Book reviews

Campbell's operative orthopaedics. 4 volume set. 10th edition. Edited by *S. Terry Canale*. Pp 4605. London: Elsevier Science, 2002. ISBN: 032301240X. £350.00.

A cause for congratulation and celebration. Although it is bigger and heavier and more expensive, it is right that this essential work on practical surgery is constantly upgraded. The entire subject is continually changing with new concepts, new techniques and improved equipment.

The reputation of this work has long since been established and the content of this edition is beyond criticism. It needs no further recommendation that it be available to every surgical institution.

M. Laurence

Paediatric sports medicine for primary care. Edited by *Richard B. Birrer, Bernard A. Griesemer and Mary B. Cataletto*. Pp 604. Philadelphia, etc. Lippincott Williams & Wilkins, 2002. ISBN: 0781731593. \$49.95.

This rather long title is self-explanatory. The authors concentrate on primary care for the athletic child and, as such, this book forms a good primer for the doctor who may be called to attend to any sporty child with any condition which may interfere with physical activity. It also includes nutrition, respiration, growth and psychology. Legal issues are not overlooked.

Part III consists of 200 pages covering every area of the musculoskeletal system likely to be injured. Each area is written by an appropriate expert, but the level of instruction is towards diagnosis, rather than management.

M. Laurence

Advanced techniques in image-guided brain and spine surgery. By *Isabelle M. Germano*. Pp 233. New York and Stuttgart. Thieme, 2002. ISBN: 1-58890-067-3. GTV ISBN 3-13-131520-0. €199.00.

New technologies in surgery seem to fall into two groups. First, there are those advances which have a fundamental effect upon treatment, such that a completely new era of management begins. In neurosurgery, obvious examples are the advent of CT and MRI and the introduction of the operating microscope. Then there are those technological advances which seem impressive at first but eventually have only a limited impact on clinical practice. Such developments as intracranial endoscopy and the use of the laser and the ultrasonic aspirator come to mind.

Image-guided surgery, or neuronavigation as it is sometimes termed, clearly falls into the second category. From a technological point of view it appears to be amazing but as we have become more used to the idea, it has become apparent that although it has its uses in some clearly-defined situations it is not going to revolutionise intracranial or intraspinal surgery. Orthopaedic surgeons, other than those involved in spinal surgery, are probably not aware of this very dramatic development in cybernetics. Basically, the system allows the surgeon to see exactly where he is in the body during the course of an operation by the use of a pointer or wand, the tip of which is shown on a VDU. The situation is somewhat analogous to that of a car, or more attractively, a boat which has a satellite navigation system showing its exact position on a chart. Before surgery, the area of the body in question is scanned, then the image space is registered to the physical space of the patient's body using a series of fiducials or anatomical points which are touched with the wand. The position of the wound in the body is then determined by the triangulation of light-emitting diodes on the surgical wand.

To date, image-guided surgery has mainly been used in the intracranial cavity in order to limit the size of the exposure of the brain and define resection boundaries while minimising manipulation of nervous tissue. It has also been used in the more accurate placement of cannulae within the ventricular system. In the spine it seems likely that it will find its greatest value in the accurate placement of screws in relation to such critical structures as the vertebral artery. It may also be useful in achieving an adequate decompression in situations in which direct vision is limited, for example, during anterior decompression of the cervical spine. In spinal surgery, the registration depends on the visual identification of exposed anatomical landmarks, by contrast with intracranial surgery in which fixed fiducials are placed on the patient's scalp before the operation begins. Errors of registration can occur if there is a discrepancy between the virtual image space and the actual physical space. For this reason the surgeon has to carry out meticulous anatomical verification throughout the procedure. Furthermore, while the head remains in a fixed position in intracranial procedures the spine is a mobile structure with movement between individual segments. This means that only one vertebral level which is completely fixed may be dealt with at a time. Image-guided techniques may therefore be of limited value in operations in which the relationship between the different vertebrae is being adjusted, for example, in the correction of spinal deformities.

Nevertheless, there seems little doubt that image-guided surgery is likely to be at the very least a useful adjunct to spinal surgery and it will not be long before every spinal surgeon will be expected to have mastered this rather daunting new technology. This useful monograph is not perhaps for the absolute beginner but it deals with some of the varied applications of image-guided surgery. It is well written, clearly laid out and has a profusion of appropriate illustrations. It is recommended reading for any person who has proceeded beyond the first step of mastering this new technique.

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