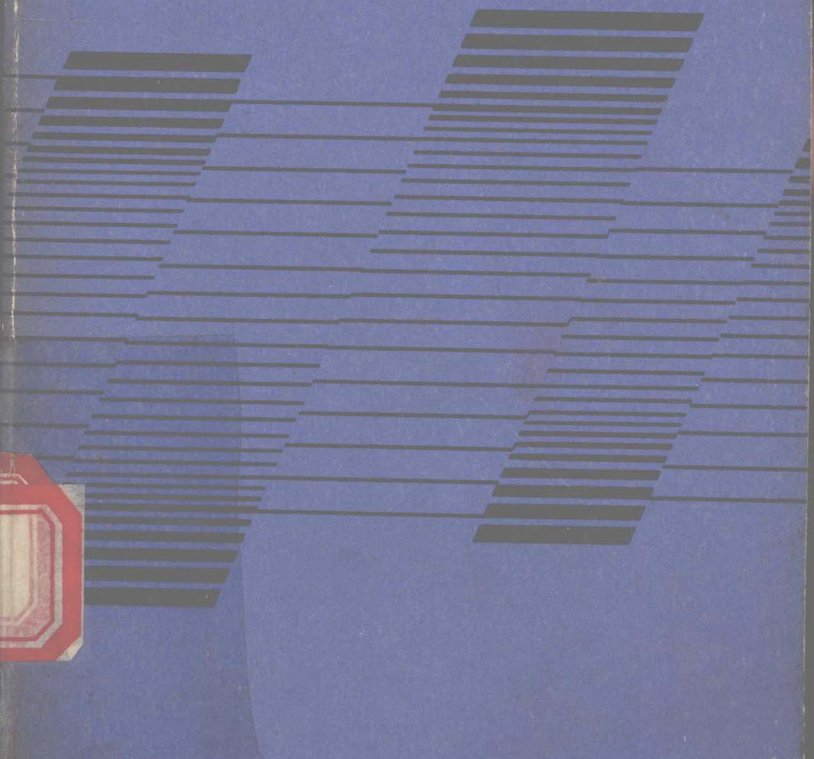
Clinical Anesthesia Procedures of the Massachusetts General Hospital



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To Richard J. Kitz, M.D., Henry Isaiah Dorr Professor and Chairman, Department of Anaesthesia, Massachusetts General Hospital, for his devoted interest in the education and well-being of his residents and for his continued support and encouragement of the contributors to this manual

Preface

This manual of anesthetic practice, written primarily by recent house staff of the Department of Anaesthesia at the Massachusetts General Hospital, is intended to be a foundation of practical knowledge for the inexperienced or incompletely trained anesthetist. The authors have, however, made the assumption that the reader has some fundamental knowledge of anesthetic drugs, management of the airway during mask anesthesia, and intubation techniques for the patient with normal anatomy.

The authors have tried to provide detailed descriptions of both common and uncommon anesthetic procedures, to develop some practical guidelines for the management of difficult situations, and to elaborate on the needs of certain specialty areas. The material in this handbook is not intended to take the place of more comprehensive texts or the anesthetic literature. Rather, it is hoped that this manual will serve as a source of easily accessible, usable information for the anesthetist about to confront an unfamiliar clinical situation. The guidelines suggested are based on current practice at the Massachusetts General Hospital (including the Boston Hospital for Women, the Massachusetts Eye and Ear Infirmary, and the Shriners Burns Institute), but the authors do not mean to deprecate other reasonable methods.

I wish to acknowledge the contribution made by numerous MGH staff members who reviewed the manuscripts and offered valuable suggestions. In this regard, I would particularly like to thank Drs. George Battit, David Cullen, Nabil Fahmy, Aaron Gissen, Nishan Goudsouzian, Richard Kitz, Laurence Krenis, Demetrios Lappas, William Latta, Jeevendra Martyn, Elliott Miller, Gerard Ostheimer (Boston Hospital for Women), Daniel Philbin, Henning Pontoppidan, Michael Rie, James Roberts, John Ryan, Robert Schneider, Sarita Walzer, and Roger Wilson.

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The indications and dosages of all drugs in this manual have been recommended in the medical literature and conform to the practices of the general medical community at the Massachusetts General Hospital. The medications described do not necessarily have specific approval by the Food and Drug Administration for use in the disease and dosages for which they are recommended. The package insert for each drug should be consulted for use and dosage as approved by the FDA. Because standards for usage change, it is advisable to keep abreast of revised recommendations, particularly those concerning new drugs.

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I. THE PREOPERATIVE VISIT

A. Every patient scheduled for surgery should be seen and evaluated by an anesthetist prior to the patient's arrival in the operating room.

1. Ideally the anesthetist who is to administer the anesthetic should perform this evaluation. It will enable the anesthetist to form an impression of the patient's mental status, emotional makeup, and general medical condition; it will establish rapport between the patient and the anesthetist and provide the patient with greater peace of mind.

2. If the interviewing anesthetist knows that he will not be present at surgery, he should so inform the patient. At the same time he should assure the patient that the attending anesthetist will be equal in competence and that all relevant information gleaned from the interview will be transmitted to him. When known, the name of the anesthetist who will actually administer the anesthetic should be communicated to the patient.

3. A clear, detailed note should be recorded in the patient's chart to help the interviewing anesthetist recall facts, to provide information to other anesthetists, to communicate to the surgical team, and to identify and justify the medical decisions made (as a matter of legal record).

B. Chart review

1. The patient's current hospital record should be read at the time of the interview to determine:

   a. Pertinent medical, surgical, and allergic histories.

   b. Results of physical examinations.

   c. Working diagnoses, both medical and surgical.

Preoperative Evaluation

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d. Surgical plans.

e. In-hospital progress.

f. Evaluations by consulting specialists.

g. Results of laboratory tests:

(1) Recent hemoglobin or hematocrit is essential.

(2) Recent ECG for patients over 40, and for younger patients whose history suggests the need.

(3) Recent chest x-ray, while always helpful, is not mandatory for young, healthy patients.

(4) A quick metabolic screen includes BUN, blood sugar, and bilirubin. A more detailed survey might add creatinine, SGOT, LDH, alkaline phosphatase, total protein (albumin and globulin), prothrombin time, partial thromboplastin time, CBC and platelets, and thyroxine.

(5) Pulmonary function tests, particularly FEV_1 and vital capacity, and arterial blood gases for patients with known or suspected lung disease.

2. The patient's old hospital record, if available, should be checked for previous anesthetic reports, principally:

a. Response to premedication drugs.

b. Agents and techniques used in previous anesthetizations.

c. Problems encountered, such as intubation difficulties, hypotension, and cardiac arrhythmias, and how these problems were treated.

d. Postoperative complications, such as need for prolonged intubation, impaired liver function, or myocardial infarction.

C. **Patient interview**

1. The anesthetist should gather the following information:

   a. Cardiac history, including symptoms of angina, dyspnea on exertion, orthopnea, paroxysmal nocturnal dyspnea, palpitations; history of prior myocardial infarction, arrhythmias, or congestive heart failure; past and current cardiac medications.

   b. History of hypertension, including duration, severity, treatment, and effectiveness of control.

   c. Pulmonary history, including symptoms of dyspnea, cough, sputum production, wheeze, hemoptysis; history of smoking, asthma, pneumonia, and tuberculosis; presence or absence of current upper respiratory infection.

   d. History of diabetes mellitus, including duration, severity, treatment, and effectiveness of control.

   e. History of renal disease.

   f. History of hepatic disease, including history of hepatitis and alcohol intake.

   g. Bleeding tendency.

   h. Medication allergies, including manifestation (rash, anaphylaxis, or side effects such as nausea).

   i. Other medical problems, medications, and "street drugs" (when suspected).

   j. Previous anesthetizations, including obstetric and dental, and the patient's perception of the experience.

   k. Family history of adverse anesthetic experience (specify).

2. A limited physical examination is performed, concentrating on the heart and lungs (which should be auscultated in all patients); the skin in the area of anticipated needle punctures, especially with regard to local or lymphatic infection; arterial pulses; and close evaluation of the patient's airway:

a. The size of the mouth and the size of the tongue relative to the mouth.

b. The presence of dentures, loose teeth, chipped teeth, extensive dental restorations, and protruding teeth.

c. The ability to open the mouth widely (normally at least 35 mm in men and 30 mm in women).

d. Neck mobility both in flexion and in extension.

e. The distance between thyroid cartilage and the mandibular mentum (i.e., is the lower jaw normal or receding?) — normally three fingerbreadths with the head in a neutral position.

f. The patency of both nasal passages (when nasal intubation is contemplated).

g. The length of the neck.

h. The position of the trachea, whether midline or deviated.

3. Counseling the patient

a. The anesthetist informs the patient of the following:

(1) The estimated time of surgery.

(2) The time, prior to surgery, after which the patient must have nothing to eat or drink.

(3) That the patient will receive premedication (specify IM or PO) and when.

(4) That the patient will be transported to the operating room at the appropriate time.

(5) That the anesthetist in the operating room will place an intravenous catheter, apply a blood pressure cuff and ECG electrodes, and insert additional monitoring lines as needed (specify to the patient).

b. The anesthetist discusses his choice of technique with the patient. He presents the relative risks to the patient regarding suitable alternative methods (e.g., spinal as opposed to general anesthesia) in that patient's particular case. After the discussion, the patient's wishes are considered, but the anesthetist should not allow himself to be pressured into giving an unsafe anesthetic solely

because of the patient's preference. Furthermore, the anesthetist should endeavor not to become antagonistic to the patient, but rather work to arrive at a mutually acceptable plan.

c. The anesthetist informs the patient that he will be attended and kept as safe as possible throughout the surgery, and that he will be taken to a recovery room or intensive care unit (ICU) after the operation is completed. The patient should be told that he will be kept free of pain during surgery, and that medication for pain will be available postoperatively. If postoperative intubation is anticipated, the patient should know that he will not be able to talk until the endotracheal tube is removed.

d. The anesthetist restricts his counseling of the patient to his areas of expertise and allows the surgeon to present opinions regarding diagnosis, prognosis, and postoperative treatment plans.

II. PREMEDICATION

A. The goals of administering analgesics, sedatives, and tranquilizers prior to surgery are to allay the patient's anxiety, alleviate pain, and facilitate a smooth induction of anesthesia with a minimum of psychic stress. It has been shown (*JAMA* 185:553, 1963) that a good preoperative visit by an anesthetist serves much the same purpose and reduces the dose requirement of these drugs.

1. The narcotic or barbiturate addict, when known, is given his respective drug in a dose adequate to prevent withdrawal from occurring during anesthesia.

2. The debilitated or elderly patient receives decreased amounts of premedicant in accordance with the severity of his illness.

B. Narcotics

1. **Morphine** generally acts as both an analgesic and a sedative. It causes little cardiac depression, although it may cause hypotension through histamine-induced vasodilatation. It acts on the medulla to depress carbon dioxide responsiveness; breathing tends to be slow and deep. Given intravenously in high doses, morphine produces muscle (including chest wall) stiffness and a worsened respiratory compliance. Other effects include pupillary constriction, occasional nausea and vomiting, and occasional constriction of the sphincter of Oddi. For this