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An Atlas of **PELVIC OPERATIONS**

By LANGDON PARSONS, M.D.

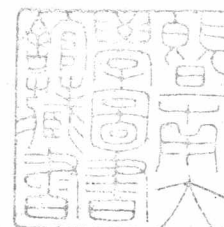
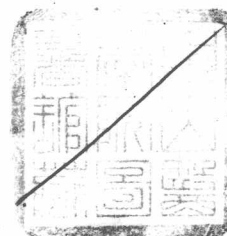
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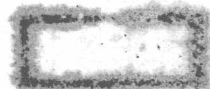
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Preface and Acknowledgments

The purpose of this Atlas is to teach the technical details of pelvic surgical procedures by means of illustrations.

The format of the book is designed to permit a surgeon to follow a detailed description of the operation by word as well as by drawings or to combine the two if he chooses.

The written material on each page applies only to the plate which accompanies it. This method of necessity restricts the amount of descriptive writing, but we hope that the drawings are in sufficient detail to be almost self-explanatory. General matters are discussed in the introduction to each section.

It is our intention that each step in the operative procedure shall have a definite reason for its description. In this manner the operation proceeds according to a plan of reasonable steps rather than as a memory exercise. Frequently in the past operative descriptions have indicated that certain dangers are inherent in a given operation, but at no point is the surgeon told how the danger may be avoided or what to do about it if it is encountered. The steps of the operative procedures recorded here are designed to keep the operator out of trouble as well as to point out the exact moment in the operation when trouble is most likely to occur.

The operations described in this Atlas do not represent the only procedures for each given situation. Rather than present a description of multiple procedures of comparable usefulness, we have selected the operative technique regarded as standard in the institutions where we work. The methods illustrated have been applied repeatedly by surgeons of varying degrees of proficiency, and have proved to be safe and effective. Complications have usually been avoided, while the morbidity and mortality have been low.

Not all pelvic operations have been described. Many textbooks continue to include surgical procedures now rarely used. Here an attempt has been made to select for the reader the operations in common use.

Indications for or against a given operative procedure may vary from year to year. An operation may be sound but the indication for its use open to question. We have made no attempt to influence the train of thought which leads to a decision as to the choice of operative procedure. However, once the surgeon has elected to perform a specific operation

this book will provide a detailed "road map" which will guide him through to a satisfactory conclusion with the greatest possible ease and safety. Since we are not writing a textbook of surgery, consideration of the physiological aspects of preoperative and postoperative management is not included.

It is our hope that the procedures outlined will be useful to surgeons interested in pelvic operations as well as to those men who limit their practice to this specialty. Inasmuch as the preoperative diagnosis of pelvic conditions may not always be accurate, and unsuspected pathology may be encountered in the pelvis at the time of laparotomy, the Atlas includes many general surgical procedures outside the field of what is usually considered gynecological surgery. It is our feeling that the surgeon operating in the pelvis should be capable of dealing with the unexpected problem. Whether or not the surgeon feels that he is capable of performing any given procedure is a matter of judgment based on conscience and experience. When the operator does not feel qualified to perform the definitive surgery required by the unexpected situation, other less formidable operations are outlined which may serve as stages for subsequent treatment.

A section on radical surgery for malignant disease of the pelvic organs is included because we wish to emphasize that this type of surgery in scope and magnitude differs markedly from the operative procedures employed for benign disease within the same organs. Operations for cancer have as their primary aim complete eradication of the malignancy. This presupposes a thorough understanding on the part of the surgeon of the life history of the particular neoplasm encountered and a working knowledge of the normal pathways of extension. To be successful both the local disease process and the regional areas to which it may spread must be eliminated. The emphasis is on cure. It is not enough to achieve a limited survival or palliation when a more extensive surgical procedure might bring about permanent salvage.

To understand thoroughly the varied ramifications of the malignant process requires years of specialized study. Such training is possible for only a few men in metropolitan treatment centers, and of necessity it cannot be a regular part of the experience of every surgeon and gynecologist. Unfortunately

malignancy does not respect the geographical distribution of these specialized hospitals. The problem involved in the management of neoplasm in the pelvis must often be solved by operators who have little specialized training in this field.

With this in mind the section on malignant disease has been added to this book in the hope that the surgeon who feels himself qualified may find the description of these procedures helpful to him in carrying out what we consider to be adequate surgery for the common pelvic neoplasms.

This book could not have been written without the encouragement and helpful assistance of our colleagues and teachers as well as those directly concerned with the technical details of its production.

We are primarily indebted to the men who instilled in us principles of surgical technique. Dr. George W. Brewster and Dr. Arthur W. Allen were a constant inspiration. To Dr. Joe V. Meigs we owe a never-ending debt of gratitude for teaching us all we know of gynecology. In the preparation of this book his help and encouragement have been unceasing.

Our colleagues and the house staff of the hospitals in which we work have been most cooperative. To the administration and staff of the Massachusetts Memorial Hospital, the Massachusetts General Hospital, the Vincent Memorial Hospital, the Massachusetts Department of Public Health Hospital for Cancer at Pondville, Massachusetts, and to the Palmer Memorial Hospital of the New England Deaconess Hospital we extend our thanks.

We would like to express our appreciation for the helpful spirit which Miss Signe Windhol exhibited in the long and tedious hours of secretarial labor.

Were it not for the unstinting enthusiasm of Miss Mildred Coddington the publication of this Atlas would have been impossible. Her friendly cooperation made the sketching in the operating room and revision of drawings a pleasure. Our admiration for her art and her personal qualities is boundless.

Finally we congratulate each other that the Atlas is at last in publication and that we remain firm friends.

LANGDON PARSONS
HOWARD ULFELDER

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SECTION I

Abdominal Operations

Considerations Preliminary to All Abdominal Surgery

Before discussing the detailed steps involved in pelvic operations, it is appropriate to review some of the general considerations that have a bearing on the ease and success with which this type of surgery may be performed.

PREOPERATIVE PREPARATION

Preoperative and postoperative care are integral components in the success of modern surgery, but the limited scope of this Atlas will not permit a detailed discussion of them. Today chemotherapy, blood and fluid replacement, electrolyte balance and intestinal deflation are all major factors in avoiding many of the unfortunate complications of the surgery of the past. In general, the surgery is in itself superior to that of past decades, but the recent advances in preparation for operation and its after-care have made surgery easier and permitted a more thoroughgoing attack on disease than was hitherto possible. This is as true of operations in the pelvis as it is of those in other areas.

In part the difficulties of pelvic surgery are in inverse ratio to the accuracy of the preoperative diagnosis. With the increasing costs of hospitalization there is a tendency to get on with the presenting pathological signs and symptoms without sufficient preliminary study or even preparation for operation. Too frequently the patient enters the hospital one afternoon, with operation scheduled for the following morning.

If the surgeon is prepared for the unexpected, his ability to cope with the problem is considerably improved. The trouble with encountering unsuspected pathology in the pelvis is the tendency to belittle the problem. If the surgeon is presented with a history of bleeding in a patient with a large abdominal tumor, the surgical procedure seems obvious. Failure to consider the possibility that the small or large bowel may be involved or kidney function impaired through encroachment of the tumor may unduly complicate the actual operation when these findings are discovered for the first time after the abdomen is opened.

Therefore, while we have important additions to our armamentarium of treatment, the increasing economic factor tends to restrict their use to dealing with complications after they have happened rather than in preventing their occurrence.

The preliminary use of a Miller-Abbott tube whenever bowel pathology is known or has a reasonable chance of being present will materially aid the surgeon and patient.

Investigation of the urinary tract for possible involvement of the bladder or ureter may modify the planned surgical attack.

Unexpected pathology or operative difficulty may result in hemorrhage beyond the expectations of the surgeon. Adequate preliminary evaluation of the blood picture is essential.

It is also important to have adequate amounts of blood available to cover unexpected blood loss. A train of unfortunate events not infrequently follows the attempt to replace blood under the stress of operative emergency.

When bowel pathology may be present, it may be well to prepare the bowel with chemotherapeutic agents in anticipation of inadvertent damage. The same factor applies to possible trauma to the urinary tract.

Inasmuch as profound alterations in the electrolyte balance may occur in the postoperative period, it is advisable to have a preliminary evaluation of the nitrogen excretion, chlorides, blood sugar, serum protein, sodium and potassium. Facilities for obtaining these determinations are not always available, but the surgeon should have such determinations if possible. The preliminary values may indicate the need for correction before operation is undertaken.

The basal metabolism in the presence of subjective symptoms may be indicated. Patients with a hypothyroid state, for example, do not tolerate morphine at all well.

The choice of anesthesia may be altered by unexpected findings revealed in a chest roentgenogram.

The electrocardiogram in the presence of minimal symptoms may serve as a base line for comparison in view of possible complications in the postoperative period.

Even in the presence of obvious palpable pathology in the pelvis, other abnormalities, organic or physiological, may be present and bear on the successful outcome of the contemplated operation.

ANESTHESIA

In general, the anesthesia should permit successful and easy access to any pathological state that may be encountered within the abdomen even though preoperative evaluation places the disease in the pelvis. The surgeon, for example, who encounters extensive diverticulitis of the sigmoid colon when the preoperative diagnosis suggested endometriosis should not be handicapped in performing a transverse colostomy because of the inadequacy of anesthesia.

Whenever a prolonged procedure is contemplated, and when there is any question of malignant disease or the diagnosis is in any way obscure, the surgeon would do well to consider gas, oxygen and ether anesthesia with an intratracheal tube as his anesthesia of choice. There may be contraindications to the use of inhalation anesthesia, but by and large the patient will be more relaxed with less risk.

For many of the combined pelvic and abdominal procedures the use of spinal anesthesia with or without supplementary pentothal will give satisfactory relaxation. If the operation is

unexpectedly prolonged through technical surgical difficulties or unsuspected pathology, the spinal anesthesia with pentothal may have to be supplemented by drugs of the curare series in order to get enough relaxation to complete the abdominal surgery and close the peritoneum without tension.

Preoperative evaluation of the patient is important. It is helpful to have the anesthetist consider the needs of the patient in relation to the contemplated operation. The history of old back injury or headache after a previous spinal anesthesia may influence the surgeon or anesthetist in the choice of inhalation anesthesia rather than spinal.

The patient may give some indication in the history of sensitivity to the common preoperative drug medications. Known sensitivity exists to both morphine and barbiturates. As it affects both the immediate operation and the subsequent postoperative course these facts should be known in anticipation. Properly administered preoperative drug therapy will aid materially the smoothest of operative procedures. For success a high degree of cooperation between surgeon and anesthetist is essential.

It seems pertinent at this point to indicate certain preliminary steps which may help to eliminate some of the common errors associated with intra-abdominal surgery for pelvic pathology.

EXAMINATION AND CURETTAGE UNDER ANESTHESIA

It is of utmost importance that all clinic or office observations should be rechecked at the time of operation. The urinary bladder must first be completely emptied by catheter. Complete inspection of the external genitalia, vagina and cervix, as well as a digital examination of the rectum and vagina, is definitely indicated. Too many abdominal explorations are performed on the basis of digital examination alone.

Description of gynecological disease and the specific indications for pelvic surgery are not within the scope of this text. In general, removal of the uterus by the abdominal route is performed for such conditions as fibromyomata, pelvic inflammatory disease, endometriosis, either external or internal, prolapse of the uterus and abnormal uterine bleeding. It is imperative, however, to keep the possibility of both malignancy and pregnancy within the uterus constantly in mind. Most of the tragedies in gynecological surgery involving removal of the uterus arise either because these entities were not suspected or because the preoperative investigation was inadequate. For example, with a history of abnormal intermenstrual spotting the cervix may reveal a focus of carcinoma lurking within the endocervix. Curettage will indicate the size and contour of the uterine cavity and will detect the vast majority of lesions within

the uterus and cervix. Curettage itself is not 100 per cent accurate, and the frozen section interpretations of the cur-rettings may be less so. It is of great importance to send the laboratory every specimen removed at curettage, however small. Should a suspicious specimen be too small to permit frozen section diagnosis, the abdominal exploration should be postponed until permanent sections can be examined. If malignancy is suspected from the history and physical findings, but pathological opinion is doubtful on the basis of frozen section, definitive treatment should await the report of the permanent pathological preparations also.

If the operator will make it an invariable rule to perform an examination under an anesthetic, together with a diagnostic curettage in every instance in which pelvic laparotomy is contemplated, many unfortunate mistakes will be avoided.

EXPLORATION OF THE UPPER ABDOMEN

After entering the peritoneal cavity and before any attack is made on the pelvic viscera, the upper abdomen should be carefully explored with the examining hand to determine co-existent pathology which may have a bearing on the immediate operation or subsequent convalescence. For example, ovarian tumors may represent metastases from the gastro-intestinal tract. Concomitant primary neoplasms can exist in both bowel and genital organs. Pre-existing gallstones may precipitate an attack of acute cholecystitis during the convalescent period from pelvic laparotomy. Knowledge of the accompanying pathology would influence the type of operation in the first instance and a more accurate diagnosis and proper therapy in the second.

MOBILIZATION OF THE UTERUS AND ADNEXA

This phase of intra-abdominal surgery is difficult to illustrate pictorially, but represents an essential preliminary maneuver for any surgical procedure in the female pelvis.

In order to secure an adequate operating field the intestine must be gently packed out of the pelvis with moist gauze. Not infrequently, however, the uterus and adnexa are fixed in the pelvis by previous surgery or inflammatory disease. In such instances the bowel may be densely adherent to the uterus, adnexa or broad ligament. It is imperative that the bowel be freed from the structures and packed out of the field before attempting to remove the uterus. The proper line of cleavage is best established by gentle gloved finger manipulation. Where the bowel loops can be grasped, separation is often possible by gently rolling the tissue between the thumb and forefinger with only occasional help from a sharp instrument such as a knife or scissors. A most useful slogan of "stay on the uterine side" should be closely followed, for it is better to leave benign disease on the attached viscera than to remove a section of small bowel or sigmoid with the specimen.

The adnexa must be freed from the posterior leaf of the broad ligament and sigmoid before any attempt is made to remove either the adnexa or the uterus, or both. Application

of a tenaculum to the fundus or a clamp on the tubal angle and ovarian ligament may be a helpful maneuver.

It is important to recognize that the fixation of tissues resulting from either endometriosis or malignancy differs materially from that encountered in pelvic inflammation from other causes. This observation has practical value. A line of cleavage can always be established between pelvic inflammatory disease involving tube and ovary and the attached viscera. For the most part, mobilization in pelvic inflammation should be begun from below upward. A suction apparatus attached and ready for use should be available in the event an abscess is entered. Whenever firm bands of tissue are encountered, they should be avoided until they can be brought under complete vision before applying clamps. The presence of adhesive bands that will not separate suggests that either vessels are present or a false cleavage plane has been established.

The invasive tendency of endometriosis differs from that of pelvic inflammation. Ovarian endometriosis invades the posterior leaf of the broad ligament and cannot be separated without rupture of the adherent chocolate cysts. Great care must be taken in this type of pathology that endometriosis may not have invaded the small bowel or sigmoid adherent to the pelvic masses.

The approach to this type of pathology is usually made from above downward rather than from below upward as in pelvic inflammation. It is extremely important to stay on the uterine side in the dissection.

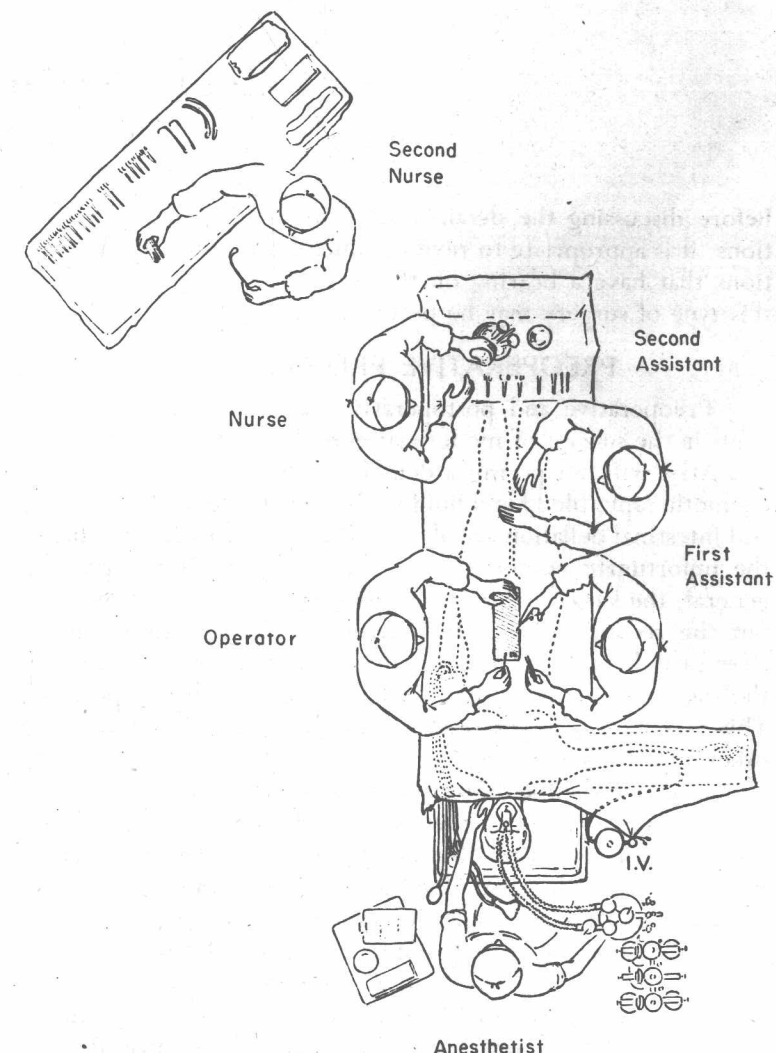
When the surgeon encounters a large malignant ovarian cyst or pathologic state involving the side wall of the pelvis, it is important to ascertain position of the ureter by exposing it at the pelvic brim through the posterior peritoneal covering.

The mobilization of the uterus and adnexa simply constitutes a preparation of an adequate operative field and represents basic preliminary steps in whatever type of pelvic surgery the surgeon elects to perform.

POSITIONING OF THE OPERATING TEAM

The diagram indicates the usual position of the surgeon and his assistants and nurses.

The *surgeon* (operator) stands left of the patient. This is the optimum position for a right-handed surgeon operating in the lower abdomen. By shifting his feet and turning his body toward the head he is in a satisfactory position to do any needful exploration or operation in the upper abdomen as well. By and large this position is maintained throughout the operative maneuvers described. Occasionally the surgeon may shift to the opposite side of the table to have better access to the lateral structures deep in the left pelvis. When this is done, it will be indicated to the reader. Such a move is made usually in cases in which the overhanging edge of the abdominal wound interferes with exposure of the pelvic wall. Moreover, separate bilateral procedures, such as extraperitoneal lymph node resection, will be made easier if the surgeon changes his position to the side on which the operation is to be done.



Diagrammatic Representation of Operating Room for Pelvic Surgery

The *anesthetist* occupies a position at the head of the patient. The anesthesia machine, if inhalation is the chosen method, will be set up to the right of the anesthetist. The worktable with his supplies and charts will be on the left. He is protected from the operating field by linen drapes over a wire hoop which attaches to the table and is adjustable either forward or backward. The wire hoop permits him to have constant direct observation of the patient's face as well as an unobstructed working field. The patient's right arm is extended on a board placed beneath the mattress to permit intravenous infusion. The upright used to support the infusion bottle is placed to the right of the anesthetist behind the board supporting the arm. The entire pathway of the intravenous fluid is under the direct vision of the anesthetist, whose duty it is to regulate the speed and quantity of the flow.

A blood pressure cuff is in place on the patient's left arm, which is tucked beneath her body with the fingers extended. The surgeon's movements are thus unencumbered. The tubes from the sphygmomanometer lead toward the patient's head,

allowing the anesthetist to make the necessary observations from behind the protective drapes.

The *nurse*, operating on the same side as the surgeon, from her position at the patient's feet is able to feed the instruments to him from a Mayo stand placed over the foot of the table. The main instrument table is on her left. A *second nurse*, standing in front of the instrument table, anticipates the nurse's need for supplies not available on the Mayo stand, such as suture material, sponges or infrequently used instruments. If only one nurse is scrubbed, the larger instrument table is so placed that from her position to the left of the surgeon she may supply her own needs from it.

The *first assistant* stands directly opposite the surgeon just below the board carrying the patient's extended arm. He should be cautioned not to hyperextend the patient's shoulder by pushing too firmly against the board in his zeal to provide more effective assistance.

The *second assistant*, if available, usually takes his place to the right of the first assistant opposite the nurse. His job is to aid in exposure by retraction as directed.

Consistently throughout this Atlas the drawings have been made from the position which offers the most unobstructed view of the field, usually just behind or beside the surgeon. Since the operator stands on the left side of the table, in most cases the reader may assume that the patient's feet are toward the top of the page. A real effort has been made in all plates (except for the insets and close-ups) to keep the relationships accurate on a scale approximately two-thirds of normal size.

POSTOPERATIVE MANAGEMENT

This important phase of pelvic surgery strives for anatomic healing and physiological recovery in the shortest possible time and with minimum discomfort. Every decision made and every order written in the postoperative period must take these factors into account, perhaps favoring one at the expense of another in individual cases.

The orders which accompany the patient as she leaves the operating room should be concise and specific, avoiding the routine in favor of the individual need. Recording of the vital signs is essential and must be maintained throughout the recovery period. Periodic registering of pulse, respiration and blood pressure is also important during the period of returning consciousness after anesthesia. The patient should

be constantly observed during this time, preferably in a special room or ward. She should be turned often enough to give each lung a chance to expand. The order sheet must include specific orders for administration of an opiate for relief of pain and discomfort.

Blood and fluid replacement are based on the calculated need. Both the volume and the electrolyte content will vary with circumstances. In general, a total fluid intake of approximately 2000 cc. daily should be maintained. Such quantities often cannot be taken by mouth in the immediate postoperative period, and intravenous supplement will be necessary. The actual amount, rate of administration and the time they are to be given should be clearly stated in the postoperative orders.

After recovery from anesthesia a different set of problems arises. Recordings of the pulse, temperature and respirations are continued, and the patient will need further opiates for pain and discomfort. A change of drug may be indicated if nausea and vomiting persist. The blood pressure readings are recorded as the individual case dictates.

Dysfunction of the urinary bladder after pelvic laparotomy is common but not routine. Although a variety of plans for management are in vogue, the basic precept should be the avoidance of overdistention; even one such episode may stretch the bladder to such an extent that the faculty of complete emptying is not recovered for days. An order for catheterization should be written to cover the immediate postoperative situation. When bladder difficulty can be expected from the kind of operation performed, an indwelling catheter may be inserted at the conclusion of the operation. Orders should then be left to cover the management of the catheter. Small prophylactic doses of nontoxic chemotherapeutic agents may be advisable if repeated catheterizations have been necessary or the nature of the surgery suggests bladder infection.

Ileus may be expected for one or two days after operation, and it will be advisable to restrict the intake by mouth to clear fluids in small amounts until normal peristalsis has been re-established. At times the ileus is severe enough to produce gastric dilatation. Simple gastric lavage may bring much relief. In severe cases a Levin tube in the stomach or a Miller-Abbot tube in the small intestine may be indicated. The large bowel is usually less prompt than the small intestine in its recovery of tone, but this delay is rarely the cause for serious difficulty. Relief by enemas should be given with due regard to the

Considerations Preliminary to All Abdominal Surgery

immediate findings and the type of operation performed. They should not be given purely as a routine.

With a strong wound closure early ambulation is possible and should be encouraged as a means of minimizing postoperative tissue wasting. It may have some bearing on reducing the incidence of postoperative pulmonary emboli. To this end it is better to have the patient walk to the point of tolerance than to sit up in a chair for protracted periods.

Complications are infrequent, but should be anticipated and forestalled as far as possible. In general, they will develop least often when surgery is gentle and hemostasis is complete and when a happy balance between activity and comfort is maintained during the recovery period. Every available adjunct which has demonstrated its usefulness during convalescence should be understood and used for proper indications. This applies particularly to chemotherapeutic agents. The surgeon would do well to question exactly what he hopes to accomplish by any agent he uses. Routine use of any one or combination of drugs on the theory that they probably will not cause any harm and may do some good should be condemned.

Postoperative pain and discomfort vary enormously in different patients. The surgeon should therefore not fall back on standardized orders for opiates. Some patients may require more, some less, medication for discomfort based on similar cause. The wound itself is most painful immediately after the operation and requires an opiate for relief. Within a day, however, physical comfort seems to improve with moderate activity, and it may be wise to change to medications with less depressant effects. As the convalescence progresses, a great variety of causes for discomfort may develop, and each should be treated in its own appropriate fashion to try to eliminate the cause as well as to stifle the pain.

Intangible factors play a role in the recovery phase after surgery. Most people abhor illness and disability and are anxious to return to the security of their daily routine. All are apprehensive to a greater or less degree, and attentiveness and sympathy on the part of the physician are very much in order. The same attitude will help sustain the patient through the trials of convalescence. The doctor who is wise and sincere cannot consider his job done until the patient is restored to full activity: he must be ready with explanations and advice at any point along the path to this goal. Each patient must be regarded as an individual problem.

TOTAL ABDOMINAL HYSTERECTOMY

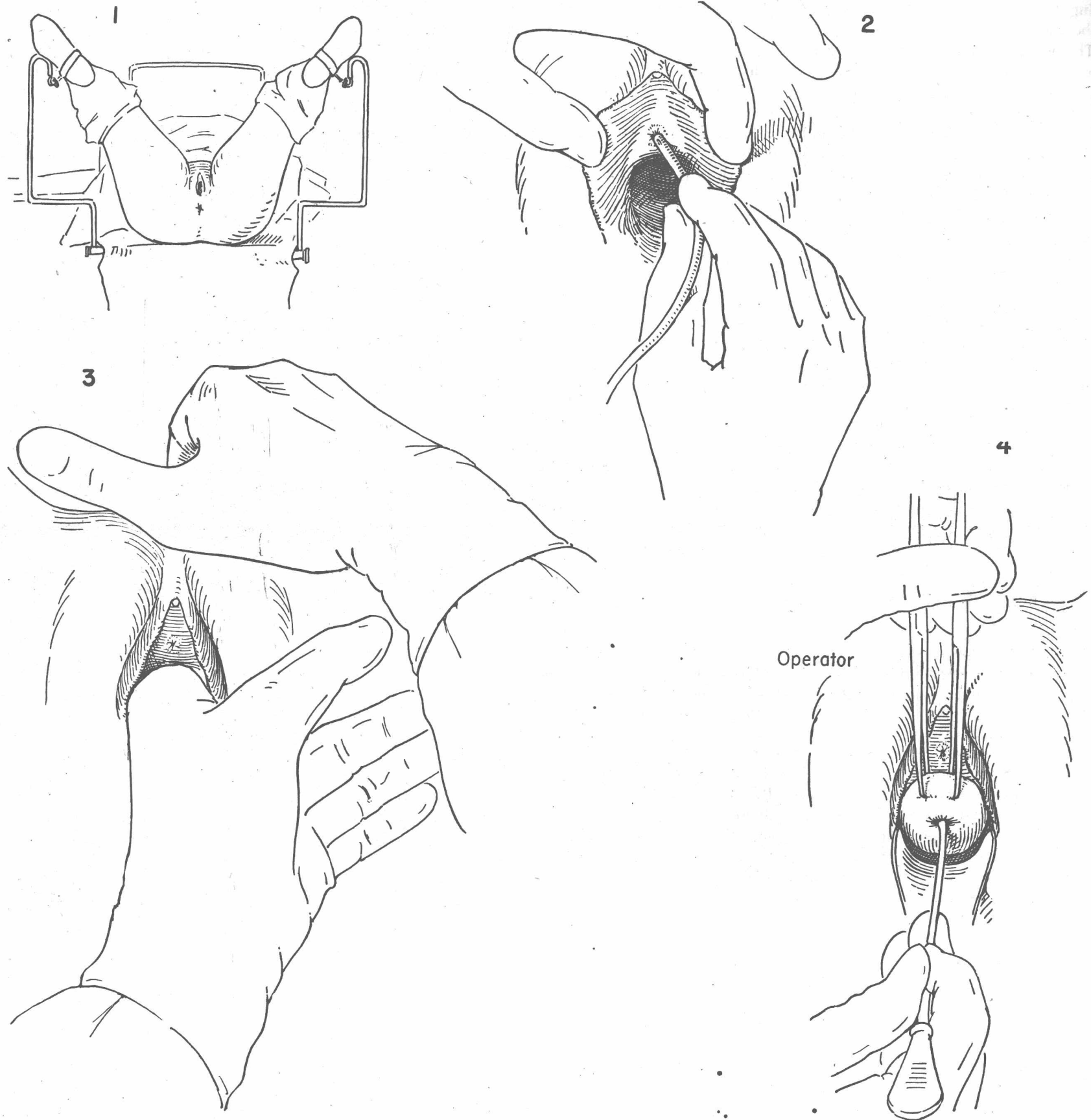
In this first series of sixteen plates the authors have chosen to carry the reader through an entire operation from the preliminary phases to the completed closure. As in every pelvic laparotomy, a preliminary examination and curettage must precede the abdominal surgery. The reasons for this maneuver are many: (1) The previous pelvic findings should be checked. (2) The bladder is emptied. The technical steps of abdominal hysterectomy are simplified if the bladder is collapsed. (3) The cervix is inspected and the uterine cavity and endometrial and cervical canals are evaluated as regards unsuspected pathology. The decision to leave or remove the adnexa may depend on the findings at curettage. Performed as a routine step whenever hysterectomy is contemplated, the maneuver avoids the pitfall of discovering unsuspected pathology after the uterus is removed.

FIGURE 1. The patient is placed in the lithotomy position. Note the wide-angled stirrups which permit the legs to lie easily without pressure on the medial calf. The patient's buttocks present at the table's edge. In this position the perineum is prepared with whatever anti-septic agent the surgeon elects to use.

FIGURE 2. The lips of the labia are separated with the thumb and finger of the left hand, exposing the urethra. A lubricated catheter is inserted into the urethra and the bladder emptied. Complete evacuation is ensured by pressure of the left hand on the abdominal wall above the symphysis.

FIGURE 3. A careful vaginal examination is carried out. The complete relaxation under anesthesia may confirm, enhance or deny the previous observations.

FIGURE 4. The gross appearance of the cervix is evaluated. Any suspicious area should be biopsied. Two tenacula are placed on the anterior lip of the cervix. Traction is applied. Elevation and traction on the tenacula exposes the cervical os. A long probe is gently inserted in the cervical canal. This gives some indication of the depth of the cavity. Undue pressure on the probe may result in perforation of the uterus. This is particularly true of the small atrophic uterus in the older woman. Care must be exercised.



This description of curettage is in abbreviated form. For full details the reader is referred to the section on Vaginal Procedures.

FIGURE 5. The depth of the cavity has been determined by the probe. The graduated type of Hank dilator is now introduced into the cervical canal. The surgeon holds the tenacula himself in his left hand in order to increase his sense of touch. This cannot be done if the assistant holds them. The cervix is placed on traction and elevated, and the cervical os exposed. The dilator, held gently between thumb and forefinger, is then inserted into the cervical canal. The smallest of the series of dilators is followed serially by those of increasing diameter. This maneuver should be a gradual stretching of the cervical musculature. Avoid a too forceful, plunger-like action in order to minimize the danger of pushing endometrial content through the tubes into the peritoneal cavity.

FIGURE 6. Fine-meshed gauze or rubber is inserted into the vagina beneath the cervix to aid in the collection of the uterine contents. The use of fine-meshed gauze or rubber prevents the curettings from becoming enmeshed and lost in the interstices of the usual rough gauze. The endometrium is then thoroughly curetted unless grossly malignant material is obtained. Particular attention should be given to the cornua of the uterus. This area is the "blind spot" in any curettage. The examining finger should palpate the curettings. Curettings that break up under the finger should be regarded as suspicious of malignancy. Save every piece of material for pathological examination, however small.

FIGURE 7. Inasmuch as the curette may fail to dislodge a uterine polyp suspended by a stalk and lying free in the cavity, another instrument is used to explore the cavity.

INSET A. The common duct stone searcher used to explore the endometrial cavity after curettage.

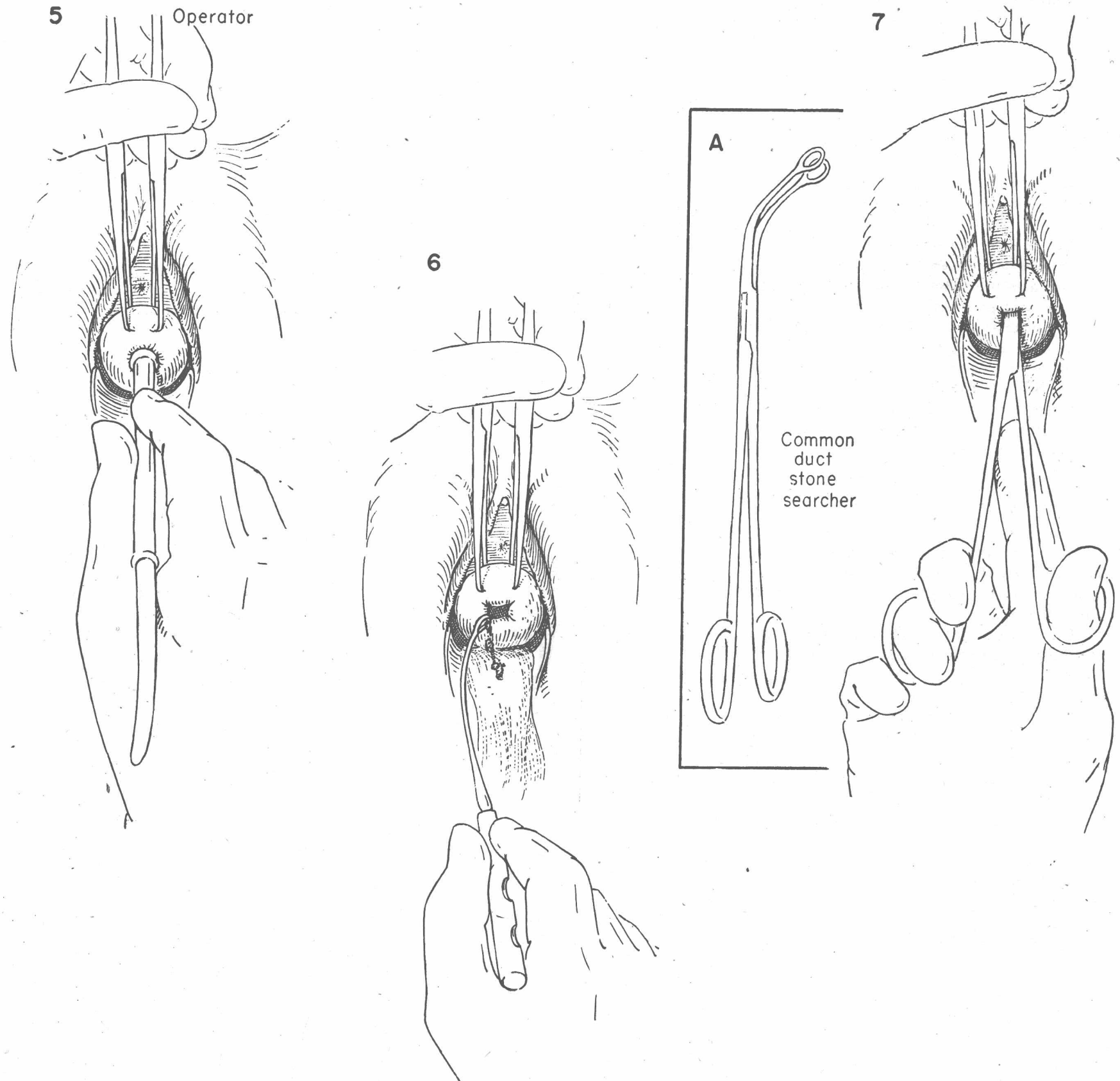


FIGURE 8. Proper positioning of the patient on the table is important to the surgeon and anesthetist during operation and to the patient in her convalescence.

The patient is portrayed in Trendelenburg position. The degree of depression of the head of the table should allow the intestines to fall back out of the pelvis with the minimal amount of packing. Extremes place too much demand on the anesthetist.

The feet are tied by a long, wide-tailed cotton strap which passes around the ankle to fix to the crossbar beneath the foot of the table. This permits less strain on the shoulder brace and minimizes the danger of brachial stretching and subsequent paralysis.

The main trunk of the body is supported by a straight table. Angulation, either in extension or flexion, maintained during a long operation may produce troublesome backache later.

The foot piece is broken at the level of the popliteal space. An improper break may produce abnormal pressure on the calf. The right arm is extended on a flat board passed beneath the mattress to permit intravenous infusion. The surgeon operating from the left side of the table is unencumbered. Care must be taken that the shoulder is not abducted excessively. An adjustable frame protects the anesthetist from the operative field, but gives him ample room at the head of the table.

The surgeon stands to the left of the patient with the first assistant directly opposite.

INSET A. After proper draping, the paramedian incision begins at the symphysis, passing upward to curve slightly to the left if necessary to go above the umbilicus.

FIGURE 9. The incision extends through the skin and fat to the fascial level.

FIGURE 10. Individual bleeding vessels are clamped by the assistant as the incision is made.

FIGURE 11. The clamped vessels are ligated with fine silk or cotton.

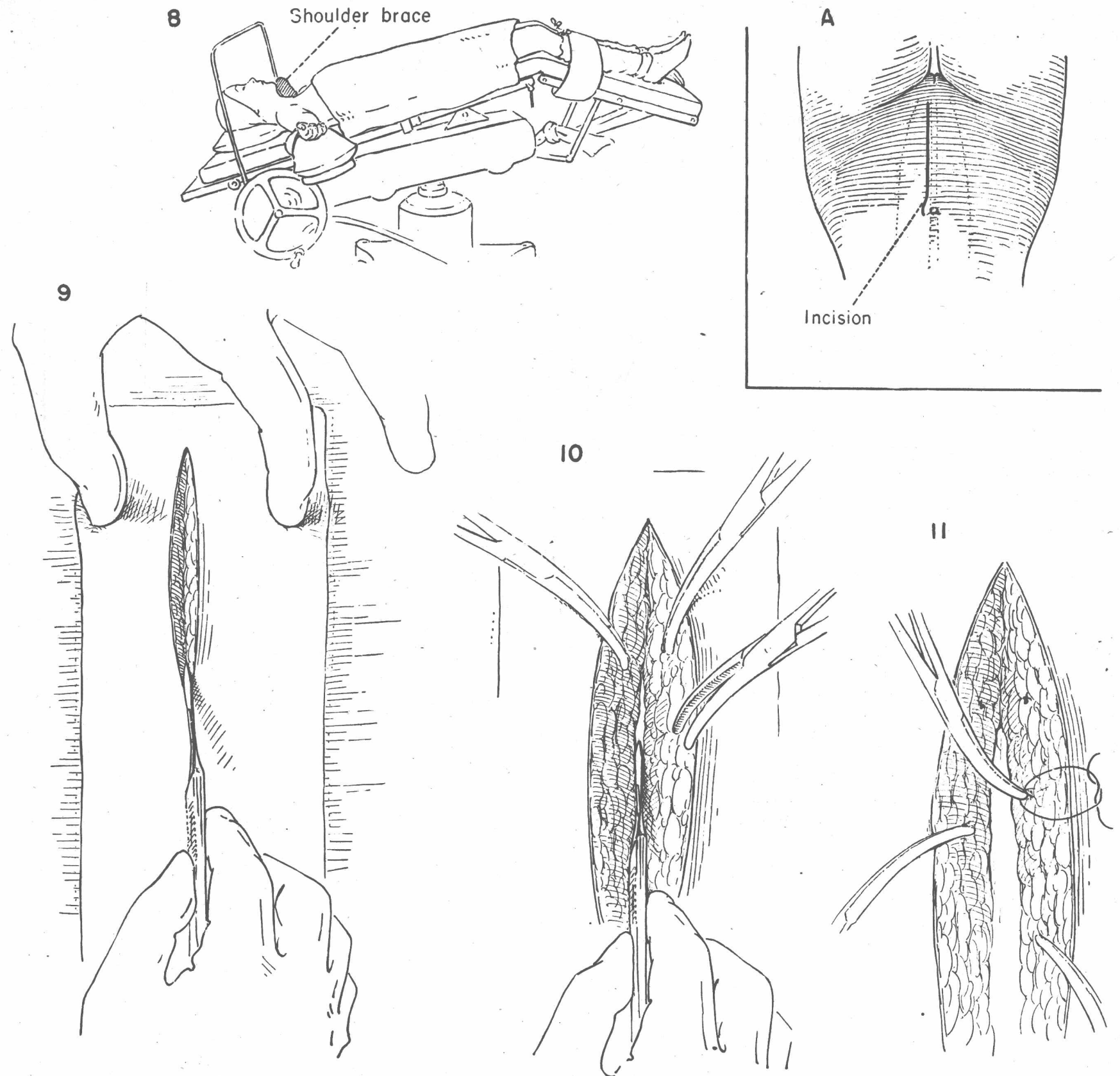


FIGURE 12. Towels have been applied to the incised skin edges and held in place by clips. The operative field is thus protected from the surrounding skin.

The surgeon and assistant apply counter-traction on the incised wound to expose the underlying fascia. An incision is made in the fascia slightly to the left of the midline, beginning at the symphysis and passing upward toward the umbilicus. The underlying rectus muscle is exposed.

FIGURE 13. The assistant applies clamps to the cut edge of fascia on his side. The clamps are placed on traction, and the surgeon retracts the muscle with his left hand to dissect the muscle from its bed and expose the peritoneum lying beneath. Individual vessels are ligated.

FIGURE 14. At the lower end of the wound the pyramidalis crosses the field obliquely. This muscle is freed from its bed without dividing it. During closure the pyramidalis will lie obliquely across the rectus, thereby strengthening the lower abdominal wall.

FIGURE 15. This dissection exposes the vessels at the midportion of the muscle which give troublesome bleeding when divided. These vessels should be identified, clamped and ligated with silk or cotton.

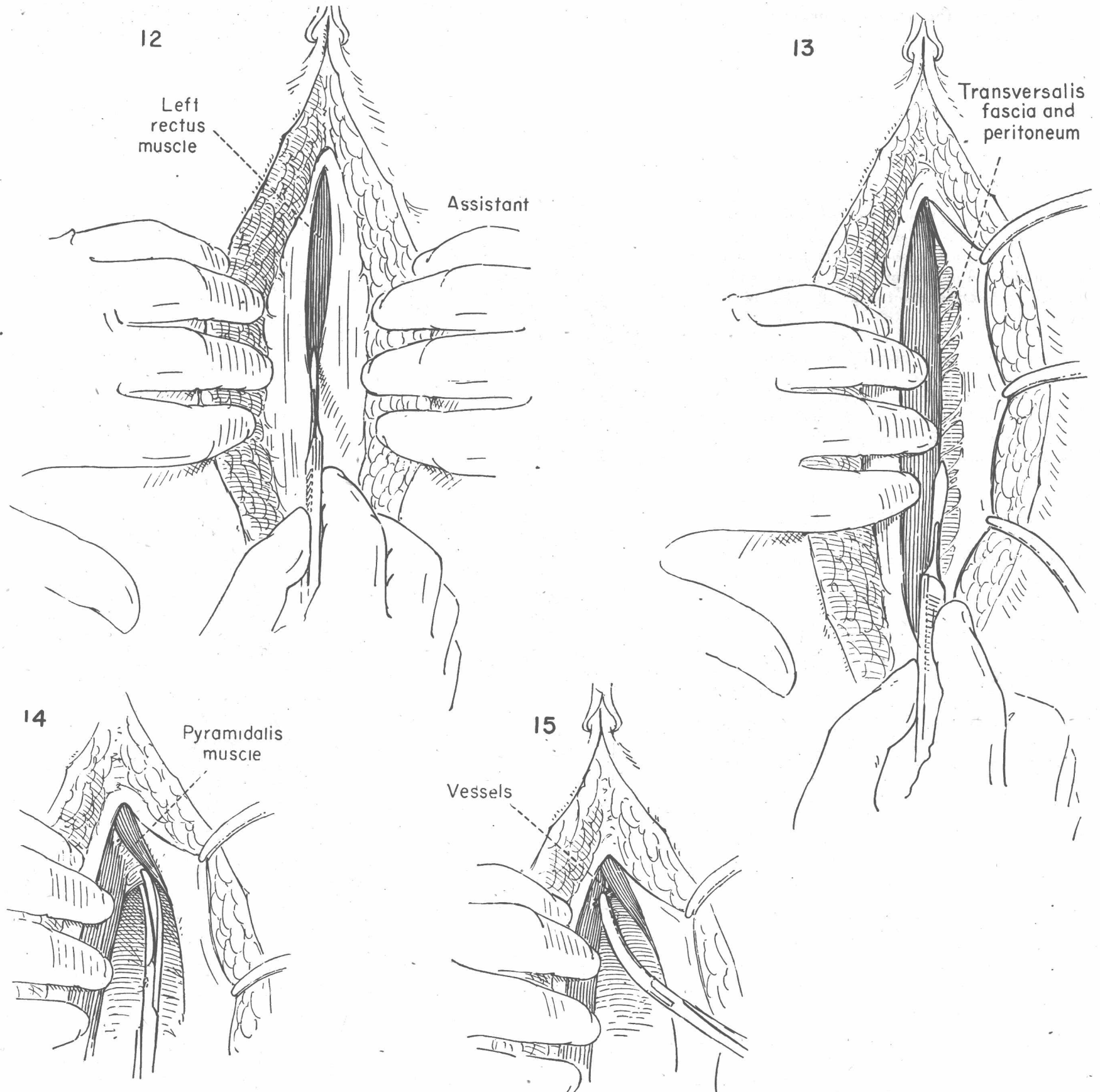


FIGURE 16. The left rectus muscle is retracted laterally. The peritoneum presents through the whole extent of the wound. The surgeon and assistant grasp the peritoneum opposite one another with toothed forceps. The use of Kelly or Kocher clamps for this maneuver is to be condemned. Extreme care must be taken that bowel is not included in the forceps. Bowel may be adherent to the peritoneum. If there is any question, select another spot to enter the abdominal cavity. Should the peritoneum be taut because of incomplete anesthesia, wait until complete relaxation is acquired. The peritoneum is then elevated by forceps and an incision made through its full thickness to enter the abdominal cavity.

FIGURE 17. The opening is widened by lateral traction of the tissue forceps. After assuring himself that there is no bowel adherent to the peritoneum, the surgeon applies a Kelly clamp to the cut edge. The assistant carries out the same maneuver and clamps the opposite side.

FIGURE 18. The scalpel is now abandoned for curved scissors. After proper inspection of the under surface of the peritoneum the incision is enlarged.

FIGURE 19. The surgeon then introduces the second and third fingers of the left hand into the opening of the peritoneum, extending them in the direction of the symphysis. This step protects the bowel from inadvertent damage as the incision is enlarged. The extent of the incision downward is limited by the proximity of the bladder. The first observation of bleeding from the cut edge as the incision approaches the symphysis should give warning of the region of the bladder.

FIGURE 20. The same maneuver is carried out in an upward direction away from the symphysis.

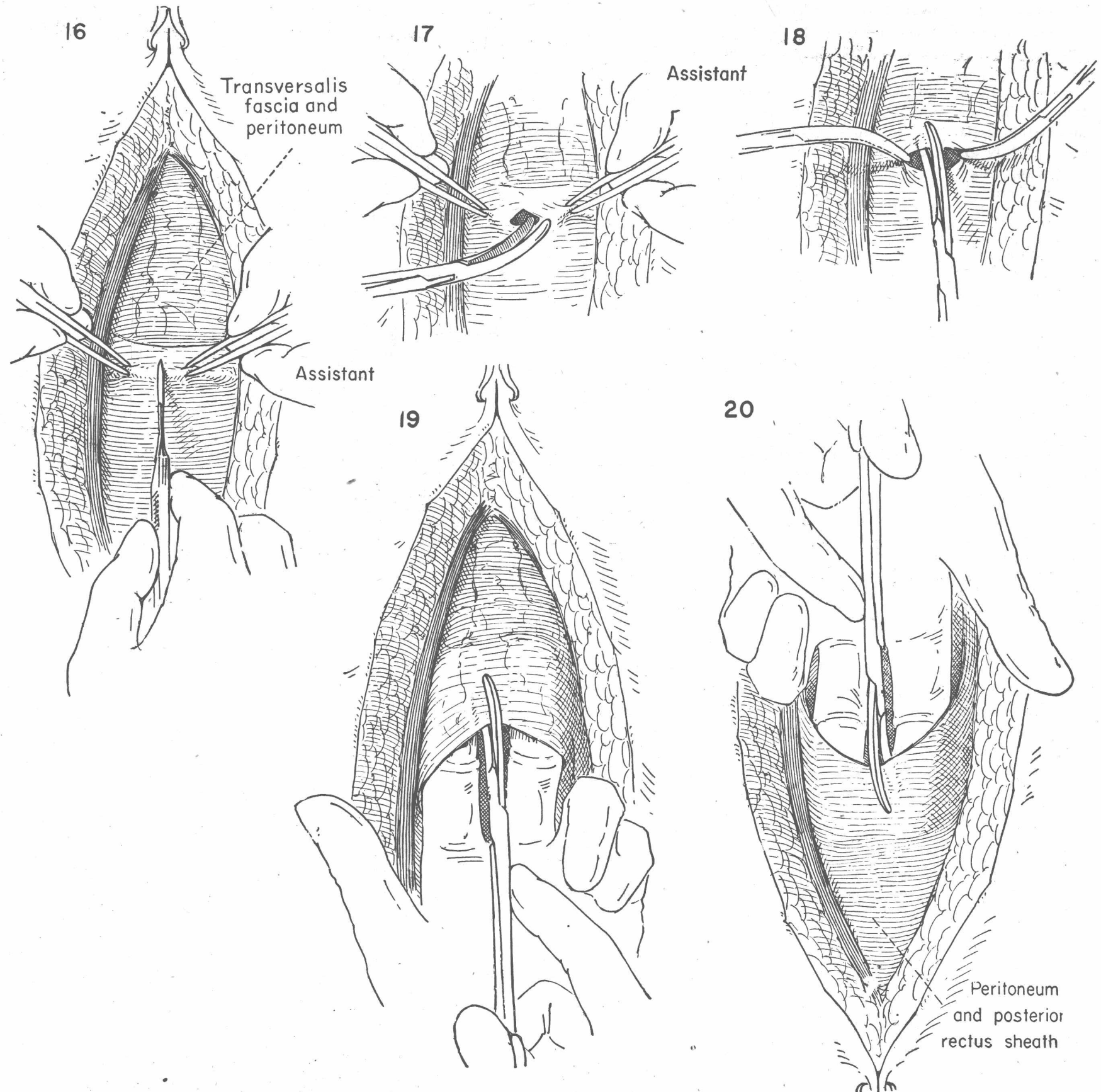


FIGURE 21 AND INSET A. Though the surgeon is operating primarily for pelvic pathology, it is, nevertheless, his obligation to explore the remainder of the abdominal cavity distant to his immediate operative field. Metastases to the liver, unsuspected malignancy of the stomach, small bowel or colon, or extension of malignancy to involve aortic nodes may influence the surgeon in his choice for or against a planned pelvic procedure. The presence of silent gallstones may serve to explain a postoperative attack of right upper quadrant pain or the onset of jaundice in the postoperative period. Not to know of the presence of coexistent pathology may trap the surgeon into performing an inadequate or ill-advised pelvic operation. The time to explore comes with the entrance into the peritoneal cavity. This maneuver is too often neglected by gynecologists concentrating on their chosen field of surgery.

FIGURE 22. Before any attempt is made to operate on the uterus or adnexa the entire operative field must be cleared of adherent bowel or omentum. The adhesion may be the result of previous operative intervention or existing pelvic pathology such as inflammatory disease or endometriosis. Once freed, the intestine is then gently packed out of the pelvis with large, moist sponges or packs.

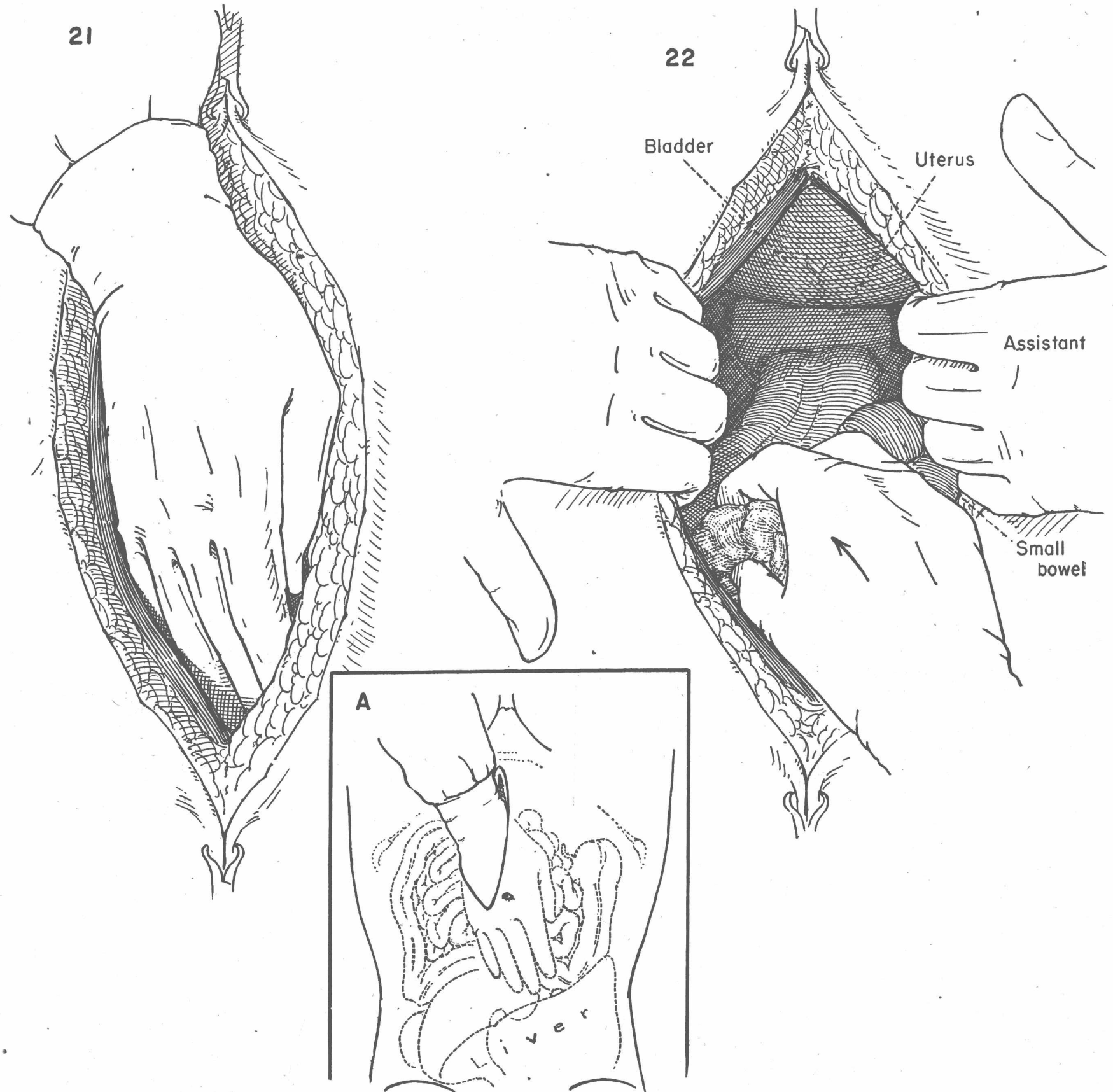


FIGURE 23. With the operative field completely cleared of bowel, the adnexa lying free, and the small bowel packed out of the pelvis, the wound edges are then protected by moist gauze pads. The self-retaining retractor is then introduced. In general, we have elected to avoid use of the fixed lower retracting blade, preferring instead the more mobile type of Deaver retractor. It is our custom, therefore, to insert the Balfour retractor with the crossbar toward the patient's head. In applying the self-retaining retractor, be sure that the blades do not compress the cecum, sigmoid or small bowel.

FIGURE 24. The secret of all surgery involving the uterus or adnexa is continued traction maintained throughout the operation. Bleeding is controlled and tissue planes maintain their proper relationships as a result of constant traction on the uterus. Injuries to the bladder and ureter are less likely to occur. The bladder reflexion in relation to the cervix and vagina is made apparent. The course of the ureter is less tortuous when the structures are placed on stretch.

When there is no question of malignancy of the endometrium on history, checked by preliminary curettage, the surgeon applies a tenaculum to the uterine fundus. The bladder is reflected by the Deaver retractor. The uterus is steadied by the thumb and forefinger of the left hand while the tenaculum is applied with the right. Enough tissue is incorporated in the clamp to prevent it from pulling out of the muscle and causing troublesome and unnecessary bleeding.

INSET A. When malignancy of the endometrium is suspected or confirmed, it is unwise to traumatize the fundus with the tenaculum. As a substitute, a Kelly clamp is placed across the broad ligament close to the uterine body. This clamp includes the round and ovarian ligaments as well as the tube. In addition to avoiding trauma to the fundus, any leakage from the endometrium through the tube is prevented. The peritoneal cavity is protected from accidental seeding in this manner.

INSET B. The broad ligament clamps are applied to both sides, and constant traction is maintained in this fashion in lieu of the uterine tenaculum.

