PLASTIC & RECONSTRUCTIVE SURGERY

Medical Knowledge

I. Wound Repair: Principles and Applications

Goal: The resident will demonstrate knowledge of the physiology and biochemistry of wound healing and manage wounds using a variety of techniques to achieve normal healing and maximum aesthetic benefit.

Objectives:

1. Recite the physiology and biochemistry of normal healing.
2. Discuss common agents and processes which result in abnormal healing.
3. Discuss and compare skin and connective tissue according to:
   a. Anatomy
   b. Normal physiology and biochemistry
   c. Pathophysiology of benign and malignant skin disorders
   d. Unique pathophysiology of connective tissue disorders
4. Explain the basic techniques for surgical repair of superficial incisions and lacerations of the head, neck, trunk, and extremities to include the following considerations:
   a. Skin
   b. Subcutaneous tissue
   c. Superficial muscle and fascia
   d. Dressings
   e. Splints
   f. Suturing, differences in suture materials and indications for the use of different materials, and knot tying techniques

II. Flaps and Grafts

Goal: The resident will demonstrate knowledge of the physiology of flaps and grafts and will be familiar with surgery in common types of flaps and grafts.

Objectives:

1. Discuss the use of the reconstructive ladder (including skin grafts, local flaps, and regional and free microvascular flaps) in the definitive management of traumatic or extirpation wounds of the head and neck, chest/ trunk, extremities.
2. Describe the physiology of various techniques of skin and composite tissue transplantation with particular regard to component tissue circulation:
   a. Skin grafts (split- vs. full- thickness)
   b. Bone/ cartilage grafts
   c. Composite grafts and flaps
   d. Skin flaps
   e. Muscle flaps
   f. Myocutaneous flaps

g. Bone flaps
h. Fasciocutaneous flaps

III. Anesthesia and Critical Care

Goal: The resident will demonstrate the indications, principles, techniques and complications of local, regional, and general anesthesia, will be thoroughly familiar with the principles and techniques of critical care and management of the critically ill burn, trauma, and postoperative patients.

Objectives:

1. Discuss common agents for local anesthesia (esters and amides), and regional anesthesia and general anesthesia (intravenous agents, inhalation agents, muscle relaxants, antiemetics, etc).
2. Identify the principles and the techniques for administration of local anesthesia.
3. Categorize the pathophysiology of thermal, chemical, and electrical burns, including consideration of:
   a. Systemic pathophysiology
   b. Local pathophysiology
   c. Cardiac depression
   d. Pulmonary compromise
4. Analyze treatment options for the comprehensive care of the burn patient, including:
   a. Excision of burn wound
   b. Homografting
   c. Xenografting
   d. Autografting
   e. Special considerations in the management of the burned hand and face

IV. Transplantation/Immunology

Goal: The resident will demonstrate knowledge of the basic principles of immunology and tissue transplantation techniques for treatment of common plastic surgical problems.

Objectives:

1. Discuss the physiology of skin graft take and the immunology of allograft rejection.
2. Recite the basic immune response including antibody recognition of foreign antigens, first set rejection, and second set rejection.
3. Discuss the immunologic aspects of plastic surgery, including:
   a. autoimmune disease
   b. Immunology of skin transplantation
   c. Interrelationship of transplantation and microsurgery.

V. Head and Neck Surgery

Goal: The resident will achieve a working knowledge of the anatomy, physiology, embryology

of the head and neck, and will apply this knowledge to the management of disorders and processes in this anatomic area.

Objectives:

1. Discuss the anatomy, embryology and principles of treatment of congenital disorders of the head and neck.
2. Discuss benign and malignant tumors of the head and neck including:
   a. the biologic basis of treatment options for these lesions
   b. Management of such lesions including diagnosis, surgery and nonsurgical therapy
3. Discuss mechanisms of traumatic head and neck injuries, understand the diagnostic techniques and therapeutic options for such problems, and understand options in the management of traumatic injuries of the head and neck.

VI. Hand and Upper Extremity Surgery

Goal: The resident will achieve a detailed knowledge of the anatomy, physiology, and embryology of the upper extremity and will utilize this knowledge in the complete management of the hand, arm, and brachial plexus.

Objectives:

1. Describe the anatomy and physiology of the muscles, tendons, ligaments, and bones of the hand and upper extremity.
2. Identify in detail the anatomy of the vascular tree of the upper extremity including relationships to the surrounding structures.
3. Identify the radiographic anatomy of the bony structures of the upper extremity.
4. Achieve familiarity with the spectrum of congenital abnormalities of the upper extremity and perform comprehensive diagnostic evaluation and surgical management of such problems.
5. Understand the principles of diagnosis and treatment of extremity tumors and options in the management of a wide variety of such lesions.
6. Understand the principles of diagnosis and treatment of extremity trauma and options in the management of acute injuries and other trauma-related problems of the hand and arm.
7. Understand the principles and techniques of upper extremity reconstruction and their application to developmental, traumatic and acquired problems.

VII. Pharmacology/Therapeutics

Goal: The resident will demonstrate knowledge of the pharmacology of drugs used in plastic surgical practice including antibiotics, anti-inflammatory agents, analgesics, and effectively utilize such drugs in a wide variety of settings.

Objectives:

1. List the principles of use (including dosage and complications) of common analgesics (oral and parenteral).

2. List the common pathogens producing infections of the skin, head and neck structures, breast and hand.
3. List the special pathogens related to infections caused by human and animal bites and infections.
4. Discuss the indications and proper antibiotics and antimicrobials for treatment of the problems noted in #1 and #2 above.
5. Discuss the pharmacology of the major types of antibiotics and the indications for their use.
6. Discuss the bacteriology of wounds, including:
    a. skin infection
    b. breast infections
    c. surgical wound infections
    d. hand infections
    e. special problems
        1. animal bites
        2. human bites
        3. farm injuries

Patient Care

Goal: The resident will provide patient care that is compassionate, appropriate, and effective.

Objectives:

1. Participate in the care and treatment of scars and keloids, including:
    a. surgical techniques (Z-plasty, W-plasty, etc)
    b. nonsurgical techniques
    c. camouflage techniques

2. Evaluate patients and their nutritional status as related to wound healing, including:
    a. diagnosis of deficiency
    b. treatment of deficiency

3. Participate in planning surgical incisions, with respect to:
    a. selection in relation to skin lines
    b. techniques for closure
    c. suture materials – types and uses.

4. Participate in wound management, including:
    a. debridement
    b. use of splints, dressings, casts, topics agents
    c. use of biologic substitutes.

5. Under the direction of a plastic surgeon, treat complex wound problems such as dehiscence, delayed healing of complex traumatic wounds.

6. Under the direction of a plastic surgeon, perform surgical and pharmacologic treatment of hypertrophic scars and keloids.

7. Utilize splints, casts, dressings, topical agents, etc., to optimize healing.

8. Under the direction of a plastic surgeon, place incisions for elective surgery in such a way as to achieve the greatest aesthetic benefit.

9. Utilize biologic and artificial skin substitutes in wound management.

10. Participate in the surgery of grafts and flaps including: skin, dermis, cartilage, bone, tendon, muscle, fascia, combined tissue; specifically:
    a. grafting techniques
    b. instruments for harvesting grafts
    c. graft preservation techniques
    d. donor site management
    e. recipient site management
    f. special techniques
    g. xenografts

11. Participate in operations incorporating the full spectrum of flaps and grafts including skin grafts, local flaps, fascial and musculocutaneous flaps, free tissue transfers, bone grafts, composite grafts, etc.

12. Treat patients who have complications of flaps and grafts including skin graft loss, flap necrosis, wound dehiscence, wound infection, etc.

13. Participate in the use of the operating microscope.

14. Participate in surgical procedures for free tissue transfer.

15. Participate in the management of a variety of nerve injuries, using microsurgery and nerve grafts where appropriate.

16. Participate in the preoperative evaluation and postoperative management of patients undergoing free tissue transfer.

17. Participate in surgical procedures for replantation of amputated parts.

18. Participate in the preoperative evaluation and postoperative management of patients undergoing replantation of amputated parts and revascularization procedures.

19. Participate in surgical procedures using solid implant materials.

20. Participate in the evaluation and treamtment of patients with localized lipodystrophy, using suction lipectomy techniques.

21. Participate in the evaluation and treatment of patients with a wide variety of congenital and acquired defects using tissue expansion techniques.

22. Participate in obtaining informed consent from patients; effectively documenting that agreement.

23. Contribute effectively and accurately to the medical record of both inpatients and outpatients.

24. Participate in the management of critically ill patients in the surgical intensive care unit.

25. Participate in the critical care management/emergency management of burn and trauma patients, including:

    a. initial care
    b. diagnosis
    c. preparation for the operating room
    d. postoperative care.

26. Participate in the management of ICU patient, including:

    a. monitoring
    b. respiratory management
    c. cardiovascular management
    d. fluid management
    e management of infection and sepsis
    f. management of nutrition.

27. Participate in the care of surgical patients with complications including:

    a. respiratory failure
    b. cardiovascular problems (arrhythmia, DVT, PE)
    c. sepsis
    d. bleeding
    e. hematoma.

28. Participate in the management of patients with autoimmune and collagen vascular diseases.

29. Diagnose and treat patients with surgical wound infections.

30. Evaluate and treat patients with infections of the head and neck, breast, skin and hand.

31. Prescribe analgesics for postoperative care and for pain management.

32. Prescribe anti-inflammatory agents for appropriate cases.

33. Utilize steroids for treatment of a variety of plastic surgical problems and in the postoperative care of steroid-dependent patients.

34. Participate in the management of patients undergoing chemotherapy for head and neck and/or skin malignancies.

Practice Based Learning and Improvement

Goal: The resident will investigate and evaluate his or her own patient care practices, appraise and assimilate scientific evidence, and improved patient care practices.

Objectives:

1. Use information technology to prepare for surgical cases, bringing to the OR the knowledge of current modalities of care for patients and the scientific evidence for that care.

2. Routinely analyzes the effectiveness of own practices in caring for patients.

3. Improve own practices in the care of patients by integrating appropriately gathered data and feedback.

4. Educate medical students and other healthcare professional in the practices of surgical patients.

Interpersonal and Communication Skills

Goal: The resident will demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, and professional associates.

Objectives:

1. Educate patients and families in pre- and post-operative care of surgical patients.

2. Demonstrate compassion for patients and families with traumatic and acquired anomalies.

3. Provide adequate counseling and informed consent to patients.

4. Listen to patients and their families.

5. Assimilate data and information provided by other members of the health care team.

6. Effectively obtain truly informed consent from patients.

System Based Practice

Goal: The resident will demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Objectives:

1. Function within the organization of specialty clinics including the coordination of all special services in the evaluation of patients.

2. Participates in multidisciplinary planning and treatment for patients with complex diagnoses.

3. Direct the overall care of patients with complicated wounds by partnering with the following:

    a. nutritionalists
    b. wound care specialists
    c. occupational therapists

4. Demonstrate knowledge of cost-effective surgical care.

5. Advocate for patients within the health care and insurance system.

Professionalism

Goal: The resident will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Objectives:

1. Develop a sensitivity of the unique stress placed on families under care for surgery.

2. Exhibit an unselfish regard for the welfare of patients.

3. Demonstrate firm adherence to a code of moral and ethical values.

4. Be respectful to patients and their families especially in times of trauma and stress to the family unit.

5. Respect and appropriately integrate other members of the healthcare team.

6. Provide appropriately prompt consultations when requested.

7. Demonstrate sensitivity to the individual patient's profession, life goals, and cultural background as they apply to their surgical diagnosis.

8. Be reliable, punctual, and accountable for own actions in the OR and clinic.

9. Accurately and honestly council patients regarding risks and complications of surgery.

10. Effectively deal with dissatisfied patients.

11. Understand the physician/patient relationship.

12. Understand the benefits and functionality of multidisciplinary health care teams.

13. Refer patients to the appropriate practitioners and agencies.

14. Facilitate the timely discharge of patients.