APPROACHES TO STUDYING ANATOMY

Anatomy is the setting (structure) in which the events (func- tions) of life occur. This book deals mainly with functional human gross anatomyâ€”the examination of structures of the human that can be seen without a microscope. The three main approaches to studying anatomy are regional, systemic, and clinical (or applied), reflecting the bodyâ€™s organization and the priorities and purposes for studying it.

Regional Anatomy

Regional anatomy (topographical anatomy) considers the organization of the human body as major parts or segments (Fig. I.1): a main body, consisting of the head, neck, and trunk (subdivided into thorax, abdomen, back, and pelvis/perineum), and paired upper limbs and lower limbs. All the major parts may be further subdivided into areas and regions. Regional anatomy is the method of studying the bodyâ€™s structure by focusing attention on a specific part (e.g., the head), area (the face), or region (the orbital or eye region); examining the arrangement and relationships of the various systemic structures (muscles, nerves, arteries, etc.) within it; and then usually continuing to study adjacent regions in an ordered sequence. Outside of this Introduction, the regional approach is followed in this book, with each chapter addressing the anatomy of a major part of the body. This is the approach usu- ally followed in anatomy courses that have a laboratory com- ponent involving dissection. When studying anatomy by this approach, it is important to routinely put the regional anatomy into the context of that of adjacent regions, parts, and of the body as a whole.

Regional anatomy also recognizes the bodyâ€™s organization by layers: skin, subcutaneous tissue, and deep fascia covering the deeper structures of muscles, skeleton, and cavities, which contain viscera (internal organs). Many of these deeper struc- tures are partially evident beneath the bodyâ€™s outer covering and may be studied and examined in living individuals via surface anatomy.

MEDICAL IMAGING TECHNIQUES / 66 Conventional Radiography / 66 Computed Tomography / 67 Ultrasonography / 67
Magnetic Resonance Imaging / 68 Nuclear Medicine Imaging / 70

Surface anatomy is an essential part of the study of regional anatomy. It is specifically addressed in this book in â€œsurface anatomy sectionsâ€ (orange background) that provide knowledge of what lies under the skin and what structures are perceptible to touch (palpable) in the living body at rest and in action. We can learn much by observing the external form and surface of the body and by observing or feeling the super- ficial aspects of structures beneath its surface. The aim of this method is to visualize (recall distinct mental images of) struc- tures that confer contour to the surface or are palpable beneath it and, in clinical practice, to distinguish any unusual or abnormal findings. In short, surface anatomy requires a thorough understanding of the anatomy of the structures beneath the surface. In people with stab wounds, for exam- ple, a physician must be able to visualize the deep structures that may be injured. Knowledge of surface anatomy can also decrease the need to memorize facts because the body is always available to observe and palpate.

Physical examination is the clinical application of surface anatomy. Palpation is a clinical technique, used with obser- vation and listening for examining the body. Palpation of arterial pulses, for instance, is part of a physical examination. Students of many of the health sciences will learn to use instruments to facilitate examination of the body (such as an ophthalmoscope for observation of features of the eyeballs) and to listen to functioning parts of the body (a stethoscope to auscultate the heart and lungs).

Regional study of deep structures and abnormalities in a living person is now also possible by means of radiographic and sectional imaging and endoscopy. Radiographic and sectional imaging (radiographic anatomy) provides useful information about normal structures in living individuals, demonstrating the effect of muscle tone, body fluids and pressures, and gravity that cadaveric study does not. Diagnos- tic radiology reveals the effects of trauma, pathology, and aging on normal structures.