



**Final Clerkship Year**  
**Course 451 (1432 - 2011)**

**Department of Surgery, College of Medicine**

**King Saud University, Riyadh, Kingdom of Saudi Arabia**

## **Introduction**

Dear Student,

It is our pleasure on behalf of the Department of Surgery to welcome you at the start of your course and wish you the best with your studies. You have been through the previous surgical course 351 and we expect that you have learned the principles of how to take a good history from a patient with a surgical problem, how to do a proper physical examination for different systems of the body, and how to interpret these data into a reasonable differential diagnoses. In addition to what you have learned previously, now you are going to acquire more knowledge, skills, interpersonal attributes and study in depth the management of common surgical conditions. It is our duty to see that the time is well spent and the course objectives are fully satisfied.

## **The department education vision**

The Department of Surgery will focus on teaching the most recent understanding of main health problems encountered in surgery practice in Saudi Arabia. Our goal is to transfer the necessary medical knowledge and skills needed to respond safely and appropriately to common surgical problems that might face students during their initial postgraduate years and that are necessary for any physician to acquire in order to provide safe medical practice.

## **General Objectives:**

Students at this course are expected to master the following competencies:

1. To know, understand, and analyze evidence-based information related to common surgical conditions
2. To perform proper clinical history taking, physical examination, and their interpretation
3. To communicate efficiently with patients and their relatives, colleagues, faculty, and other health care staff
4. To be able to manage common elective and urgent/emergency surgical problems using a systematic approach, considering cost effectiveness, and patients' safety measures
5. To be able to do certain procedural skills with faculty staff assistance and supervision

## **Specific Objectives:**

### **1. Pre-operative evaluation and preparation**

At the conclusion of the course, the student should be able:

- To have a working knowledge of the risk factors for mortality and complication expected after commonly performed operations in each region/discipline
- To describe features of patient's clinical history and physical findings that may influence surgical decision making
- To discuss tools that may assist in preoperative risk assessment and management
- To understand and analyze common pre-operative orders
- To understand the concept of informed consent

## **2. Operative**

The student should provide:

- An understanding of the operative set up, team, and procedures
- An understanding of aseptic techniques (surgical scrub, skin preparation, draping, gowning, and conduct of surgery - open, laparoscopic, robotic, etc.)
- An understanding of wounds classification and prevention of surgical site infection

## **3. Post-operative management of surgical patients**

By the end of the course, the student should be able:

- To discuss postoperative orders including nursing care, intravenous fluids, medications, and further investigations
- To follow the patients' convalescence and discuss progress notes
- To assess and discuss the management of common postoperative problems related to each discipline (e.g. pain, nausea/vomiting, fever, oliguria, as well as changes in cardiovascular and pulmonary functions)
- To understand appropriate use of blood and blood products
- To describe the use of post-operative antibiotics
- To assess surgical site (e.g. normal healing, infection, skin edge necrosis, dehiscence)
- To identify and understand the need for postoperative nutritional support
- To understand the need for early postoperative ambulation

## **4. Anesthesia & Critical Care**

To learn the basic theory and gain practical experience in:

- Pre-operative clinical assessment and medical anesthetic problems

- Re-certification in Basic and Advanced Cardiac Life Support
- Intra-operative monitoring
- Principles of critical care, monitoring, and management in SICU
- Post-operative chest and cardiac complications and their management
- Basic principles of general, spinal, regional, and local anesthesia

## **5. General Surgery**

### **Surgical Infections**

Students will be able to understand:

1. The definition and the factors contributing to infections in surgery.
2. General features of infections, diagnostic methods and principles of treatment.
3. Common pathogens: their infections and sensitivity pattern.
4. Common soft tissue infections: diagnostic features and treatment.
5. Surgical wound infection- risk factors, classification, diagnosis and treatment.
6. Indications, timing, choice and duration of prophylactic antibiotics.
7. Indications, choice and duration of therapeutic antibiotics.

### **Trauma**

**Trauma Evaluation and Management (TEAM) Program. A surgical clerkship program designed by the Trauma Committee – American College of Surgeons**

Goals:

1. Rapid, accurate and physiologic assessment of the patient's condition.
2. Resuscitation, stabilization and monitoring of the patient according to priority.
3. Preparation for the patient's inter hospital transfer, if the patient's needs exceed the facility's capabilities.

4. Working as a team member to achieve optimal safe patient care.

**Objectives:**

1. Describe the fundamental principles of initial assessment and management.
2. Identify the correct sequence of priorities used in assessing the multiply injured patient.
3. Describe guideline and techniques used in the initial resuscitation and definitive-care phases when treating the multiply injured patient.
4. Identify how the patient's medical history and the mechanism of injury contribute to the identification of injuries.
5. Identify the concepts related to teamwork in caring for the injured patient.

**Neck masses**

Students will be able to understand:

1. A brief neck anatomy and its clinical significance.
2. The distribution of neck lymph nodes and its drainage areas.
3. A general approach to neck masses and diagnostic methods.
4. Common acute and chronic neck masses( excluding thyroid): presenting features, diagnosis and treatment.
5. Salivary gland swellings- presentations, diagnosis and treatment.

**Epigastric abdominal pain and masses**

Students will be able to understand:

1. The visceral contents within this area and its clinical significance.
2. The causes of acute and chronic abdominal pain and masses in this area.
3. The differences between visceral, somatic and non surgical pain in this area.
4. The physical sign of liver, stomach and pancreatic masses and enumerate their causes.
5. The urgent and non-urgent surgical conditions in this area.

6. The investigation and treatment of these conditions.

### **Left upper quadrant abdominal pain and masses**

Students will be able to understand:

1. The visceral contents within this area and its clinical significance.
2. The causes of acute and chronic abdominal pain and masses in this area.
3. The physical sign of spleen and pancreatic masses and enumerate their causes.
4. The urgent (splenic infarction, abscess, acute pancreatitis etc.) and non-urgent surgical conditions (splenomegaly).
5. The investigation and treatment of these conditions.
6. Indications and complications of splenectomy.

### **Hernias**

Students will be able to understand:

1. The anatomy and presenting features of common hernias.
2. To differentiate groin hernias with other causes of groin swellings and pain.
3. The clinical differences between reducible, incarcerated, obstructed, strangulated and Richter's hernias and its significance on management plan.
4. The differential diagnosis of abdominal wall hernias ( desmoids, hematoma, etc.).
5. Investigations and surgical treatment of common hernias.

### **Jaundice**

Students will be able to understand:

1. Normal bilirubin metabolism and how it is affected in a jaundiced patient.
2. Classification of jaundice (obstructive vs non-obstructive).
3. Common causes of (benign and malignant) obstructive jaundice.
4. Common symptoms and signs in obstructive jaundiced patient.
5. Investigation and management of obstructive jaundice patient.

### **Nutritional support in surgical patients**

Students will be able to understand:

1. The need of nutritional support in surgical patients.
2. The consequences of malnutrition in surgical patients.
3. The methods of assessing malnutrition.
4. Types of nutritional support, its indication and methods to provide it.
5. Complications of nutritional support.

### **Upper GI bleeding (Haematemesis)**

Students should be able to:

1. Outline the initial management (resuscitation) of patients with acute upper GI bleeding.
2. Enumerate the common causes of upper GI bleeding.
3. Take relevant history (portal hypertension, peptic ulcer, drugs etc.), and elicit signs (hepatomegaly, jaundice, mass, splenomegaly etc).
4. Discuss the medical management.
5. Understand the role of intervention radiology and surgery in the management.

### **Right iliac fossa abdominal pain and masses**

Students will be able to understand:

1. The visceral contents within this area and its clinical significance.
2. The causes of acute and chronic abdominal pain and masses in this area.
3. The history and physical sign of acute appendicitis, appendicular mass, Crohn's dis., carcinoma caecum etc.

4. The differential diagnosis of gynecological conditions (ectopic, ovarian mass) and other non-surgical conditions (renal colic, pyelonephritis etc).
5. The investigation and treatment of these conditions.

**Lower GI Hemorrhage (Colorectal Unit - Pending)**

**Painful Anorectal Conditions (Colorectal Unit - Pending)**

**Breast & Thyroid (Breast and Endocrine Unit - Pending)**

**Morbid Obesity (Upper GI Unit - Pending)**

## **6. Urology**

### **A. Adult Urology**

#### **Presentation and investigations of urologic diseases:**

- Symptoms of urologic problems
- Their clinical significance
- Imaging of urinary tract:
  - Types
  - Indications
  - Advantages and disadvantages

#### **UTI**

- lower UTI
- Upper UTI
- Bacteria
- Presentation and management
- Septic shock

#### **Renal colic and stones:**

- Evaluation and emergency management of patient with renal colic and its treatment:



- Types of stones
- Indication of treatment
- Mainlines of treatment

## **LUTS**

- Evaluation of patient with LUTS
  - a. With voiding pathology.
  - b. With L.U.T irritative pathology
  - c. Neurovesical dysfunction

## **Haematuria**

- Evaluation of patients with hematuria
- Renal tumors
  - Types
  - Evaluation and staging
  - Maintenances of treatment
- Bladder tumours
  - Types
  - Evaluation and staging

## **Painful scrotum and scrotal swelling**

- Main causes
- Clinical and imaging evaluation
- Testicular tumour
  - Types
  - Staging
  - Mainlines of treatment

## **B. Pediatric Urology**

1. Describe the acute evaluation of a male child / adolescent with testicular pain and scrotal swelling.
2. Initial approach for patients with antenatal hydronephrosis and basics for specific management.

3. Introduction of neurovesical dysfunction and the management of neuropathic bladder and the approach to the child.
4. Initial approach for patient with external and internal congenital anomalies.

## **7. Neurosurgery**

### **Head Injury**

#### **1. Diagnosis and Management of Head Trauma**

At the end of the course, the student should be able to:

1. Understand and assign the Glasgow Coma Score.
2. Recognize the presentation of raised intracranial pressure and brain herniation.
3. Initiate management of elevated intracranial pressure.
4. Recognize and initiate management of concussion, brain contusion and diffuse axonal injury.
5. Recognize and initiate management of acute subdural and epidural hematoma, including surgical indications.
6. Recognize and understand the principles of management of open, closed and basilar skull fractures, including cerebrospinal fluid leak, and chronic subdural hematoma (in children and adults).

### **Intracranial tumor and infection**

#### **2. Diagnosis and Management of Brain Tumor and Abscess**

At the end of the course, the student should be able to:

- Understand the general clinical manifestations (focal deficit and irritations, mass effect; supratentorial vs. infratentorial) of brain tumors.
- Recognize Neurofibromatosis and its associated pathologies.
- Review the diagnostic tools that are currently used for evaluation (laboratory tests, radiology, biopsy).
- Understand broad treatment strategies (surgery, radiosurgery, radiation, and chemotherapy) in the treatment of tumors.
- Recognize the clinical manifestations of abscess and focal infections due to local spread, hematogenous disease associated with immune deficiency, and how they differ from the mimic tumors.
- Understand the general principles in the treatment of abscess and focal intracranial infections.

### **Spine disease**

#### **3.     **Diagnosis and Management of Spinal Cord Injury****

At the end of the course, the student should be able to:

1. The emergency room diagnosis and interpretation of radiologic studies in spinal trauma.
2. Initiate acute management of spinal cord injury including immobilization, steroids and systemic measures.
3. Understand the definition and subsequent management principles of the unstable spine.

#### **4.     **Diagnosis and Management of Non-traumatic Neck and Back Problems****

At the end of the course, the student should be able to:

1. Recognize the broad categories of spinal pain, spinal cord compression and radiculopathy:
2. The signs and symptoms (including cauda equina syndrome).
3. Their common causes, their diagnosis and their management (cervical and lumbar disc herniation, osteoarthritic disease, spondylolisthesis).
4. Their differential diagnosis and management (including metastatic disease and primary spinal tumors).
5. Recognize the clinical presentation, investigations and management of myelopathy.
6. The common causes, their diagnosis and their management (cervical and lumbar disc herniation and osteoarthritic disease).
7. Differential diagnosis and management (including transverse myelopathy, spinal infections, metastatic disease and primary spinal tumors).

### **Pediatric Neurosurgery**

#### **5.     **Diagnosis and Management of Hydrocephalus and Spinal Dysraphism****

At the end of the course, the medical student should be able to:

1. Recognize the symptoms and signs of hydrocephalus in children.
2. Recognize the symptoms and signs of hydrocephalus in adults.

3. Understand common etiologies of hydrocephalus in children and adults, and differentiate between communicating and obstructive hydrocephalus.
4. Understand treatment strategies for hydrocephalus.
5. Recognize common syndromes of spinal dysraphism, their neurologic manifestations and broad principles of management.

## **8. Pediatric Surgery**

Neonatal intestinal obstruction Objective is:

1. To discuss the main causes of intestinal obstruction in neonate such as Hirschsprung disease, esophageal atresia, imperforated anus, and intestinal atresias.

### **Common pediatric surgical emergencies**

To discuss the common problems that would require urgent pediatric surgical consultation and management.

1. Acute appendicitis and its DDX
2. Intussusceptions
3. Meckels diverticulum and its associated problems
4. FB associated problems
5. Perianal sepsis in children

### **Other common pediatric surgical problems**

1. Abdominal wall defects (AWD)
2. Umbilical, inguinal hernias and others
3. Vascular malformation (VMF)
4. Undescended testis

### **Current national pediatric surgical problems**

1. Children Motor vehicle trauma
2. Childhood obesity

## **9. Plastic Surgery**

Students are expected to:

- Understand principles of wound healing, hypertrophic scars, keloids and contractures.
- Understand anatomy and common congenital anomalies of the hand, extremities and maxillofacial region.
- Understand common skin neoplasms.
- Understand skin grafts and flaps.

### **Clinical objectives:**

1. To be able to recognize different types of burns.
2. To be able to do full examination the hand and recognize common hand disorders.
3. To be able to examine and recognize common maxillofacial injuries.
4. To master principles of wound care.
5. To understand principles of reconstructive surgeries.
6. To understand the management of burn patients.
7. To understand the management of common hand disorders.

## **10. Vascular Surgery**

### **Acute arterial ischemia:**

The student should be able to demonstrate knowledge the followings:

1. The "6-P's" and the importance with respect to this limb.

2. The etiology of acute arterial obstruction i.e. embolism and thrombosis and describe the causes of the thrombosis and the source of emboli.
3. Describe the arterial tree and understand which part of the arterial tree is responsible for supplying that part of the limb.
4. The Pathophysiology at the cellular level of different tissues in ischemic limb and what happens when the circulation is restored, particularly with respect to compartment syndrome.
5. The urgency of the treatment of the problem and how long is acceptable before arterial supply should be restored.
6. The effects on the coagulation system of Heparin, Coumadin and the thrombolytic agents.

### **Chronic leg pain and Ulceration:**

The student should be able to demonstrate knowledge the followings:

1. The differential diagnosis of the condition and be able to extract pertinent facts in the history and examination to reach to the likely diagnosis.
2. The risk factors for atherosclerosis and be able to elicit them from the history.
3. Understand the pathophysiology of atherosclerosis.
4. Carry out a proper physical exam and document the status of the peripheral circulation.
5. The pathophysiology of the patient with critical ischemia and threatened limb loss compared to intermittent claudication.
6. Understand and differentiate different type of leg ulceration with pathophysiology knowledge and principles of management.
7. Appropriate investigations in these patients with respect to blood tests, and non invasive vascular lab testing.
8. Understand when angiography is indicated and the complications pertaining to angiography.
9. The importance of lifestyle modification and improvement of risk factors.

10. The principles of treatment of peripheral vascular disease from the conservative to revascularization and amputation.

### **Swollen leg:**

The student should be able to demonstrate knowledge the followings:

1. Understand the venous anatomy (including the deep and superficial venous systems, valves, perforators) and the lymphatic system physiology.
2. The ability to interpret a good history for patients with varicose vein, deep venous thrombosis and lymphedema.
3. Determine the changes of acute and chronic venous disease and lymphatic disorders from examination.
4. The etiology and risk factors of deep vein thrombosis with respect to Virchow's triad.
5. The types and causes of lymphedema.
6. Discuss the different investigation methods of varicose vein, DVT and lymphedema.
7. The treatment of deep vein thrombosis and the appropriate use of anticoagulation.
8. The principles of long term conservative therapy of chronic venous insufficiency with the possible sequelae.
9. The student should understand the modern treatment of varicose veins from both a conservative and invasive standpoint.
10. The principles of long term conservative therapy of lymphedema with the expected outcome.

## **11. Thoracic Surgery**

By the end of this period the student will be able:

1. To understand and describe the anatomy of the Chest, lungs and pleural cavity.

2. To understand and describe respiratory hemodynamics, pathophysiology, and monitoring
3. To understand the assessment of pulmonary function studies
4. To understand the assessment and management of patient presenting with dysphagia
5. To understand the risk factors, pathophysiology, and presentations for the management of esophageal carcinoma .
6. To understand the assessment and management of patient presentations with pulmonary nodule.
7. To describe risk factor, pathophysiology, presenting symptoms and signs, and management of lung carcinoma.
8. To understand the presentation, pathophysiology, causes, management and complications of chest trauma.

## **Contents of the Course:**

### **General Guidelines:**

- The course contains theoretical, clinical, and attitude parts to fulfill the objectives of the course.
- The course is composed of 12 weeks (11 credit hours) in the medical college curriculum.
- The course is divided into two parts, general surgery and other surgical specialties (5 weeks each, 2 weeks preparations and exams)

### **Main Contents:**



- This course covers all surgical diseases that a general practitioner would be expected to manage and take care. It is composed of clinical sessions in the hospitals supplemented by small group tutorial sessions, which are problem oriented type.
- The students are posted full time in the hospital to participate in the routine work of the surgical unit, which involves attending the morning ward round and its related works, the operating theatres, surgical outpatient clinics, skills lab sessions, and SICU according to the distributed schedule of each surgical specialty.

## **COURSE OUTLINE:**

### **A. CLINICAL:**

- i. The clinical sessions are the main part of the course, where students will master history taking, clinical examinations, and interpretation of the findings into a reasonable differential diagnoses, acquire good attitude and manners dealing with patients/ relatives and medical staff, professionalism, problem solving approach to common surgical conditions, and their management.
- ii. The training program involves:
  1. Attending daily morning ward rounds and related works
  2. Bedside teaching.
  3. Attending and sharing in the small group tutorial sessions
  4. Attending some operative sessions.
  5. Attending outpatient clinics.
  6. Attend and participate in special procedural skills sessions.
  7. Exposure to the management of critically ill patients in the SICU.

iii. All of the different clinical allocations will serve the main objectives of the course. The clinical part include rotations in the following surgical specialties:

1. Five complete weeks in General Surgery
2. Five weeks in other surgical specialties

## **B. SKILLS LAB:**

The students will learn the following skills:

- Injection Arm.
- Suture Tutor.
- PR. Exam.
- Breast Exam.
- Male/Female Catheterization Trainer.
- Infusion / Injection Arm Trainer.
- Trauma Evaluation and Management

## **C. TUTORIALS:**

**Tutorial sessions ( 1 hour ) daily, 5 days a week for 10 weeks from ( 3:00-4:00pm ).**

- The tutorials have been modified to be problem based rather than topic based.
- The objectives of each tutorial will be clearly identified (review with surgery course secretary regarding tutorial schedule outline ).

## **Regulations:**

### **a) Role of the staff members:**

#### **1. Residents and Registrars:**

Although teaching skills is part of the training for the residents, the 451 course teaching need experienced teachers to know the needed information for the student level, accordingly, residents and registrars are only going to be involved in the teaching of 451 surgical course in extreme circumstances when teaching staff is not available

#### **2. Senior Registrars/Fellows:**

- ✓ They will be involved in the clinical teaching according to the need per specialty.
- ✓ They will help in invigilation of the theoretical examinations.
- ✓ They will not be involved in the clinical examinations.
- ✓ They will not be asked to give a tutorial

- ✓ They are fully responsible for morning rounds and bedside teaching.

**3. Non – teaching staff consultants:**

- ✓ They will be involved in the clinical teaching.
- ✓ They will be asked to conduct at least one tutorial session per week.
- ✓ They might be asked to help in the clinical examinations according to the need.
- ✓ They will help in invigilation of the theoretical examinations.

**4. Clinical Tutors (Clinical Teaching Staff from Outside KSU)**

They will be spared for 351 surgical course students as possible unless really needed to cover a shortage in this course

**5. Teaching Staff:**

- ✓ They will conduct one clinical session per week.
- ✓ They will give an average of one tutorials/week.
- ✓ They will conduct the clinical examination.
- ✓ They will prepare the multiple-choice questions and one OSCE station related to his tutorial.
- ✓ They will invigilate in the theory examination.

**6. Undergraduate Courses and examinations Committee:**

- ✓ Upgrading the course.
- ✓ Identifying points of difficulties and solve them.
- ✓ Course Committee members are:
  - ( Chairman ).
  - ( Course Organizer 451 )
  - ( Course Organizer 351 )
  - ( Course Organizer 311 )
  - ( 5 members )

**7. 451 Course Organizer:**

- ✓ Responsible for the course organization. The day-to-day teaching will be the responsibility of teaching staff according to the schedule.
- ✓ Prepare and organize the exams both MCQ's and OSCE.
- ✓ Write an Annual Report to the Head of The Department about the progress of the course throughout the year.

**b) Attendance Rules:**

Attendance will be checked by the tutor in each clinical or tutorial session and approved by his/her signature. If any students signature is found to be in the attendance sheet although he/she is not physically attending the session (especially tutorials) the student will be subjected to a penalty (please see regulations in this matter).

Students should not miss more than 25% of attendance. Each student should present a legitimate excuse for not attending any of session/tutorial. More than that, the student will not be allowed to sit for the final exam and has to repeat the course. The student will be warned at the end of the 1<sup>st</sup> semester if his absence is approaching the above-mentioned limits.

**c) Uniform and Dress:**

- Male students:
  - i. Blue Scrub Suit (operative theatre uniform)
  - ii. White lab coat.
  - iii. ID badge.
- Female students:

Please see hospital policy and procedures