Book reviews

Bone implant grafting

John Older (editor), 226 pages, Springer Verlag, Berlin, 1992
ISBN 3–540–19720–6

This book is based on a symposium on bone implant grafting held in May 1991. It is sponsored by the Charnley Trust, and edited by Mr. Older who is an Honorary Senior Research Fellow at the University of Surrey, United Kingdom.

The book is divided in 4 parts, the first being on basic principles. After 3 short and rather sparingly referenced chapters on immunology and graft incorporation, the last chapter is the most interesting, describing the use of a new artificial bone graft material in the form of a mixture of granular porous calcium phosphate ceramic with the addition of bovine fibrillar collagen and autogenous bone marrow. A disadvantage is that the mixture may become very liquid as it absorbs blood and thus must be well contained not to flow out of the wound. Reported clinical results seem promising, but the study is poorly designed. In the future it may, however, be possible to use bone substitute composites with autogenous marrow cells, perhaps with the addition of BMP.

The second part is devoted to techniques of bone grafting of periprosthetic deficiencies in the acetabulum and the proximal femur. Many of the chapters are merely case reports of limited scientific value, but some practical suggestions are valuable. Due to severe graft resorption, several authors have put an end to the use of morsellized allografts in combination with a bipolar hip prosthesis for acetabular protrusion. The necessity for good internal fixation of bulk allografts to allow primary stability of the prosthetic device is repeatedly stressed. We are also reminded of the importance of distinguishing male from inferior postmenopausal female femoral heads, when used as bulk grafts. It may even be better to use an allograft than an osteoporotic autograft! Several authors stress the importance of early loading of the graft, and that the trabeculae of the allograft should be oriented to coincide with the direction of loading; grafts that are not stressed will uniformly absorb. The use of acetabular reinforcement rings, to bridge a gap between host bone and host bone, is recommended as it gives invariably good results in terms of graft-healing. The nowadays well-known Sloof technique for grafting of contained acetabular defects is thoroughly described and seems to give most reliable long-term results. Consolidation, i.e., radiographically detectable bony union between host bone and graft occurs within weeks, whereas incorporation, i.e., reorganization of the graft into structural viable bone will take months and is difficult to assess on radiographs.

Chandler agrees with Harris and his co-workers that a high hip center is not detrimental in itself but that lateralization should be avoided. He even recommends cautious violation of the medial acetabular wall to alleviate the need for a structural weight-bearing peripheral graft. However, when a graft is needed it gives much better long-term results in his hands than in those of Harris and co-workers, and he states that "failure of structural acetabular grafts is directly related to technique".

On the femoral side the impaction cancellous grafting technique with cementation of the femoral component, as decribed by Ling and co-workers, shows some promise, but the clinical material is still limited and the follow-up is short.

The third chapter deals with grafting of bony deficiencies around knee joint replacements. The long-term outcome of bulk allografts remains in doubt, but the bone grafts used to reconstruct failed knees are usually under some load and if they are well fixed to the host bone with correct trabecular orientation, good results may be seen in the future. When it comes to large structural femoral and tibial grafts, it has to be remembered that, while the hip tolerates slight subsidence of the prosthesis, that is not the case in the knee. Millimeters of component subsidence in the knee may render it functionally unstable.

The book closes with a section on bone-banking well worth reading for colleagues planning to start such an activity.

Of course, we should all strive to prevent progressive loss of bone in our patients with hip and knee prostheses. This requires proper follow-up routines. In case these fail, the orthopedic surgeon has a lot to learn from this excellent book, which is highly recommended.

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Knee surgery, current practice

Paul M Aichroth, W Dilworth Cannon and Dipak Patel (editors), 802 pages, Martin Dunitz Ltd, London, 1992.
ISBN 1-85317-090-9

This is an impressive volume written by 95 authors, the majority from U.S.A. and U.K., which is of some importance as the subtitle of the book is "current practice", and this is not the same in all parts of the world.

21 chapters cover examination methods, arthroscopy and meniscal surgery, acute and chronic ligamentous injuries, chondral and synovial diseases, patellar problems, osteotomy and arthroplasty, childhood conditions and fractures. Many of the authors are well-known in their field of interest, and most chapters are comprehensive and rich in practical experiences and advice to the reader. The quality of the different chapters is rather variable; some are excellent, regarding both text and illustrations. Many parts of the book represent something between a scientific publication and a chapter in an orthopedic textbook.

There are obvious difficulties in abandoning the inch for the metric system. More than one section in a chapter may describe the same orthopedic problem, which sometimes is an advantage, as the reader notes different views of British and American authors. The editors seem to have given the various groups of authors considerable freedom which means frequent repetitions. Despite this many of the chapters are excellent and highly educational for both residents and consultants.

Arthroscopy is the most common operative procedure in the U.S.A. and there are numerous arthroscopic knee procedures in use. The progress in this field is also rapid. Arthroscopic assisted anterior cruciate reconstruction is today done as an outpatient procedure, and even an arthroscopic unicompartmental knee replacement technique is described! However, meniscal transplantation hardly merits a place in a textbook concerning current practice. This procedure needs more experimental and clinical research and especially long-term follow-up.

The chapters on ligamentous problems are extensive and the possible stabilizing procedures are numerous. The scientific support for performing a certain ligamentous procedure instead of another is, however, often weak. Regarding the treatment of acute anterior cruciate ligament injuries, the book quotes the consensus by ESKA from 1990, that all artificial cruciate ligamentous devices are investigational.

An interesting part is the biological solution to traumatic osteoarticular defects and early arthrosis by using osteochondral allografts. Much debated issues like arthroscopic debridement and abrasion arthroplasty are discussed, and judged by Lanny Johnson as being palliative rather than curative. Tibial osteotomy is described, both as closed wedge and of dome type, and the different principles of uni- and total knee arthroplasty are presented.

Patellar problems are described both under the heading of "patellofemoral joint disorders" and of "anterior knee pain". In my view the message to examine these patients with an arthroscope must be questioned, and surgery with carbon fiber matrix must clearly be regarded as investigational. The chapter on documentation is good, it includes, for example, the Lysholm and Tegner score systems.

The reference list unfortunately quotes the papers in the order they are mentioned in the text, which makes it difficult to find a specific author by name. Also, an interested reader would prefer the complete group of authors and not only the first 3 names; the last author may well have been the driving force!

It is striking that a lot of our knowledge about the treatment of knee injuries is based on weak scientific grounds, as randomized studies are uncommon. Many knee problems still wait for well-designed studies.

The book certainly contains a lot of information and it is easy to read thanks to the spacious lay-out. It well defends its position as reference book in orthopedic libraries.

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