast embryology
   3. Breast physiology
      a. The effect of hormones and steroids on breast function
      b. Breast function in adolescence, the reproductive years, pregnancy, lactation and menopause
      c. Hormonal influence on breast disease

B. Congenital Disorders
   1. Developmental breast abnormalities
      a. Growth, development, and pathologic anatomy
      b. Surgical and nonsurgical treatment of amastia, Poland's syndrome, ectopic mammary tissue, virginal hypertrophy, gynecomastia, breast asymmetry, tuberous breasts, contour deformities, inverted nipples, nipple shape/size abnormalities

C. Benign and Malignant Tumors
   1. Gynecomastia
      a. Diagnosis
      b. Treatment

2. Fibrocystic disease and other benign tumors and processes
   a. Histology/pathology
   b. Medical treatment
   c. Surgical therapy
   d. Prophylactic mastectomy
      1. Indications
      2. Techniques
3. Premalignant and malignant conditions of the breast including genetic diagnosis and treatment
   a. Pathology and biologic behavior
   b. Diagnostic techniques
   c. Principles of primary treatment
   d. Techniques of primary treatment
   e. Secondary treatment
   f. Management of the opposite breast after mastectomy

D. Traumatic Breast Deformities/Reconstruction
1. Pathologic anatomy
2. Breast reconstruction following mastectomy
   a. Tissue expanders
   b. Implants
   c. Flaps
   d. Nipple reconstruction
   e. Other procedures
   f. Management of contralateral breast

E. Aesthetic and Functional Problems of the Breast
1. Mammary hypertrophy
   a. Histology, clinical features
   b. Surgical therapy
   c. Indications and contraindications
   d. Complications and their management
2. Mammary hypoplasia
   a. Techniques for correction
   b. Indications and contraindications
   c. Complications and their management
   d. Capsular contracture – etiology, prevention and management
   e. Long-term management including mammography
3. Mammary ptosis
   a. Diagnosis
   b. Surgical techniques
   c. Indications and contraindications
   d. Complications and their management