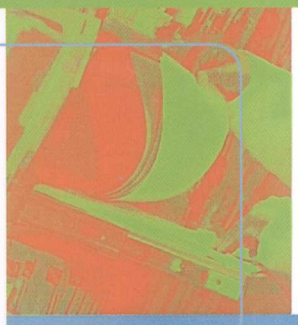
全国高等学校临床医学专业卫生部规划教材英文版

案例分析系列

解 剖 学



Case Files™ Gross Anatomy

原　　著　Toy • Ross • Cleary • Papasakelariou

中文主编　柏树令

人民卫生出版社

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案例分析系列

出 版 说 明

为贯彻教育部、卫生部关于加强双语教学的精神，配合全国各医学院校开展双语教学的需要以及适应以问题为中心的教学发展趋势，人民卫生出版社特引进了本套案例分析系列英文教材。该教材原版由美国麦格劳希尔教育出版集团出版，在美国各大医学院使用后反响良好。

书中通过剖析临床实例对相关的临床或基础知识进行回顾和复习，有助于医学生将医学基础知识和临床实践相结合。这种以问题为中心的学习(PBL)模式强调发挥学生主动思考的潜力，培养其自我学习能力。在编排上，作者有意将案例顺序随机化，目的是模拟真正的患者就医情景。为方便查询，书后附有以字母为序的案例排列索引。

加入中文编注后的案例分析系列基本保持原书风貌，并根据我国国内教学情况对重要知识点和词汇进行了点评和加注。本套教材语言叙述通俗、简练，即可加强读者对医学知识的理解，又可学习医学英语。

本系列首批教材包括12本：临床医学6本(内科学、外科学、妇产科学、儿科学、精神病学、急诊医学)，基础医学6本(解剖学、生理学、生物化学、微生物学、病理学、药理学)，将于2007年全部推出。

前　言

《案例分析系列:解剖学》一书是人民卫生出版社引进的解剖学辅助教材，全书共49个案例，涉及人体的头、颈、胸、腹、盆和上下肢各大部分，涵盖人体十大系统的各个层面。案例以症状和体征为导引，提出印象诊断；以涉及的人体解剖结构为切入点，紧密联系临床相关知识，将问题逐步局限化，重在人体局部结构知识和解剖概念定义的学习，并以黑体字表示，有针对性地讨论了疾病所涉及解剖结构的定位、作用机制、毗邻关系及相互影响。提出几个启发学生思考的问题，以便从理论上对问题有针对性地进行解答和详细解释。概括所涉及到的解剖学关键点与精华，并以知识框的形式表示，提供主要参考文献供读者参考和扩大视野。在此基础上，点评者列出生僻的、必须掌握的或重要的中英文对照相关单词，对有关部分进行了注释；重在联系临床实际，对每个案例进行了点评，以便使教者有所遵循，学者易于理解。

该书案例遵循由表及里、由浅入深、逐步深入达到透过现象、洞察本质的目的。一改其他参考书的“你问我答，一一对应”的方式，从人体结构、相关机制和作用原理上去解答问题。问题的答案也是从简单到复杂，为促进学生认真分析与深刻理解提供帮助，从而加深记忆。

本书适用于基础医学5年制本科、7、8年制研究生班、国际医学班、全英语教学班、解剖学英语师资培训班等各层次的教师及学生，对我国目前医学院校的解剖学教学改革，尤其是以案例为中心(CBL)和以问题为中心(PBL)教学法的运作程序、可操作性措施及推广应用有示范作用；对考核学生运用所学基础知识理论，分析解决现实临床病例的能力大有裨益。教材是知识的载体，教师是知识的传授者，该案例分析方法的引进不仅为我国人体解剖学教学增加了一种新的知识运载工具，而且为该科学的传授者提供了传授学习解剖学知识的思维路径。因此，本书是教师和学生的良师益友。通过对这些临床案例的分析探讨，传授了用基础知识理论分析案例的正确方法，使教师达到了授学生以渔的目的。

中国医科大学解剖学教研室　柏树令

❖ INTRODUCTION

Mastering the diverse knowledge within a field such as anatomy is a formid-able task. It is even more difficult to draw on that knowledge, relate it to a clin-ical setting, and apply it to the context of the individual patient. To gain these skills, the student learns best with good anatomical models or a well-dissected cadaver, at the lab bench, guided and instructed by experienced teachers, and inspired toward self-directed, diligent reading. Clearly, there is no replacement for education at the bench. Even with accurate knowledge of the basic science, the application of that knowledge is not always easy. Thus, this collection of patient cases is designed to simulate the clinical approach and stress the clin-ical relevance to the anatomical sciences.

Most importantly, the explanations for the cases emphasize the mechanisms and structure-function principles, rather than merely rote questions and answers. This book is organized for versatility to allow the student "in a rush" to go quickly through the scenarios and check the corresponding answers or to consider the thought-provoking explanations. The answers are arranged from simple to complex: the bare answers, a clinical correlation of the case, an approach to the pertinent topic including objectives and definitions, a com-prehension test at the end, anatomical pearls for emphasis, and a list of refer-ences for further reading. The clinical vignettes are listed by region to allow for a more synthetic approach to the material. A listing of cases is included in Section III to aid the student who desires to test his/her knowledge of a certain area or to review a topic including basic definitions. We intentionally used open-ended questions in the case scenarios to encourage the student to think through relations and mechanisms.

❖ CONTENTS

SECTION I

Applying Basic Sciences to Clinical Situations

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Applying Basic Sciences to Clinical Situations

APPROACH TO LEARNING

Learning anatomy is not just memorization. It is the visualization of the rela-tions between the various structures of the body and the understanding of their corresponding functions. Rote memorization will lead to quick forgetfulness and boredom. Instead, the student should approach an anatomical structure by trying to correlate its purpose with its design. Structures that are close together should be related not only spatially but also functionally. The student should also try to project clinical significance to the anatomical findings. For example, if two nerves travel close together down the arm, one could speculate that a tumor, laceration, or ischemic injury might affect both nerves; the next step would be to describe the deficits expected on the physical examination.

The student must approach the subject in a systematic manner, by studying the **skeletal** relations of a certain region of the body, **the joints**, **the muscular system**, **the cardiovascular system** including arterial perfusion and venous drainage, **the nervous system** such as sensory and motor neural innervations, and the **skin**. Each bone or muscle is unique and has advantages due to its structure and limitions or perhaps vulnerability to specific injuries. The student is encouraged to read through the description of the anatomical relation in a certain region, correlate the illustrations of the same structures, and then try to envision the anatomy in three dimensions. For instance, if the anatomical drawings are in the coronal plane, the student may want to draw the same region in the sagittal or cross-sectional plane as an exercise to visualize the anatomy more clearly.

BASIC TERMINOLOGY

Anatomical position: The basis of all descriptions in the anatomical sciences, with the head, eyes, and toes pointing forward, the upper limbs by the side with the palms facing forward, and the lower limbs together.

Anatomical planes: A section through the body, one of four commonly described planes. The **median plane** is a single vertically oriented plane dividing the body into right and left halves, whereas the **sagittal planes** are oriented parallel to the median plane but not necessarily in the midline. **Coronal planes** are perpendicular to the median plane and divide the body into anterior (front) and posterior (back) portions. **Transverse, axial, or cross-sectional planes** pass through the body perpendicular to the median and coronal planes and divide the body into upper and lower parts.

Directionality: **Superior** (**cranial**) is toward the head, whereas **inferior** (**caudal**) is toward the feet; **medial** is toward the midline, whereas **lateral** is away from the

midline. **Proximal** is toward the trunk or attachment, whereas **distal** is away from the trunk or attachment. **Superficial** is near the surface, whereas **deep** is away from the surface.

Motion: Adduction is movement toward the midline, whereas **abduction** is movement away from the midline. **Extension** is straightening a part of the body, whereas **flexion** is bending the structure. **Pronation** is the action of rotating the palmar side of the forearm facing posteriorly, whereas **supination** is the action of rotating the palmar side of the fore-arm anteriorly.

APPROACH TO READING

The student should **read with a purpose** and not merely to memorize facts. Reading with the goal of comprehending the relation between structure and function is one of the keys to anatomy. Also,. being able to relate the anatomical sciences to the clinical picture is critical. Thus, there are seven key questions that help to stimulate the application of basic science information to the clinical setting.

1. **Given the importance of a certain required function, which anatomical structure provides the ability to perform that function?**
2. **Given the anatomical description of a body part, what is its function?**
3. **Given a patient's symptoms, what structure is affected?**
4. **Which lymph nodes are most likely to be affected by cancer at a particular location?**
5. **If an injury occurs to one part of the body, what is the expected clinical manifestation?**
6. **Given a deficit such as weakness or numbness, what other symp-toms or signs would the patient most likely have?**
7. **What is the male or female homologue to the organ in question?**

1. Given the importance of a certain required function, which anatomical structure provides the ability to perform that function?

The student should be able to relate the anatomical structure to a function. When approaching the upper extremity, for instance, the student may begin with the statement, "The upper extremity must be able to move in many different directions to be able to reach up (flexion), reach backward (extension), reach to the side (abduction), bring the arm back (adduction), or turn a screwdriver (pronation/supination)." Because of the need for the upper extremity to move in all these direc-tions, the joint between the trunk and arm must be very versatile. Thus, the shoulder joint is a ball-and-socket joint to allow the movement in the dif-

ferent directions required. Further, the shallower the socket is, the more mobility the joint has. However, the versatility of the joint make its dislocation easier.

2. Given the anatomical description of a body part, what is its function?

This is the counterpart to the previous question regarding the relation between function and structure. The student should try to be imaginative and not just accept the "textbook" information. One should be inquisitive, perceptive, and discriminating. For example, a student might speculate about why bone marrow is in the middle of bones instead of the bones being solid. One might speculate as follows: "The main purpose of bones is to support the body and protect various organs. If the bones were solid, they might be slightly stronger, but they would be much heavier and be a detriment for the body. Also, production of blood cells is a critical function of the body. Thus, by having the marrow within the center of the bone, it is protected."

3. Given a patient's symptoms, what structure is affected?

This is one of the most critical questions of clinical anatomy. It is also one of the major questions a clinician must answer when evaluating a patient. In clinical problem solving, the physician elicits information by asking questions (taking the history) and performing a physical examination while making observations. The history is the single most important tool for making a diagnosis. A thorough understanding of the anatomy aids the clinician tremendously because most diseases affect body parts under the skin and require "seeing under the skin." For exam-ple, the clinical data may be: "a 45-year-old woman complains of numbness of the perineal area and has difficulty voiding." The student may go through the following thinking process: "The sensory innervation of the perineal area is through sacral nerves S2 through S4, and control of the bladder is through the parasympathetic nerves, also S2 through S4. Therefore, two possibilities are a spinal cord problem involving those nerve roots or a peripheral nerve lesion. The internal pudendal nerve innervates the perineal region and is involved with micturition." Further information is supplied: "The patient states that she has had back pain since falling down 2 weeks ago." Now the lesion can be isolated to the spine, most likely the cauda equina (horse's tail), which is a bundle of spinal nerve roots traversing through the cerebrospinal fluid.

4. Which lymph nodes are most likely to be affected by cancer at a particular location?

The lymphatic drainage of a particular region of the body is important because cancer may spread through the lymphatics, and lymph node enlargement may occur due to infection. The clinician must be aware of these pathways to know where

to look for metastasis (spread) of cancer. For example, if a cancer is located on the vulva labia majora (or the scrotum in the male), the most likely lymph node involved is the superficial inguinal nodes. The clinician would then be alert to palpating the inguinal region for lymph node enlargement, which would indicate an advanced stage of cancer and a worse prognosis.

5. **If an injury occurs to one part of the body, what is the expected clinical manifestation?**

If a laceration, tumor, trauma, or bullet causes injury to a specific area of the body, it is important to know which important bones, muscles, joints, vessels, and nerves might be involved. Also, based on experience, the clinician is aware of particular vulnerabilities. For example, the thinnest part of the skull is located in the temple region, and underneath this is the middle meningeal artery. Thus, a blow to the temple region may be disastrous. A laceration to the middle meningeal artery would lead to an epidural hematoma because this artery is located superficial to the dura and can cause cerebral damage.

6. **Given a deficit such as weakness or numbness, what other symptoms or signs would the patient most likely have?**

This requires a three-step process in analysis. First, the student must be able to deduce the initial injury based on the clinical findings. Second, a determination must be made of the probable site of injury. Third, the student must make an educated guess as to which other structures are in close proximity and, if injured, what the clinical manifestations would be. To be more skilled in learning these relations, one can begin from a clinical finding, propose an anatomical deficit, propose a mechanism or location of the injury, identify another nerve or vessel or muscle in that location, propose the new clinical finding, and so on.

7. **What is the male or female homologue to the organ in question?**

This knowledge of homologous correlates is important to understand the embryologic relations and, hence, the resultant anatomical relations. By being aware of the female and male homologues, fewer structures need to be memorized because analogous relations are easier to learn than two separate structures. For example, the vascular supplies of homologous structures are usually similar. The ovarian arteries arise from the abdominal aorta below the renal arteries; likewise, the testicular arteries arise from the abdominal aorta.

KEY POINTS

- The student should approach an anatomical structure by visualizing the structure and understanding its function.

- A standard anatomical position is used as a reference for anatomical planes and terminology of movement.
- There are seven key questions to stimulate the application of basic science information to the clinical arena.

REFERENCE

Moore KL, Dalley AF. Clinically oriented anatomy, 4th ed. Baltimore: Lippincott Williams & Wilkins, 1999.

SECTION II

Clinical Cases