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Preface

With *Surgery Annual 1991* the series takes on a new look. It is now being published in two parts each year. Though the style of publication has changed, the purpose has not.

The purpose of *Surgery Annual* is to present critical discussion of recent developments in the clinical management of surgical diseases, to report advances in the basic sciences as they relate to the practice of surgery, and to discuss social and economic issues important to surgeons and patients.

Dr. John A. Collins has given us an overview of surgical care in the past year. His contribution includes frank reviews of many studies, especially in the controversial area of the treatment of cancer of the breast.

Surgery Annual 1991, Part 1 satisfies clinical interests with chapters on the management of acute cholecystitis, deep venous thrombosis, the management of civilian colonic injuries, and the endoscopic obliteration of esophageal varices.

As usual we present topics of interest to practitioners of many specialties. This volume contains chapters on pediatric critical care, malignant melanoma, and intracranial monitoring in head trauma. Surgeons interested in the latest technologic developments will find chapters on intraoperative ultrasound and on extracorporeal shock wave lithotripsy for gallstones. Those interested in basic science can look forward to Part II to see chapters entitled "Pathogenesis of Hepatic Steatosis During Total Parenteral Nutrition," "New Concepts in Experimental Peptic Ulceration," and "Primary Hyperparathyroidism: New Aspects of Physiology."

A knowledge of economics is becoming essential for anyone practicing medicine today or receiving medical care. To show how important it is, we present a chapter on the cost of death among general surgical patients.

In keeping with the principle that a worldwide exchange of ideas advances surgical care and knowledge, the contributors to this volume represent South Africa and Japan as well as the United States.

I wish to express my appreciation to the editorial advisory board; to the contributors to *Surgery Annual 1991,* Part 1; and to William R. Schmitt, Vice-President and Editorial Director, and Charles Evans, Production Editor, Appleton & Lange.

Lloyd M. Nyhus, MD
Chicago

Contents

Overview of Surgery: 1991

John A. Collins

This annual review begins where last year's overview left off and attempts to avoid any duplication. I disagree somewhat with last year's author about the implications of some recent research, especially as it relates to cancer of the breast, and have changed some emphasis. The review remains centered on general surgery, however, and suffers from the same necessity to leave out some fine work, especially many promising leads in research. I will include some examples of poor scholarship to make the important point that all that is printed is not gold and in the futile hope that highlighting a small fraction of the poor or hasty work might discourage similar publications in the future.

GENERAL CARE

The most important recent development in the general care of surgical patients was an apparently effective test to detect the dominant form of non-A, non-B hepatitis in patients receiving transfusions.[1-3] This is being called hepatitis C by general agreement. Apparently, it accounts for about half the hepatitis transmitted by transfusion in the United States, but, more important, it represents the vast majority of the hepatitis that progresses to chronic active hepatitis and late cirrhosis. The test is still being evaluated, but it should be approved for screening blood for transfusion within a year. This will improve the safety of transfused blood. Hepatitis C probably represents a much greater threat than transfusion-transmitted AIDS.

Another recent concern about transfused blood is whether it is immunosup-

pressive. Some studies indicated that patients being treated for cancer and receiving transfusions have earlier and more frequent recurrences than patients not receiving transfusions. Similar findings have been reported with major infections following transfusions. Other studies found no such relation. More studies of both types were published this year. The problems with all such studies are that they have been retrospective and uncontrolled. Transfusion is not applied randomly, and some of the reasons for transfusion are associated with more severe forms of the underlying disease. This makes cause-and-effect linkage even more uncertain than usual. Some authors are convinced that such an effect exists[4,5]; others remain skeptical.[6,7] A prospective trial has been started in the United Kingdom, which, for ethical reasons, will contrast regular blood transfusions with transfusion of washed red cells (the immunosuppressive agent, if it exists, is in the plasma or white blood cell fraction).[8] Perhaps this will provide an answer to a vexing but clinically important question.

Alternatives to transfusion of red cells are still sought. Human recombinant erythropoietin is being evaluated clinically, although its uses at best are limited.[9] Cross-linked forms of soluble hemoglobin are still under development for use in emergency situations.[10] Development of these solutions has been disappointingly slow, but their clinical promise is great. The level of a rational "trigger" for transfusing red cells remains debated, but it is clearly well below the hematocrit reading of 30 percent that still seems so dear to the hearts of many. Even the threat of AIDS has not stamped it out.

The evidence favoring prophylactic use of heparin in many surgical patients continues to build, as does evidence that ultrasonographic detection of venous clots in the femoral and iliac systems is highly accurate and can replace contrast venography.[11]

Hypertonic saline solution for the treatment of hypovolemia continues to be favorably evaluated in controlled experimental and clinical studies.[12-14] An experimental study claiming danger really deals with the broader issue of non-blood resuscitation for hemorrhage when the site of bleeding remains uncontrolled.[15]

Use of radiolabeled immunoglobulin seems promising in differentiating and detecting bacterial cellulitis[16]; ordinarily this would be ludicrous diagnostic overkill, but in the growing numbers of patients with fevers and severely suppressed bone marrows it might be quite helpful. At the other end of the technology spectrum, tracing outbreaks of *Clostridium difficile* infection and colonization in a hospital revealed the organism on the hands of 59 percent of the health care workers tested.[17] It is difficult to overstate the importance of frequently washing the hands. In a randomized, prospective, double-blinded trial in 85 injured patients, it was found that "exogenous Fn (fibronectin) repletion in states of deficiency does not alter clinical course, the development of sepsis, or septic mortality."[18] It seems to have taken a very long time to begin to answer the questions about the clinical value of fibronectin as a drug. The answers have not been very supportive. Clayton et al[19] reviewed a sizable series of men with necrotizing fasciitis of the genitalia, again illustrating its serious nature.

One of the currently hot topics in intensive care is the role of the intestine as a source of infection. Abundant experimental data support the occurrence of translocation of bacteria and endotoxin from the lumen of the intestine into at least the mesenteric lymph nodes, under certain circumstances of altered microbial flora in the intestine and decreased integrity of the intestinal mucosa.[20] This has led to renewed interest in early enteral feeding, but several trials have yielded contradictory results.[21,22] Ma et al,[23] part of a group who have done much of the experimental work, reported that this phenomenon shows a marked pattern of genetic susceptibility in mice, indicating caution in quick extrapolation of the findings to humans. Studies from Cornell, however, illustrated the prominent hormonal function of the intestine in humans and indicated that this can be changed by changing the route of feeding (intestine or vein) for a week.[24] The absence of bile salts from the intestine greatly increased the ease of bacterial translocation in animals,[25] perhaps relating to the provocative finding of the protective effects of certain bile salts given by mouth to patients with obstructive jaundice.[26]

Another hot area is the figurative explosion of knowledge relating to inflammatory mediators.[27] Inflammation is destructive, but it is also part of the natural defense mechanism. The temptation to investigators to suppress a destructive response seems almost overwhelming, even though such destruction is usually focused on harmful invaders. Highly artifactual experimental models can be created in which suppression of inflammation is beneficial, but application often turns out to be quite different (eg, the failure to translate to clinical series the apparently beneficial use of steroids in experimental septic shock). The phenomenon continues. Ibuprofen, for example, improves some tests of immune factors in some experimental models.[28] One group therefore tried it prospectively in injured patients. As often happens, the researchers ignored the important data in proclaiming success for the drug. There were major infections in 2 of 20 controls and 3 of 23 treated patients, and the only septic death was in the treated group.[29] Much good will come of research in this area, but a simple-minded assault on natural defense mechanisms is not likely to be the productive route.

Glutamine continues to be impressive in its beneficial effects, given that it has been viewed as a lowly nonessential amino acid. It appears to be a specific nutrient for the intestinal mucosa and may improve muscle protein synthesis in postoperative patients.[30] In a further blow for iconoclasm, Peck et al[31] dared to reduce protein intake in enterically fed infected experimental animals. Survival was best in the group with the lowest protein intake. The same group[32] reported that markedly increased caloric intake lessened the survival rate among infected animals. Elsewhere, evidence continued to accumulate that arginine and the unsaturated fatty acids can alter immune function, that all branched-chain amino acids are not the same (leucine seems most influential), and that short-chain fatty acids are important nutrients for colonic mucosa. In what could be a real sleeper, one group found that adding nucleotides to the diet reversed starvation-induced immunosuppression in mice, indicating that yet another

nutrient not considered essential may become so in special situations.[33] The more we learn about nutrition, the more complex, intricate, and highly balanced it appears.

Pain after cholecystectomy can be lessened by ipsilateral interpleural instillation of local anesthetics.[34] The same also works for certain kinds of thoractomy, but seemingly less well.[35] Is it time to try it on patients with chest injuries?

In a study from last year so good I must mention it again this year, Indeck et al[36] studied what happened to 103 patients sent out of intensive care units for diagnostic studies: mean time away, 81 minutes; serious physiological change while out of the unit occurred in 68 percent of the patients; and management was altered within 48 hours by the findings in only 24 percent.[36] These numbers sound all too believable.

TRAUMA

A retrospective study of post-traumatic deaths in the Netherlands classified 21 percent of deaths as preventable, very similar to studies in the United States.[37] The scoring of injuries to predict outcome remains an active area of research, the reported results not always being in agreement.[38–43] The Committee on Organ Injury Scaling of the American Association for the Surgery of Trauma published its initial recommendations.[44] A thoughtful analysis from San Diego suggested resuscitation in the operating room for hypotensive patients with penetrating injuries to the chest or abdomen.[45] Cardiopulmonary resuscitation for victims of blunt trauma was not successful. Clark and Demers[46] presented a well-done review of lower body pressure garments (MAST).[46] Mattox et al[47] reported on a prospective randomized study of use of MAST in Houston, with no evidence of benefit; the mortality was higher in patients who were more than 30 minutes in the field when treated with MAST. A mandatory gun sentencing law in New Jersey was followed by a decrease in deaths due to firearms.[48] Kaufmann et al[49] presented good reasons for surgeons' retaining responsibility for the resuscitation of injured children.

Injury to the brain caused half the deaths among patients reaching a level I trauma center alive.[50] This is probably a fairly typical statistic in centers caring for mostly blunt trauma. Evaluation of the cervical spine remains problematic, with a great deal of time and x-rays invested in patients without injuries. The series by Gisbert et al,[51] however, supported continued extensive radiological evaluation. Selective treatment of penetrating neck injuries was supported by the series from Memphis[52] and for selected arterial injuries by the series from USC.[53]

Myocardial contusion (usually suspected and not real) also accounts for a considerable waste of resources. Two series reaffirmed that less monitoring and shorter periods of observation are quite safe.[54,55]

The relative roles of computed tomography (CT) and peritoneal lavage in

evaluating patients with blunt abdominal injuries continued to be debated.[56–59] CT missed many intestinal injuries; lavage missed retroperitoneal injuries. The two are complementary.

A series from Maryland on hepatic injuries was unusually well analyzed and discussed.[60] Bade et al[61] reported thoughtfully from South Africa on a series of extrahepatic injuries to the biliary tree. There has been a resurgence of interest in retrohepatic caval injuries and the methods of treatment, this time prompted by some surviving patients. The series by Burch et al[62] was large and informative. In Miami, direct approaches seemed more successful than the use of shunts,[63] which were discussed by several groups.[64,65] A multicenter study of blunt splenic trauma in adults in the era of attempted preservation was very good.[66] A review of the rationale by Shaw and Print[67] was unusually well balanced. An interesting series from Brooklyn argued for intra-aortic balloon occlusion before approaching potential trouble in selected circumstances.[68] Mattox et al[69] reported on their remarkable experience with 4500 cardiovascular wounds, and a group in South Africa reported on an impressive series of carotid arterial injuries.[70]

Fackler et al[71] attacked some sacred cows regarding the treatment of high energy missile wounds, but I am afraid they miss as often as they hit, and some of what they imply is potentially dangerous. Shooting pigs at close range is a special kind of injury: pigs do not wear pants and in the laboratory there is little chance that foreign material will be dragged into the wound. At close range, the missile is still quite stable and passes smoothly through the tissues. Even Fackler's[72] historical arguments are suspect: when Napolean's surgeons, Desault and Larrey, wrote about gunshot wounds they were referring to musket fire (low energy) and had no anesthesia, blood banks, or antibiotics to expand their options. Each war of the twentieth century has duplicated at least one experience: tragic underdebridement of contaminated high energy wounds by "green" surgeons.

GASTROINTESTINAL DISEASE

What is the best way to treat achalasia of the esophagus? A prospective, randomized trial in Chile on 81 patients found better results for surgical treatment (transabdominal myotomy and modified Nissen procedure) than for nonsurgical therapy (endoscopic pneumatic dilation).[73] Some authors[74] remain unconvinced, however, pointing out that the surgical results were better than were generally reported elsewhere while the endoscopic results were poorer. A modified Toupet procedure seemed a bit better than the Nissen fundoplication for reflux in a randomized study from Sweden.[75] Evaluation of esophagectomy without thoracotomy continued to appear. In 82 patients treated for adenocarcinoma of the esophagogastric junction, the results seemed quite acceptable.[76] Wong's group[77] from Hong Kong, however, thought the oncologic results were poorer than for thoracotomy in patients treated for carcinoma of the middle or lower third of the esophagus, but the study was not controlled.