PART I: BACKGROUND

6.1. WHAT IS NEUROSURGERY?

Neurosurgery is the branch of medicine that concerns itself with the diagnosis and surgical treatment of disorders affecting the nervous system, both centrally and peripherally. The central nervous system consists of the brain and spinal cord (Figure 6.1). It is not capable of full regeneration after injury, which is in striking contrast to the peripheral nervous system. The brain and spinal cord are the higher processing centers that regulate and control the peripheral nervous system. The latter is directly responsible for movement, speech, and action. Thus, it is the neurosurgeon’s charge to restore and preserve these functions. The neurosurgeon surgically tackles such entities as head trauma, brain injuries, spinal cord injuries, degenerative spine disease, aneurysms, tumors, and congenital malformations of the brain, skull, and spine.

6.2. HISTORY OF NEUROSURGERY

The art of neurosurgery dates back to the Neolithic time (late stone age) with evidence of brain surgery found in the unearthed remains from this era [4, 15, 21, 27, 32]. Many ancient
cultures practiced the art of trephination (alternately spelled trepanation), which involves drilling holes in the head, presumably to release “evil spirits” or “bad humors”. Figure 6.2 presents a photograph of a trephined skull that was recovered from an archeological site in South America. Although the resulting health effects of trephination are difficult to assess today, archaeological evidence of bone healing in trephined skulls suggests that ancient patients not only survived the operation, but also went on to live for a long while afterwards [4, 27, 30]. Early papyrus writings from Egypt demonstrate evidence of brain surgery in Africa as early as 3000 BC [8, 9, 14]. Pre-historic evidence of brain surgery existed in the Pre-Incan civilization in Peru, as early as 2000 BC [4]. The early surgical tools were made