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Developmental abnormalities of the spine and spinal cord can be divided into primary bony disorders (e.g. congenital scoliosis, as discussed above) and primary neurological disorders (e.g. spina bifida, Arnold-Chiari malformation and spinal dysraphism).

Figure 37.9 This 13-year-old girl sustained a cervical spinal cord injury (SCI) following a dive into a swimming pool. The International Standards for Neurological Classification of Spinal Cord Impairment (ISNCSCI), commonly referred to as the American Spinal Injury Association (ASIA), are based on a standardised sensory and motor assessment. The ASIA Impairment Scale splits these grades into: grade A (complete), grade B (sensory incomplete), grade C (motor incomplete, muscle grade <3), grade D (motor incomplete, muscle

“ 3. and grade E (normal). The patient was diagnosed with a C5 ASIA B SCI. The T2 sagittal magnetic resonance imaging scan (a) demonstrated signal change maximal at the C6 level. The patient developed significant neuromuscular scoliosis. The anteroposterior (AP) sitting radiograph (b) demonstrates a right thoracic curve with a Cobb angle of 104° and a left lumbar curve with a Cobb angle of 82°. Following pedicle screw instrumentation and fusion from T2 to L5, the right thoracic curve corrected to 40° and the left lumbar curve corrected to 38° as noted on the AP radiograph (c) with restoration of sagittal balance (d) .

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Revision #1

Created 2025-12-31 15:15:10 UTC by Omar Ayman

Updated 2025-12-31 15:15:10 UTC by Omar Ayman