

# *Illustrated Guide for Theatre Nurses*

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## FOREWORD

For all standardized techniques in the operating theatre there is a right way and a wrong way. The young would-be surgeon has to learn such elements of his craft as the tying of knots, the proper use of common surgical instruments, the selection of suture materials and the use of various drainage tubes. In precisely the same way a nurse starting her surgical training has to learn that to break a tube of catgut, to thread a needle or to hand a knife to a surgeon must be done correctly. To adopt a uniform technique for such procedures as these, repeated many times during a single operation, must necessarily lead to the development of a smooth, rapid, unobtrusive technique, and in each case the most effective method has been worked out by trial and error over the years.

The best way, of course, for a nurse to learn how to perform correctly all her many duties in the operating theatre is to study under the care of an experienced theatre sister, and the training of student nurses forms a very important part of a theatre sister's work. There is, however, a limit to what can be done in the way of practical instruction and a nurse in doubt about a certain procedure cannot in every case run to sister for a demonstration. Some book-work is therefore a necessary supplement to practical instruction. Nevertheless, theatre-craft is best learnt visually and a written text is a poor alternative to watching the correct performance of any technique. This book appears to me an admirable one for its appeal is entirely visual. Instead of a conventional text enlivened by an occasional illustration, the various procedures have each been described in a series of photographs with a very limited explanatory text. Nurses and medical students will, I think, find this a delightful book to study and one which will take all the hard work out of the necessary acquisition of a good theatre technique.

RODNEY SMITH, M.S., F.R.C.S.

*September, 1961*  
*London*

## INTRODUCTION

At first sight this book will appear to be a series of photographs showing how the nurse should carry out her duties in the operating theatre, but a more critical eye will soon discover that it is a live demonstration of the basic principles which underlie all modern operating theatre technique. The text has been compiled with care and the accompanying illustrations tell a story which the nurse unaccustomed to theatre work will recall when it is required. The photographs have been carefully prepared and a close study of each one will repay the novice, and the experienced alike. The theme of the book need not be emphasized—accuracy, dexterity, confidence, these are the essentials of theatre nursing. This book does not tritely plead for these qualities but subtly it shows how to make use of them. It should prove an invaluable guide for student nurses and for those who teach them; also for theatre technicians and medical students. My only query is reflective—why after so many years of book publishing has not this been done before?

M. B. POWELL, C.B.E.

*Matron, St. George's Hospital, London*

*September, 1961*

*London*

## Authors' Introductory Remarks

We believe that people learn more easily from pictures than from a written text; therefore, this is a picture book which started life as a series of mounted photographs used for teaching. There are many books describing theatre techniques but the meticulous descriptions tend to defeat their object. A student faced with paragraphs of text becomes discouraged, often loses sight of the principle involved and is seldom persuaded to translate words into action. In books such as these the text is all important and the illustrations merely emphasize certain passages; here the procedure is reversed. These photographs speak for themselves and need a minimum of text.

This book is not a comprehensive study of theatre technique; there are no sets of instruments illustrated or operations described. Neither text nor photographs can replace practical demonstrations in the theatre but the visual impact of photographs can emphasize the many, apparently trivial, things which if improperly done can even cause harm. The principles underlying these procedures are universally accepted, though in practice there may be minor variations in detail. In each case a correct, safe and simple method is illustrated but this does not imply that it is the only method. In many sections emphasis has deliberately been made on the more common mistakes.

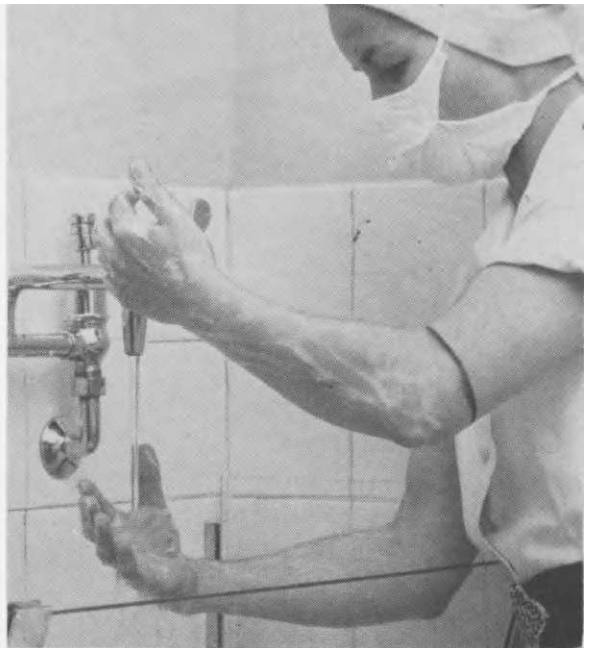
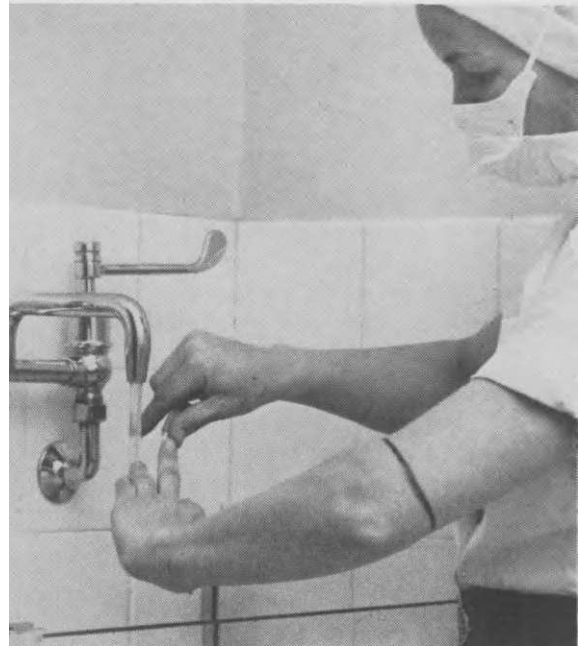
This book has been produced to help student nurses and medical students but the established theatre staff may well learn to teach from it.

We would like to thank Miss M. B. Powell, C.B.E., Matron, St. George's Hospital, and P. H. Constable, Esq., O.B.E., Secretary to the Board of Governors, for their encouragement and support; and also Miss Cecily Collier for her enthusiastic help, for her criticism which was always constructive, and for being our guinea-pig.

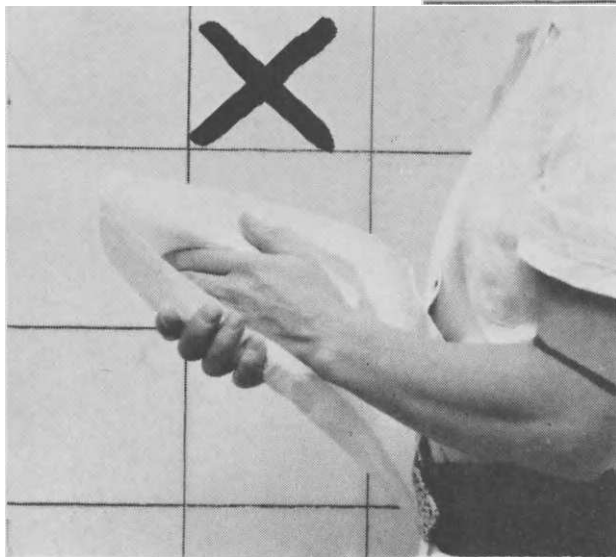
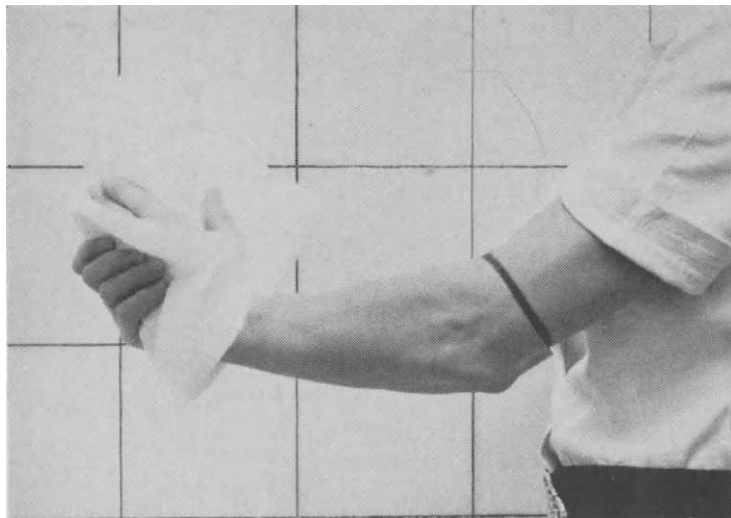
# Scrubbing up

*Skin cannot be sterilized, but surface bacteria must be reduced by thorough cleaning to help prevent wound infection.*

1. Adjust cap and mask comfortably. Clean nails under running water. Wet forearms as well as hands (note black line on upper arm indicating limit of area to be cleaned).
2. Use antiseptic soap solution. Scrub the fingernails of each hand with a sterilized brush.
3. Soap hands and forearms thoroughly without using a brush, rubbing the soap in for at least a minute. Rinse with hands higher than elbows at all times.

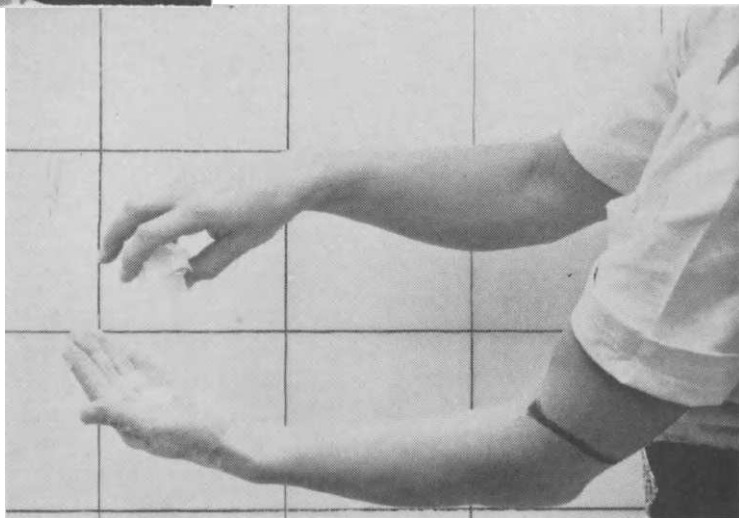


Use two sterilized towels. With each, dry from fingers to elbow and discard.



Towel contaminated against dress.

Powder hands thoroughly before putting on gown.



# Gowning

*Hands are clean but not sterile, therefore they must touch only the inner surface of the sterile gown. To facilitate this the gown is folded inside out with the collar accessible.*

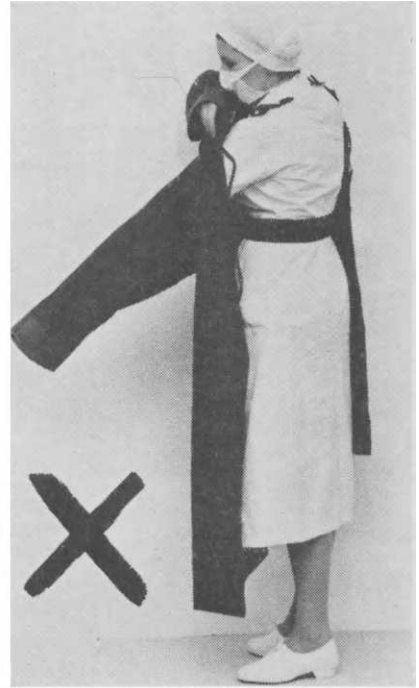
1. Take folded gown.
2. Hold gown by collar, let it unfold well away from body, armholes towards you.
3. Shake gown open gently. Put left hand into sleeve.
4. Put right hand into sleeve with arm at shoulder height. Now you need the help of a nurse.







Allow unscrubbed nurse to pull gown over shoulders, holding inside only, and to fasten all back tapes.



Sleeve contaminated by mask, hand by dress.



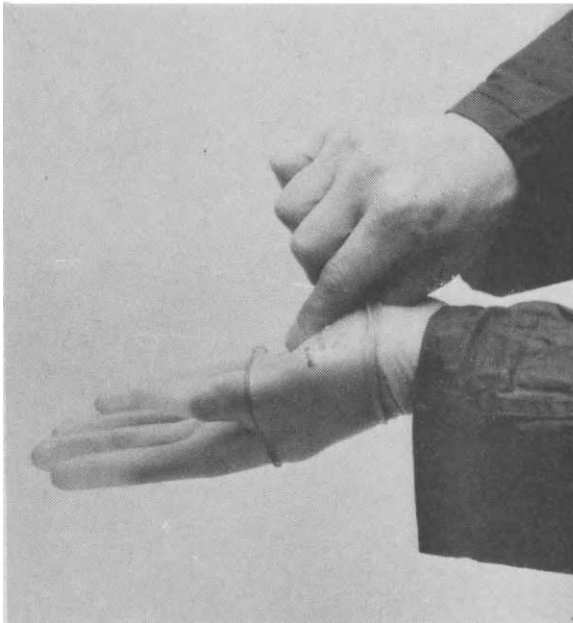
Take waist tapes at full extent of arm while leaning slightly forward and hold them out. Unscrubbed nurse takes ends of tapes and ties them.



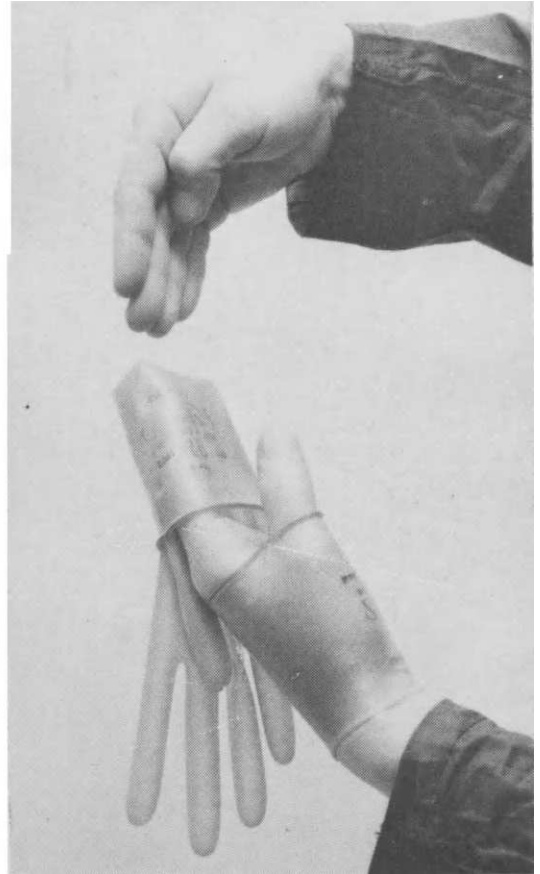
Front of gown contaminated by both nurses.

# Gloving

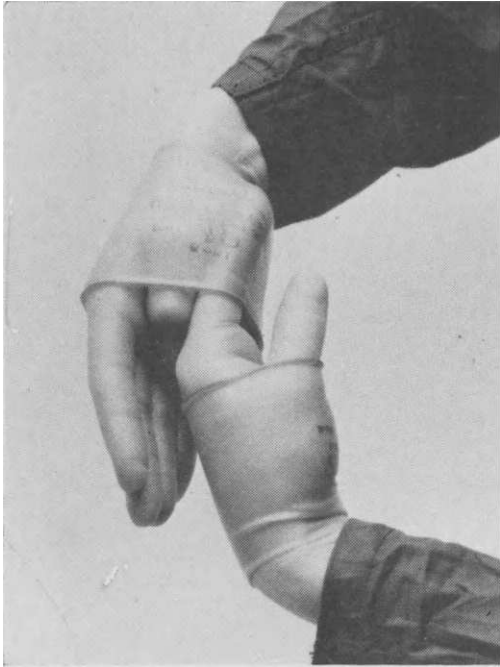
*Hands are clean, not sterile, therefore they must touch only the inner surface of the sterile gloves. To facilitate this gloves must be packed powdered and with a cuff turned back.*



Pull on left glove by grasping turned back cuff.



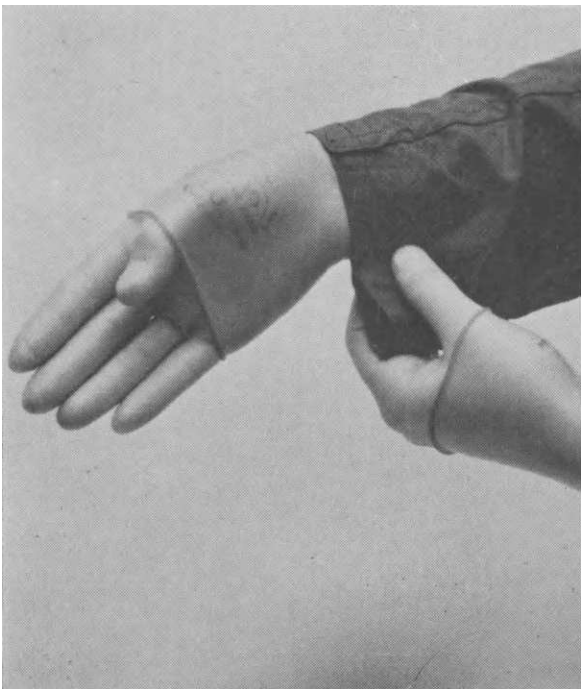
Pick up right glove by putting gloved fingers of left hand under cuff.



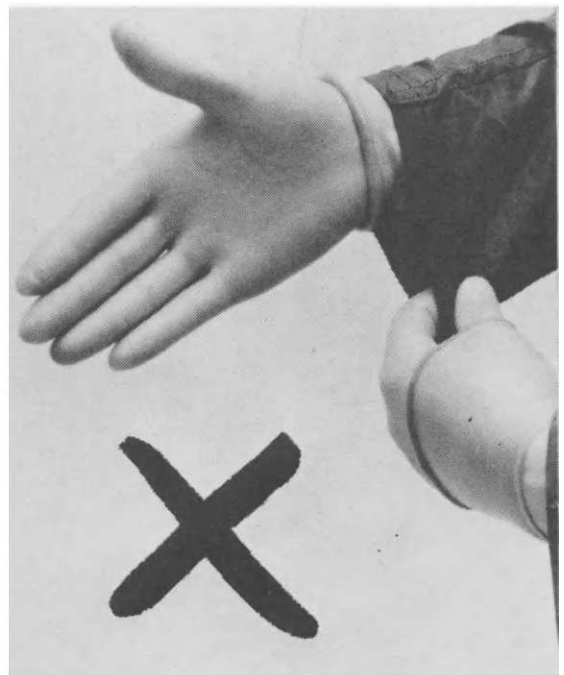
Insert right hand.



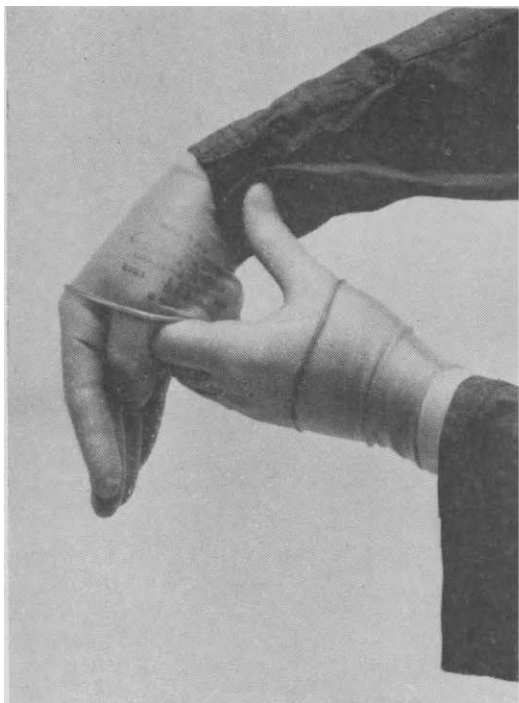
Second glove cannot be put on as first one because the left thumb becomes contaminated.



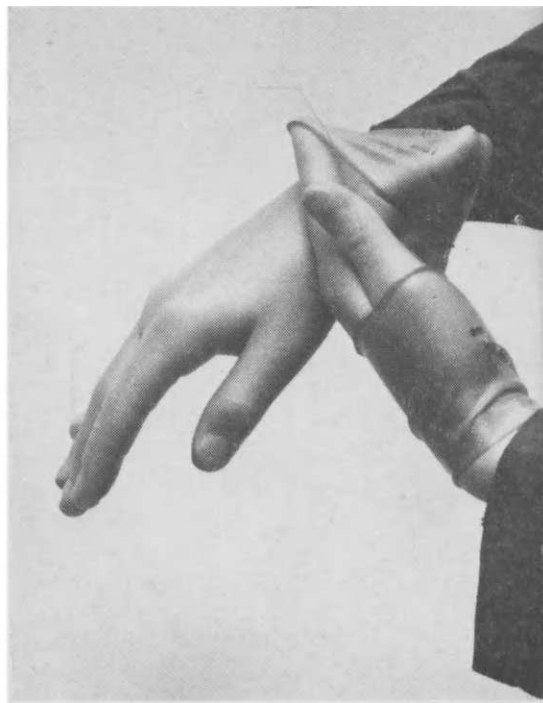
Keep right thumb across palm of hand. Grasp outside of sleeve and fold tightly round wrist.



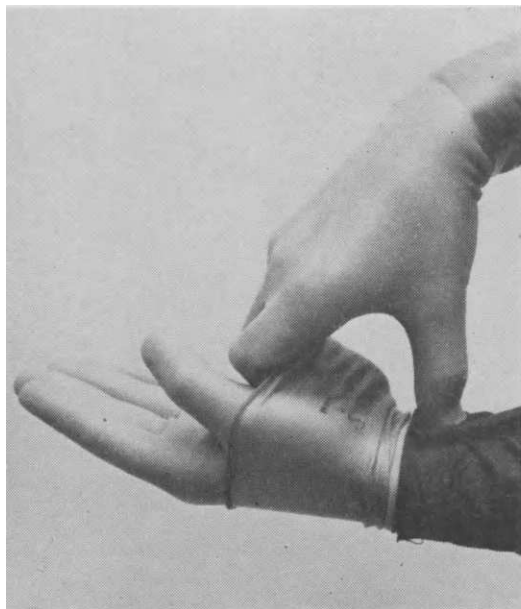
Thumb extended causing cuff to roll. Left index finger contaminated by inside of sleeve.



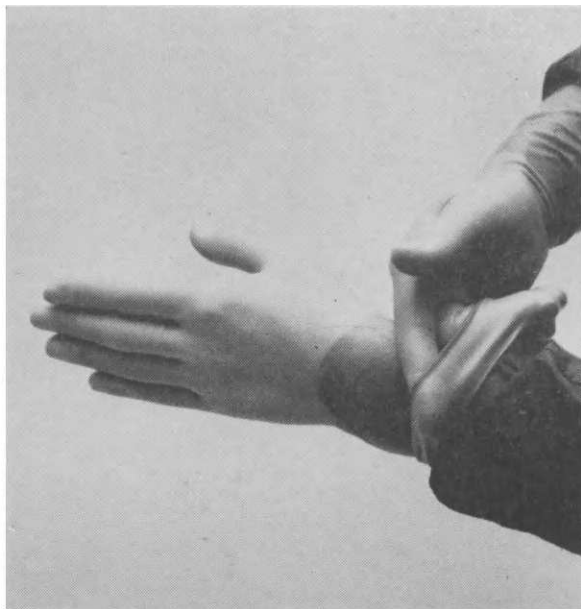
Hold sleeve with left thumb and put left fingers under right cuff.



Pull right cuff over wrist of gown by spreading left fingers and rotating right wrist.



Repeat as above with other hand.



Repeat as above with other hand.

# Using a bundle

*Bundles are taking the place of drums. Linen and swabs needed for one case are autoclaved in a waterproof wrapper. The bundle will be unfolded to form the sterile working surface of the nurse's trolley. It is unfolded by an unscrubbed nurse by hand without contaminating its inner surface or the contents. The bundles illustrated are covered with Portex\* nylon film which is permeable to steam under pressure but waterproof. It is essential that all bundles are easily identified and are folded in exactly the same way.*

## A COMPARISON BETWEEN DRUMS AND BUNDLES

### DRUMS

Difficult to sterilize; steam can penetrate only at perforations.

Sterile shelf-life doubtful.

Opened frequently; contents potentially contaminated before use.

Several needed for each case.

Cheatle forceps necessary; proved dangerous.

Expensive.

Noisy.

Space occupying.

Slow and cumbersome to use.

### BUNDLES

Steam can penetrate everywhere.

Shelf-life almost indefinite in clean, dry cupboard.

Opened once, used immediately.

One only required for each case.

No Cheatle forceps required.

Cheap by comparison.

Quiet.

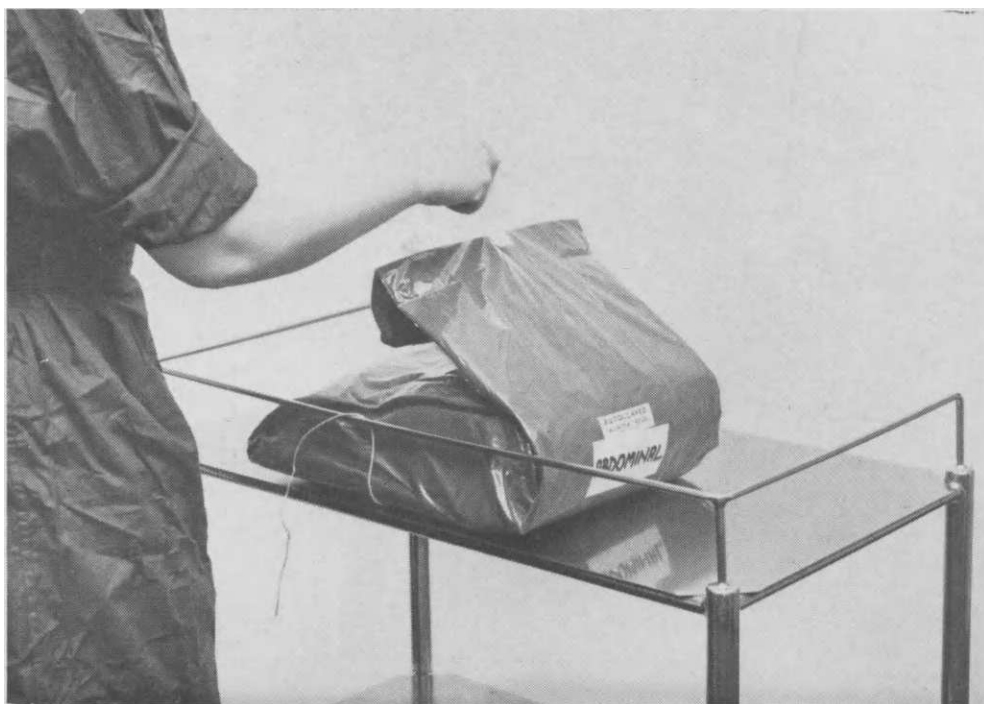
Compact.

Quick and easy to use.

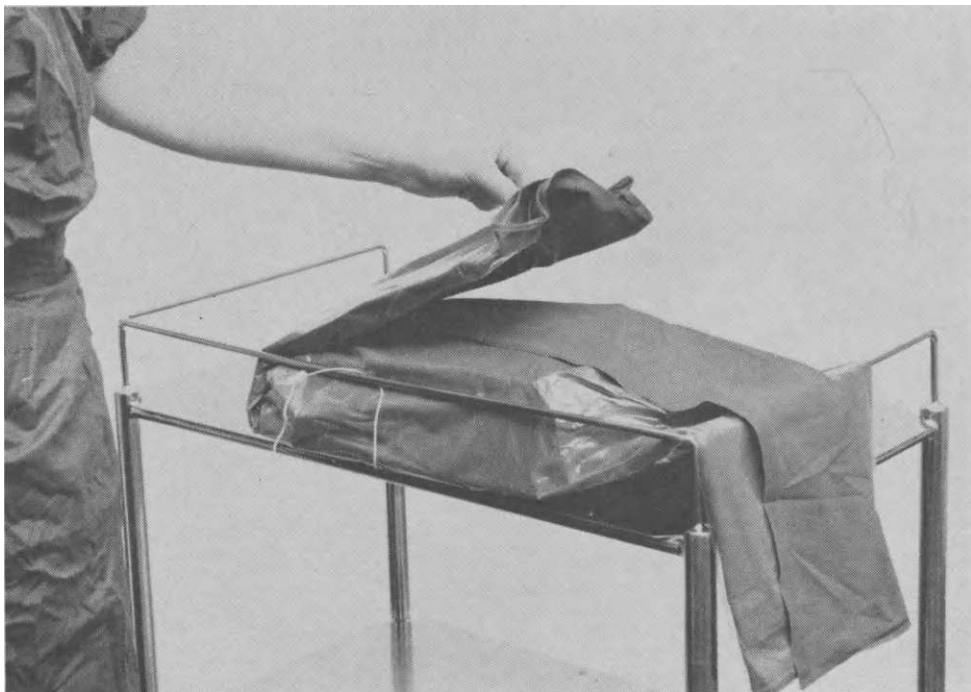
\* Portex—Registered Trade Mark of Portland Plastics, Ltd.



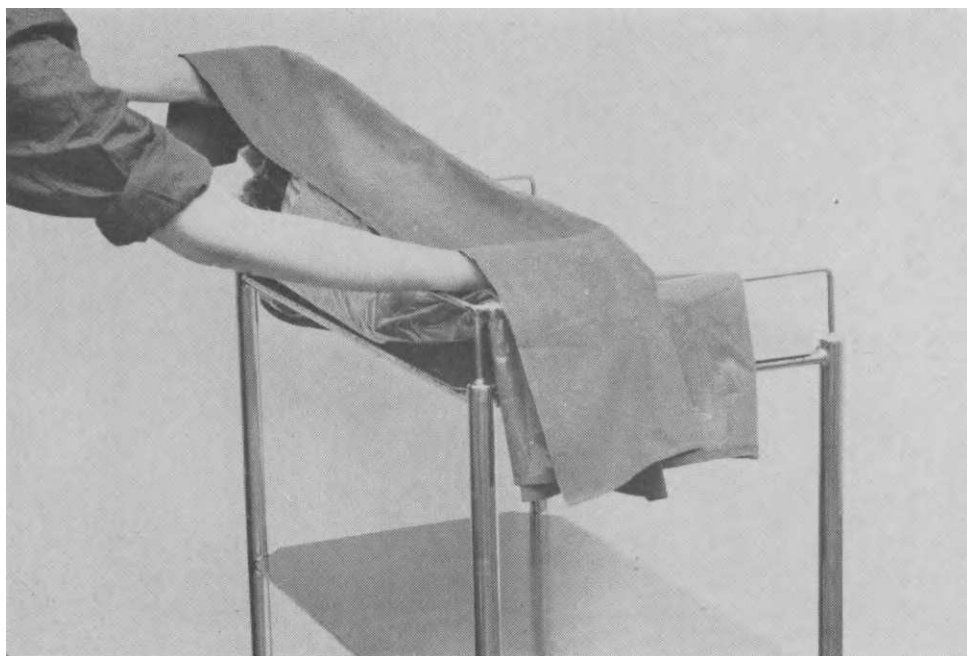
Check 'Autoclaved' label—it must be white. Place bundle at centre back of trolley with right hand flap uppermost.



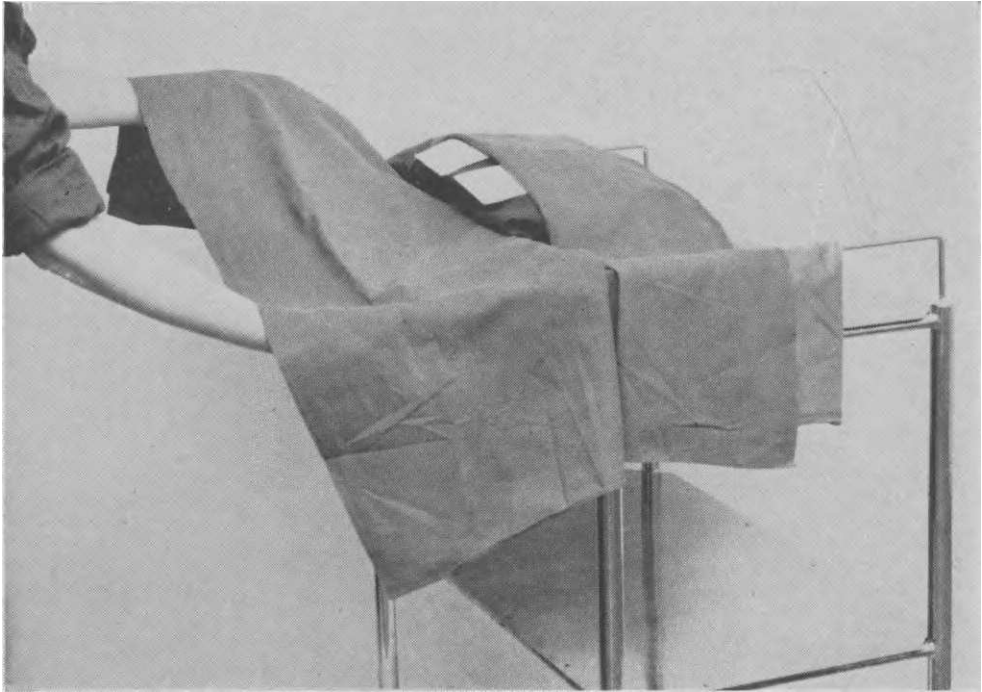
Undo string. Take sealing tab in right hand and lift flap over side of trolley.



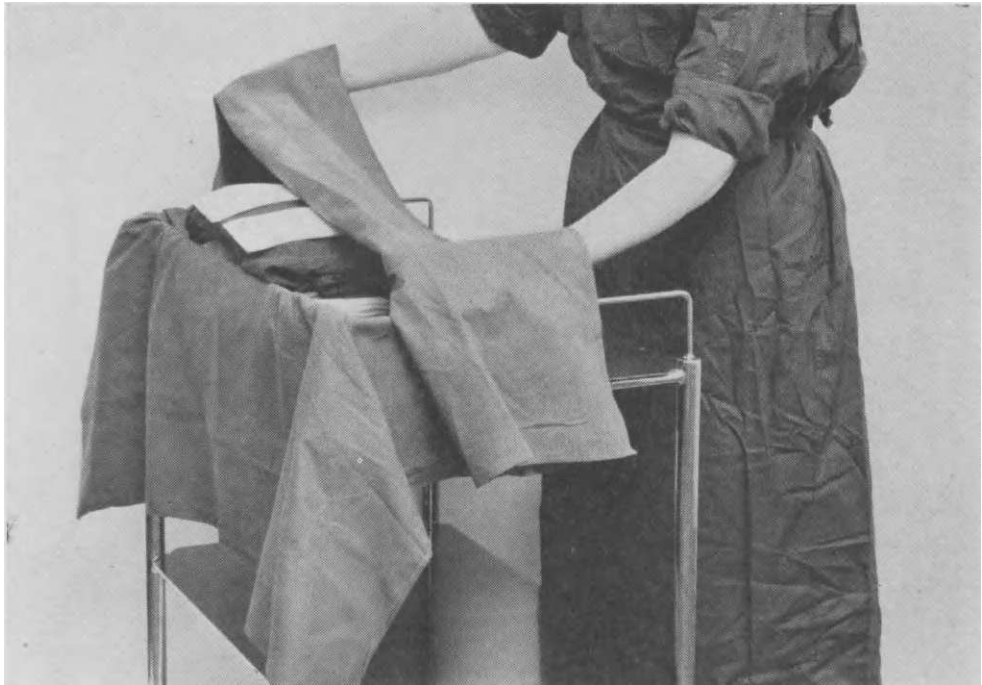
Take left flap over other side of trolley.



Put both hands under wide cuff now exposed.

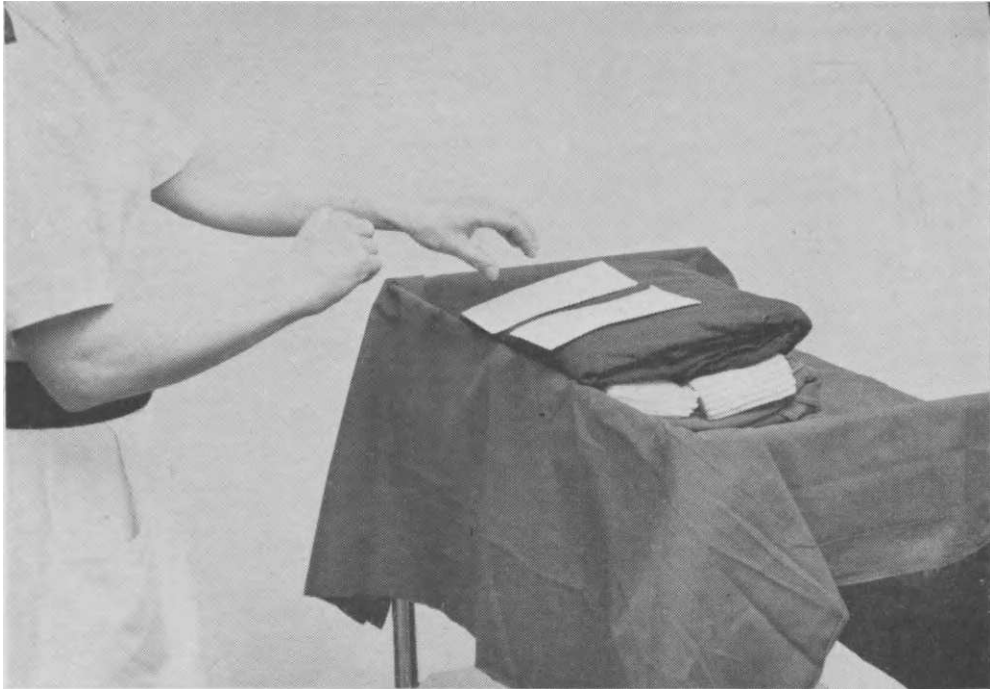


Lift cuff towards you. Inner cuff now exposed.

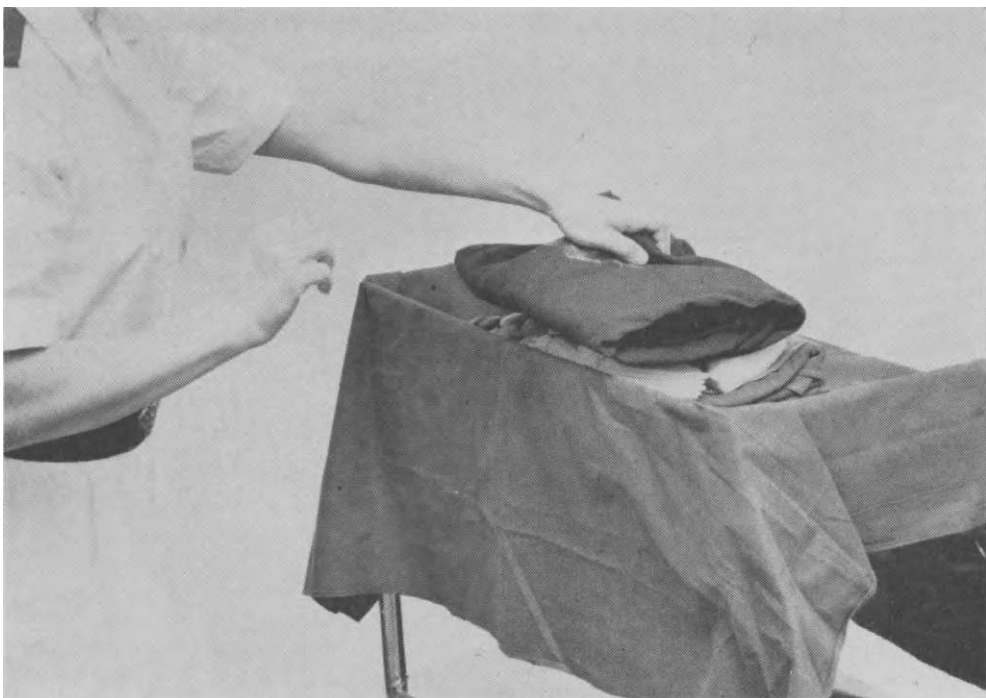


Go to front of trolley. Put both hands under cuff and lift towards you. Let towel and cover fall over front of trolley. Scrubbed nurse's hand towels and gown exposed against back rail.





*Scrubbed nurse.* Go to back of trolley. With scrubbed hands pick up hand towels. Dry hands. Discard towels.



Take gown by grasping upper surface.

# Covering a trolley-1.

BY A SCRUBBED NURSE, IF BUNDLES ARE NOT IN USE.

*The trolley is unsterile. It must be covered with a sterile towel, preserving in the process the sterility of the upper surface of the towel, and the nurse's gown and gloves.*



Protect hands with towel and cover front of trolley first.



Hands not protected, gown contaminated.

**BY AN UNSCRUBBED NURSE, IF BUNDLES ARE NOT IN USE.**

*The trolley, the nurse's gown and hands are unsterile. The trolley must be covered with a sterile towel, with sterile Cheatle forceps, preserving the sterility of both.*



Protect forceps with towel, covering back of trolley first.



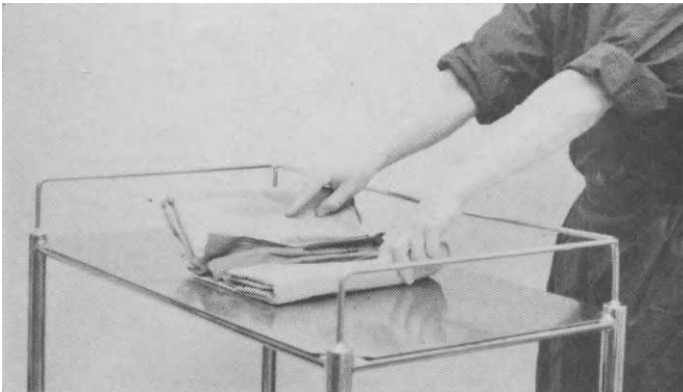
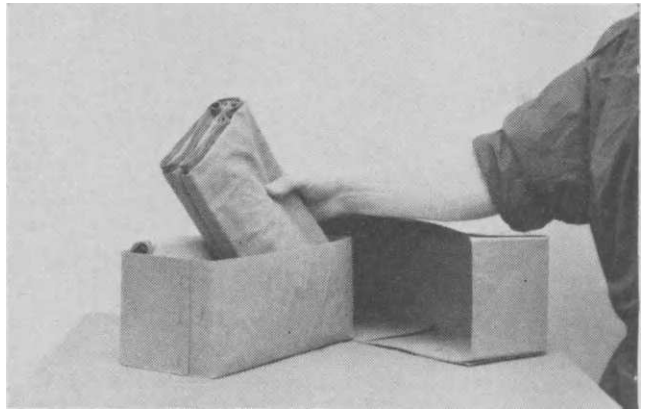
Forceps not protected and held incorrectly. Towel contaminated by gown and hands.

# Covering a trolley-2.

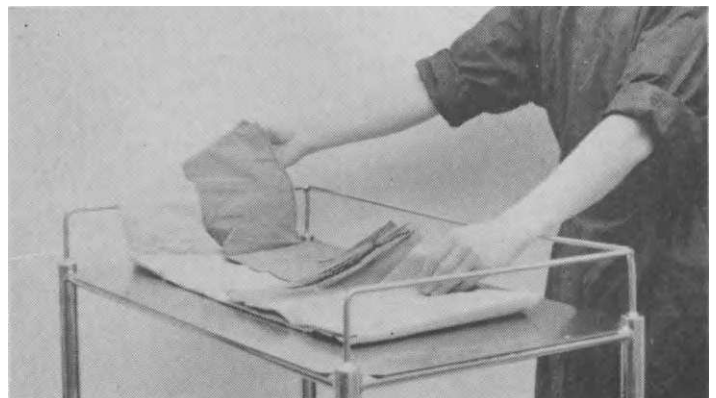
BY AN UNSCRUBBED NURSE, WITHOUT USING CHEATLE FORCEPS

*The trolley is to be covered with a sterile waterproof cover on which sterile instruments will be set. Provided that towel and waterproof are folded in a particular way, this can be done without using Cheatle forceps. The only part of the cover to touch the trolley throughout the procedure is the underside of the waterproof. It is convenient to autoclave the covers in a box.*

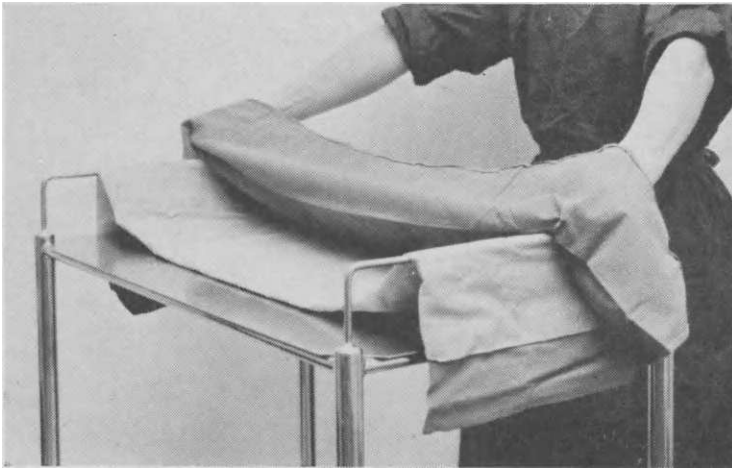
Take cover by hand. Note that the hem is visible at one end of cover.



Put cover on trolley from behind, with hem towards you.

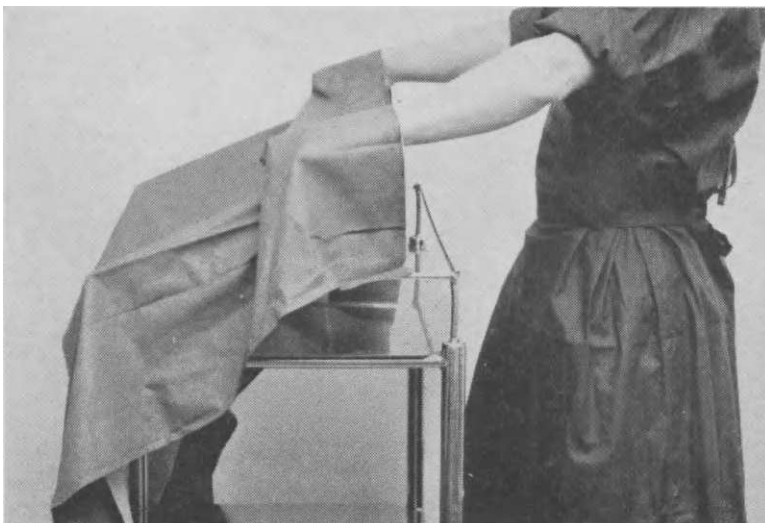
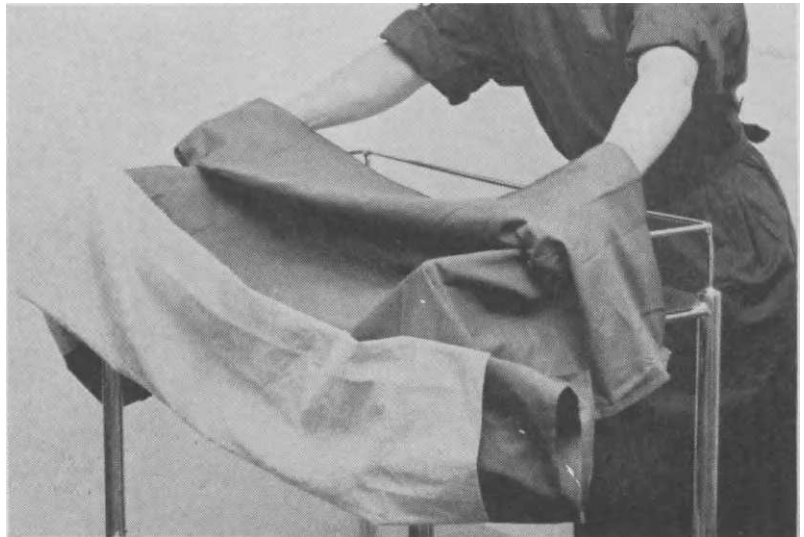


Unfold over sides of trolley.  
A cuff is now exposed.



Put hands under cuff, grip it between thumbs and fingers.

Slide hands forward along trolley rails until cover falls open.

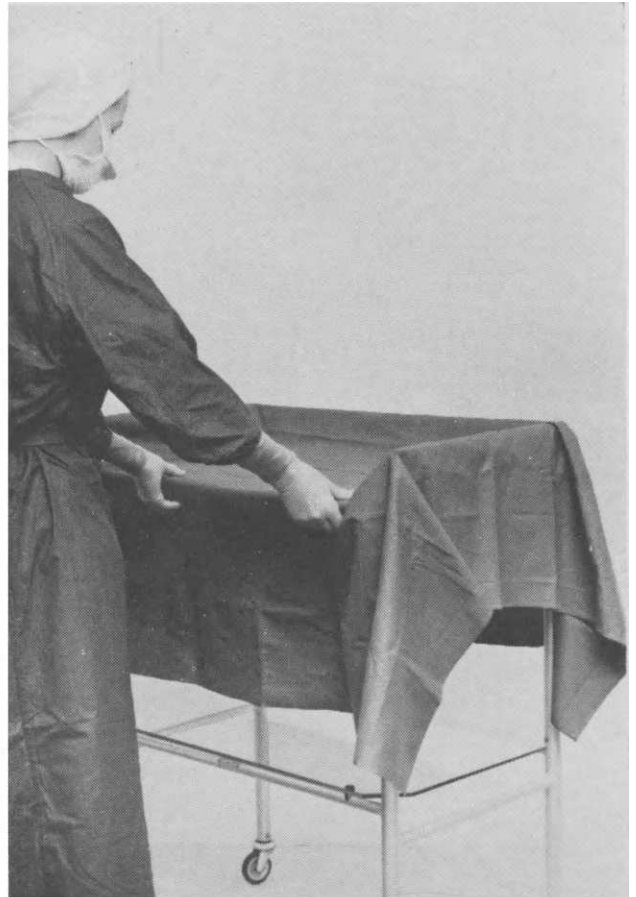
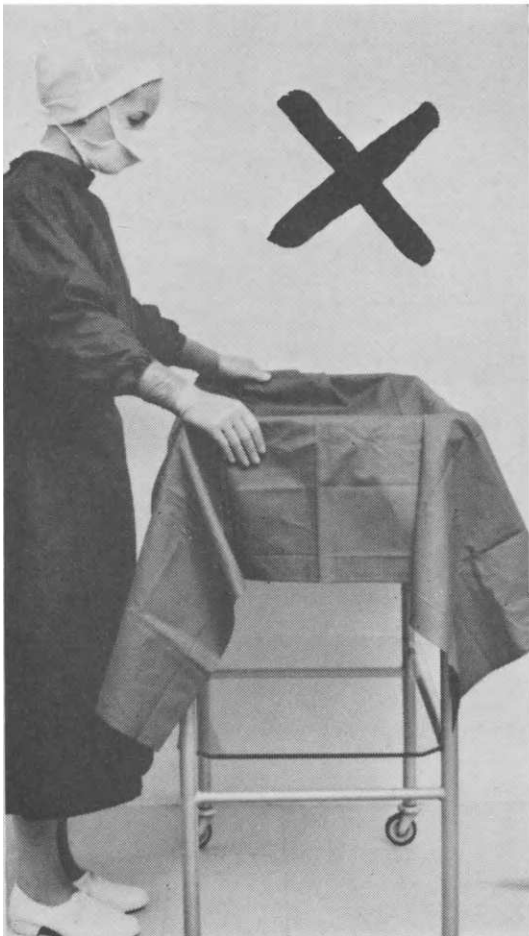


Pull cover back over trolley. Original exposed hem is now well below trolley level.

# *Moving a sterile trolley*

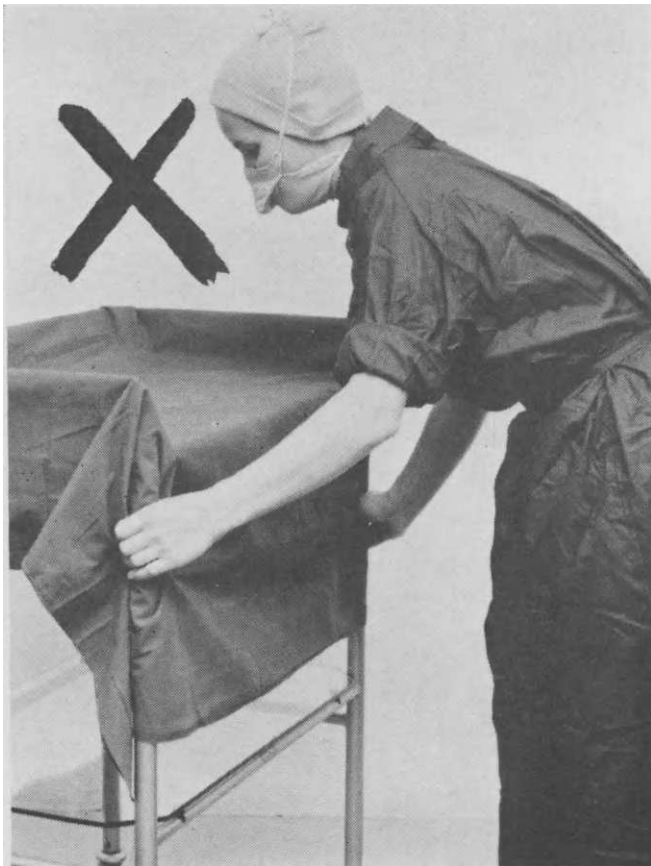
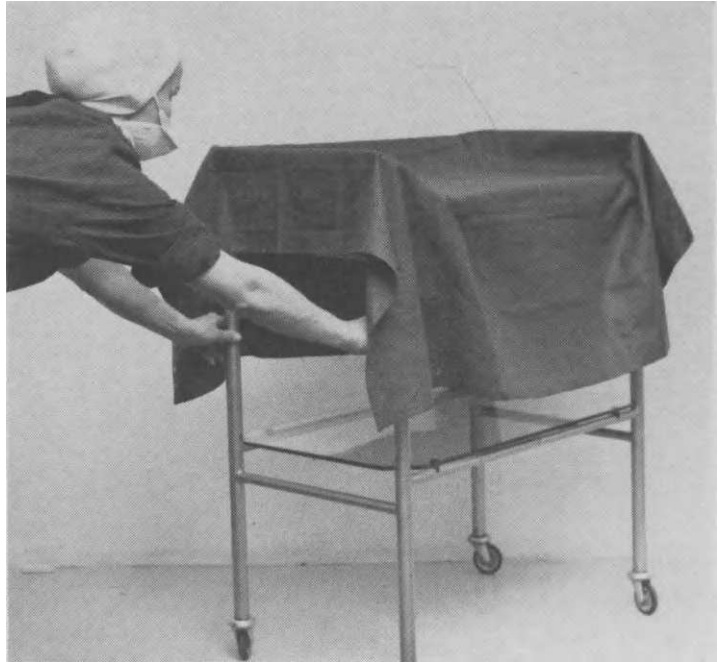
BY A SCRUBBED NURSE

*To preserve sterility the trolley is moved from the front which is protected by the scrubbed nurse. It must be assumed that its sides and back will be contaminated by theatre traffic.*



**BY AN UNSCRUBBED NURSE**

*To preserve sterility the trolley is moved from the side so that the unscrubbed nurse can get as far from it as possible.*



# *Keeping a trolley sterile*

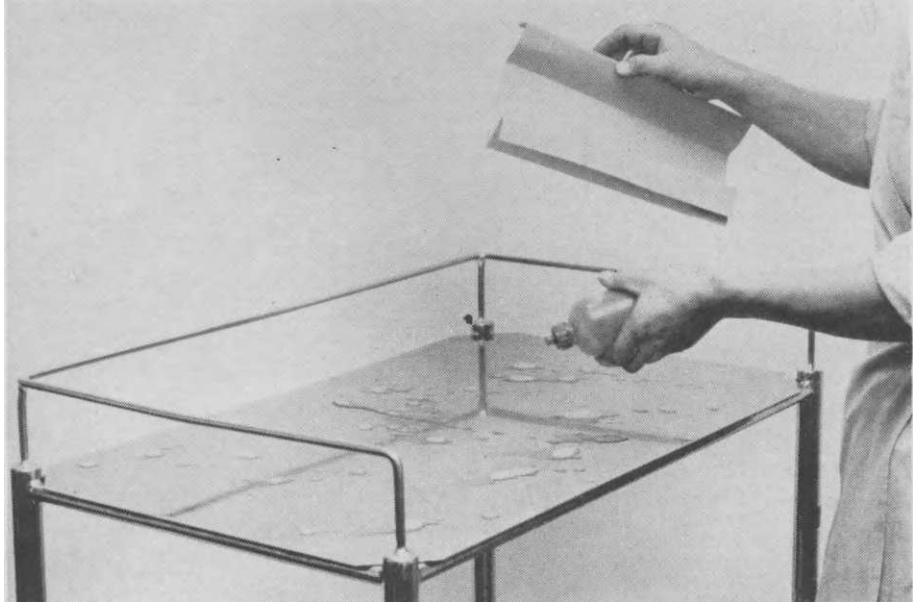
*The scrubbed nurse's back is NOT sterile. She must always face her sterile trolley.*



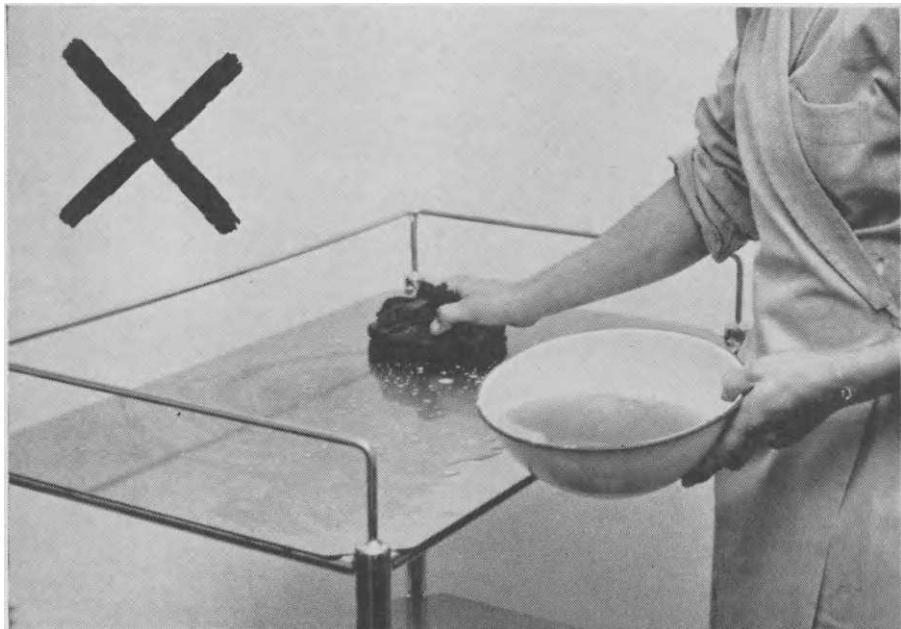


# *Cleaning a trolley*

*Trolleys should be cleaned with a disinfectant before and after use.*



Use solution direct from a spray bottle and dry with disposable paper towel.



Strength of solution doubtful; rag even more so.

# Positioning the patient

*The principles governing any position are: maximum safety for the patient; accessible and stable operative area for the surgeon; and no obstruction to inhalation and intravenous anaesthesia.*

*Never move the unconscious patient without the anaesthetist's permission.*

Particular dangers to the patient are:

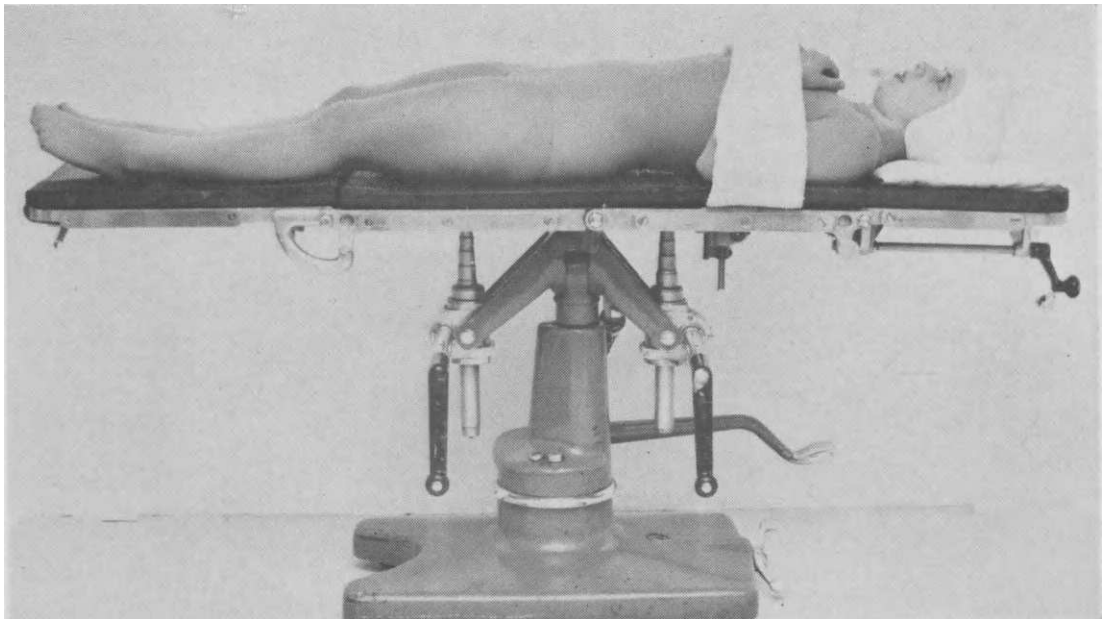
1. Permanent or temporary paralysis caused by pressure on, or stretching of, nerves.
2. Thrombosis caused by pressure on vessels of limbs.
3. Post-operative pain caused by lack of support of limbs and body curves.
4. Burns caused by contact with naked metal when diathermy is used.

Particular difficulties for the surgeon are:

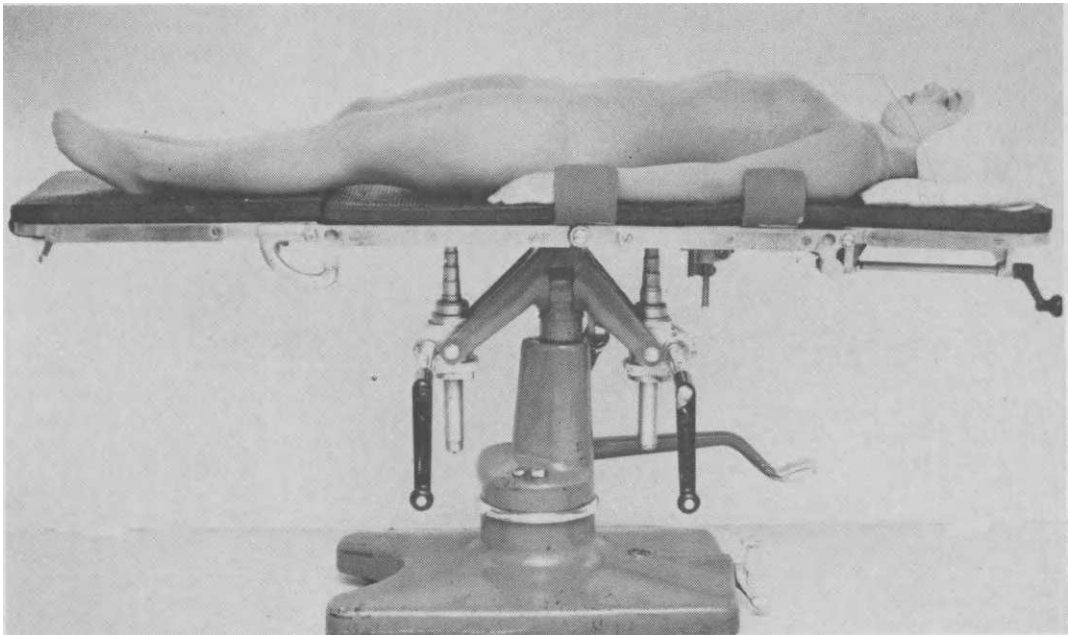
1. Inaccurate placing of the patient when a 'break' of the table is needed.
2. Obstruction to incision area by wrongly placed fittings.
3. Insecure fittings allowing the patient's position to alter.

Particular difficulties for the anaesthetist are:

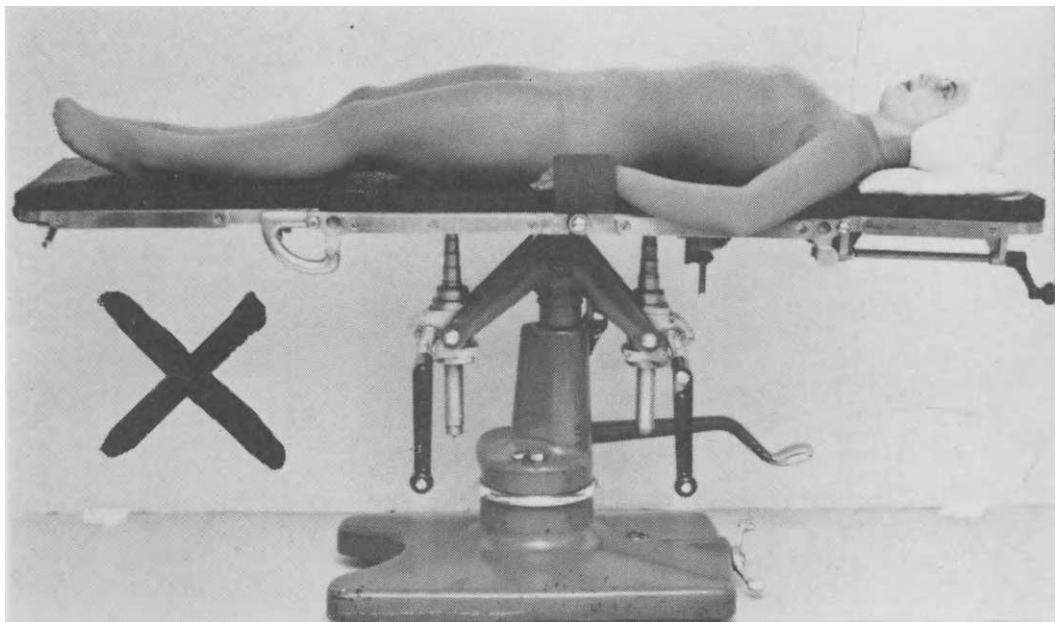
1. Over-extension of the neck narrowing the patient's airway.
2. Faulty placing of table fittings preventing adequate movement of ribs or diaphragm.
3. Pressure on veins being used for intravenous infusion preventing circulation of drugs.
4. Any sudden change of patient's position causing a fall in blood pressure.



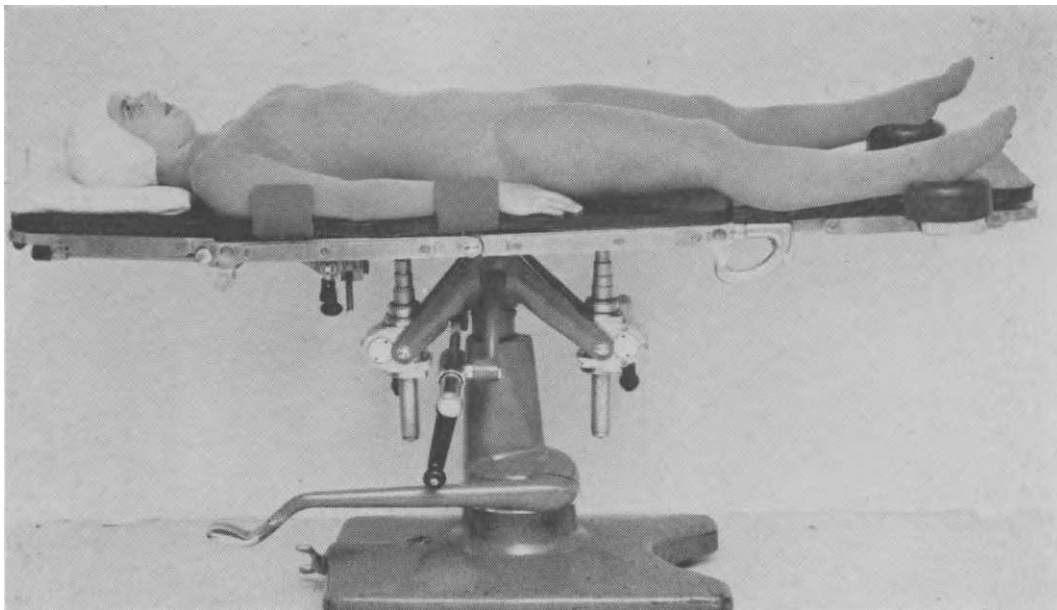
*Supine position. 1. For laparotomy through lower abdominal incision. Fold hands over chest, secure with folded towel allowing anaesthetist access to veins of hands. Put small pillow under head.*



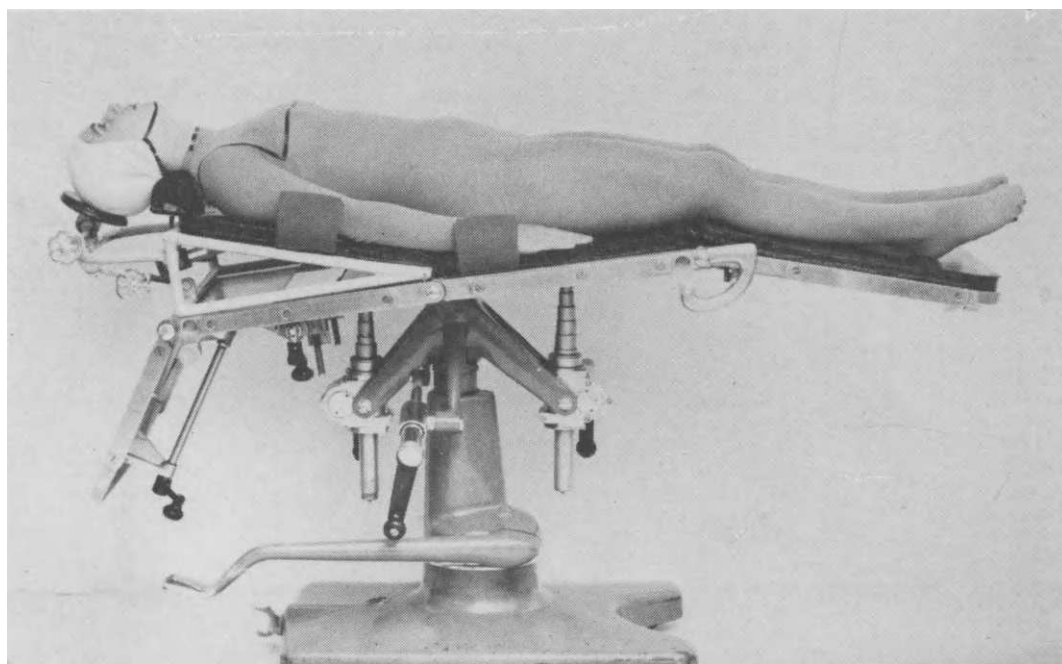
*Supine position. 2. For laparotomy through upper abdominal incision. Put hands at sides, not under thighs, and use two arm supports.*



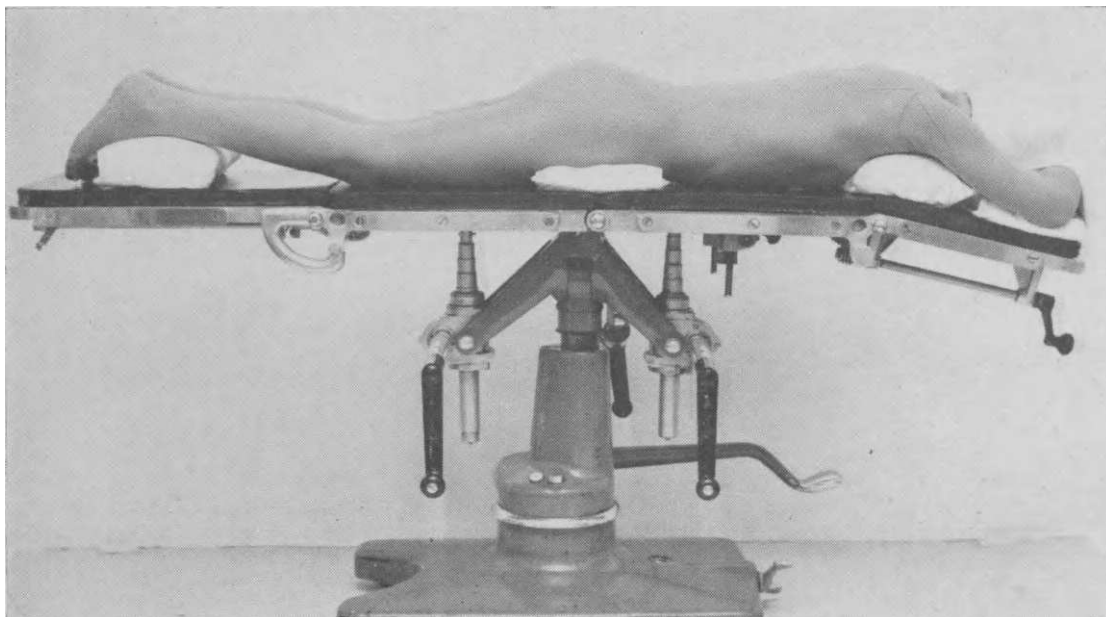
Arm bends with only one support at wrist; forearm would flop with only one support above elbow. Hard edge of table will cause pressure on nerves of arm and burns if diathermy is used. Remember that the patient will be covered by towels, you will not see this happen, therefore you must prevent it.



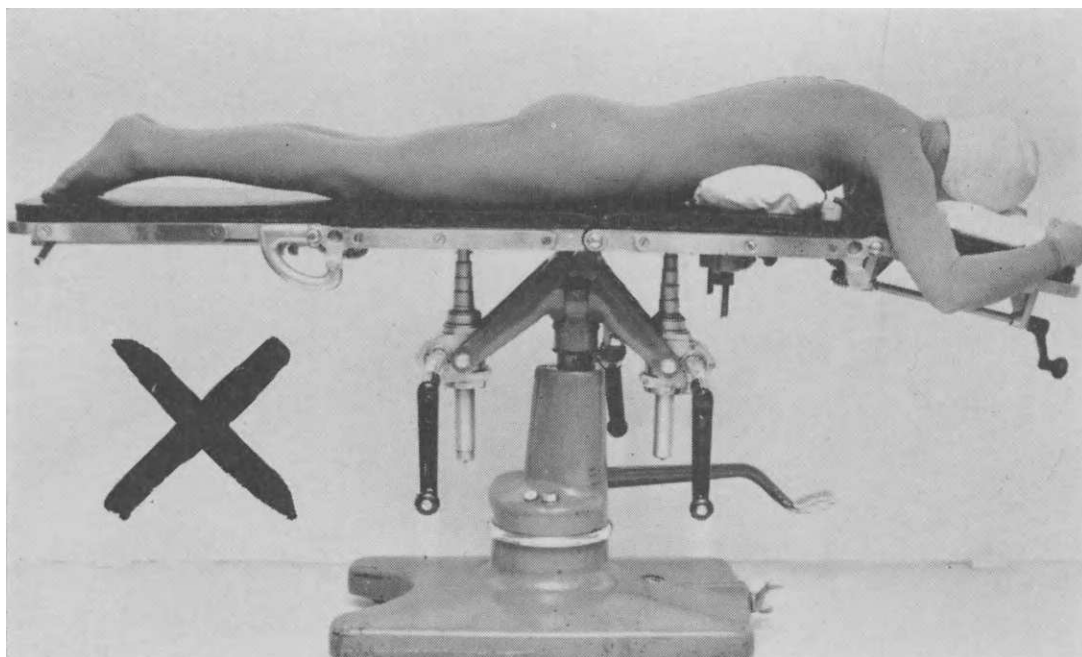
*Supine with abducted legs, for operations on varicose veins. Put heels in padded 'horse shoes' fixed to board placed between mattress and table.*



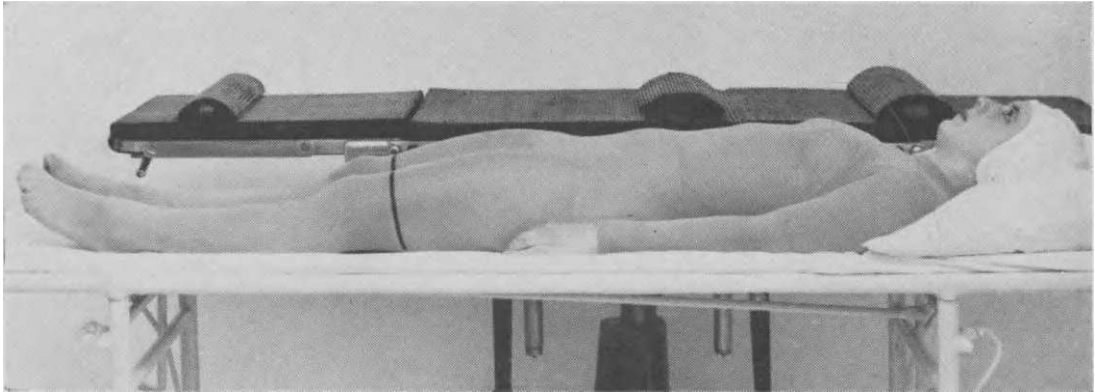
*Supine with extended neck, for operations on pharynx, larynx, trachea and thyroid gland. Support head; extend neck over padded rest. 'Break' table in two places to help general relaxation. Transverse incision and area of skin preparation marked.*



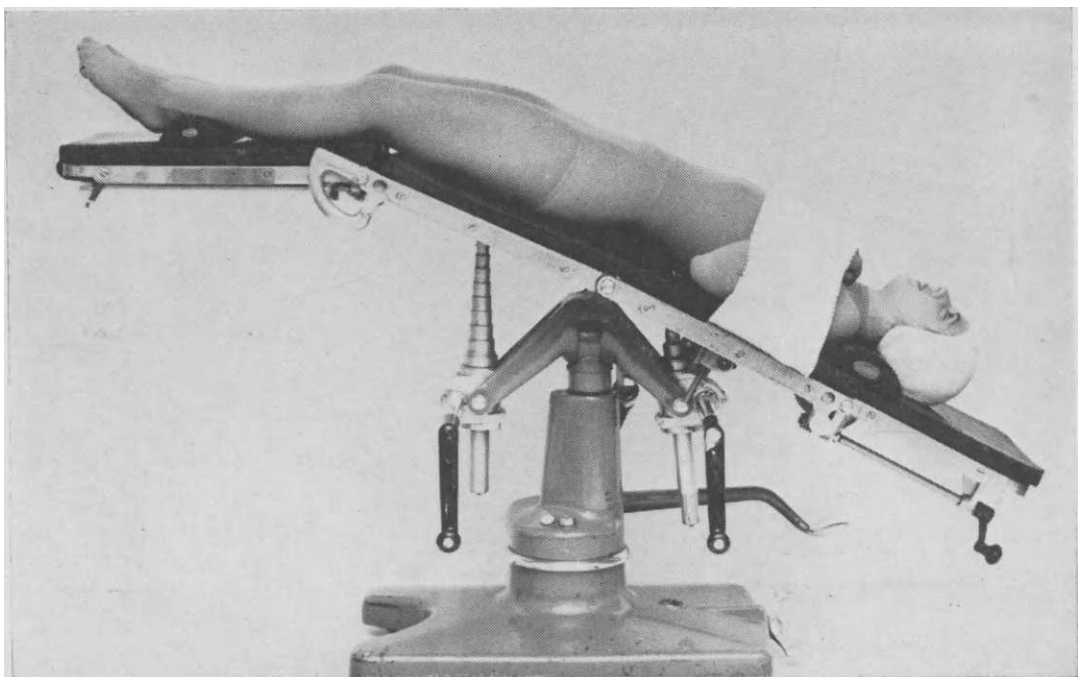
*Prone position*, for operations on the back. Drop head of table to prevent over-extension of neck. Secure forearms by folded towel tucked under mattress. Put pillows under shoulders and pelvis to allow free movement of lower ribs and diaphragm. Put pillow under ankles to prevent pressure on toes.



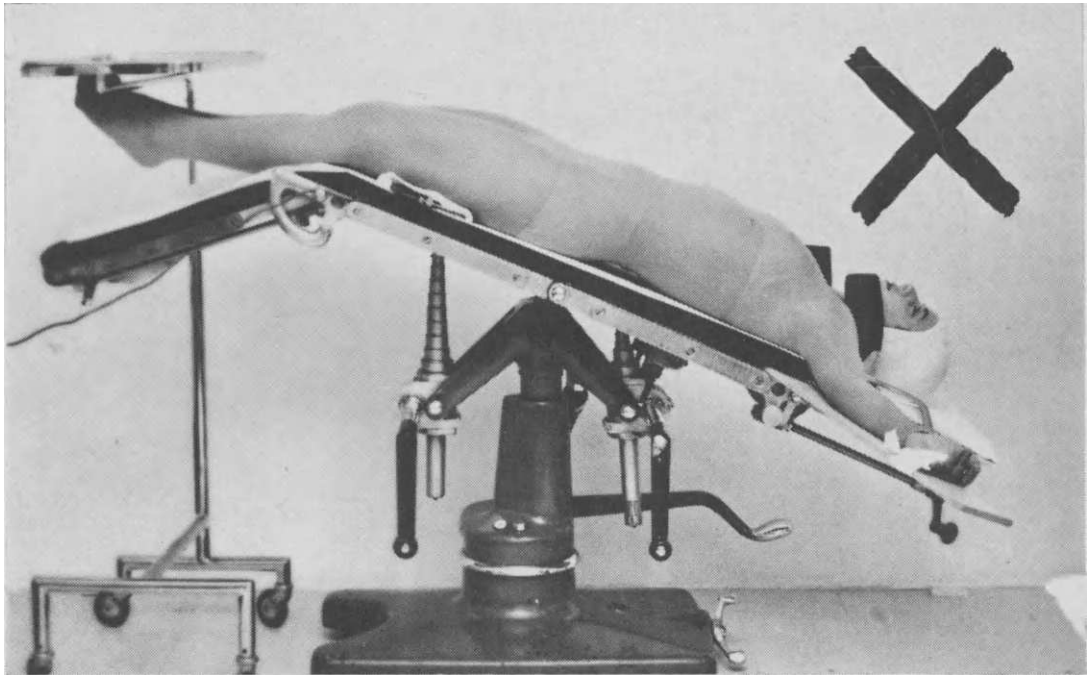
Arms not secured—pressure on nerves.  
Restricted movement of diaphragm caused by pressure on abdominal contents from pillow.  
Pressure on toes.



*Trendelenburg position*, for operations on pelvic organs through an abdominal incision. The abdominal viscera fall towards the diaphragm leaving the pelvis clear. Hook corrugated mattress onto table. Place patient's trolley alongside so that upper edges of patellae, as marked, are level with lower break of table. Place cushions level with ankles, lumbar curve and neck.



Transfer patient naked, so that entire posterior skin surface is in contact with mattress. Tilt table slowly. Leg section may be broken to horizontal. Adjust ankle cushion after tilting to prevent pressure on deep veins of calf.

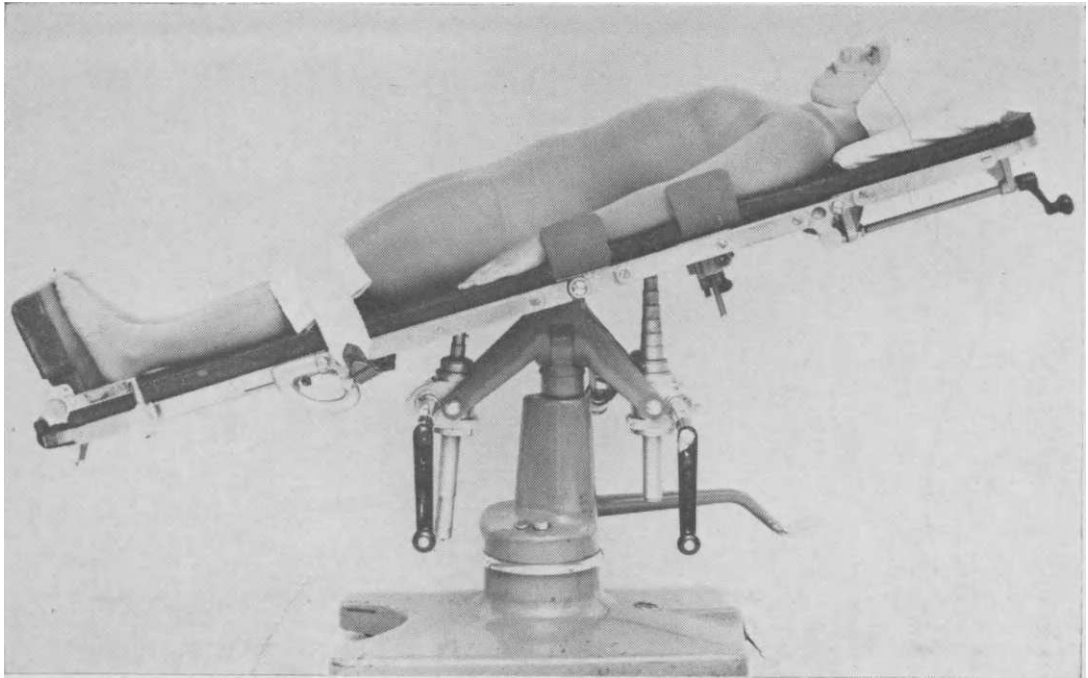


This horrifying picture breaks every rule for the patient's safety.

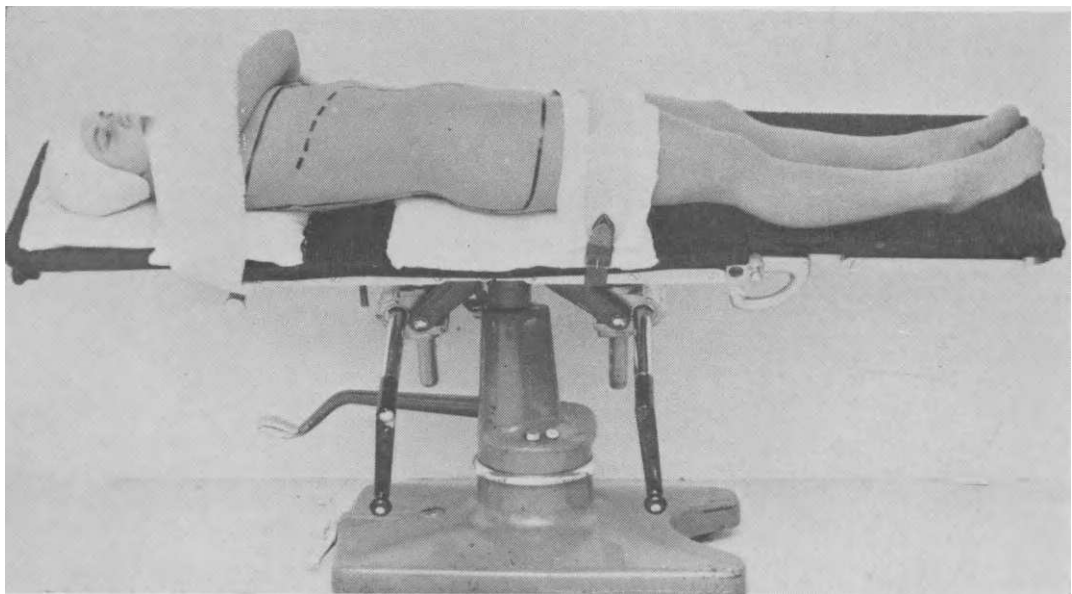
1. Patient's entire weight is on unlevel shoulder rests, shoulder is extended because arm support is unpadded, arm is at more than right-angle to body—all causing pressure and tension on brachial plexus.
2. Pressure on deep veins of calves, accentuated by weight of Mayo table. Lower legs unsupported, ankles over extended.
3. No lumbar cushion, causing strain on lumbar spine and abdominal muscles.
4. Toes touch metal of Mayo table.
5. Diathermy pad inadequately covered, wrongly placed, and not fixed in position.

*Note.* It is possible to use pelvic rests placed above the iliac crests instead of the dangerous shoulder rests, but they do tend to constrict the pelvic organs. When the use of a corrugated mattress is so much safer there can be little reason for being without one.



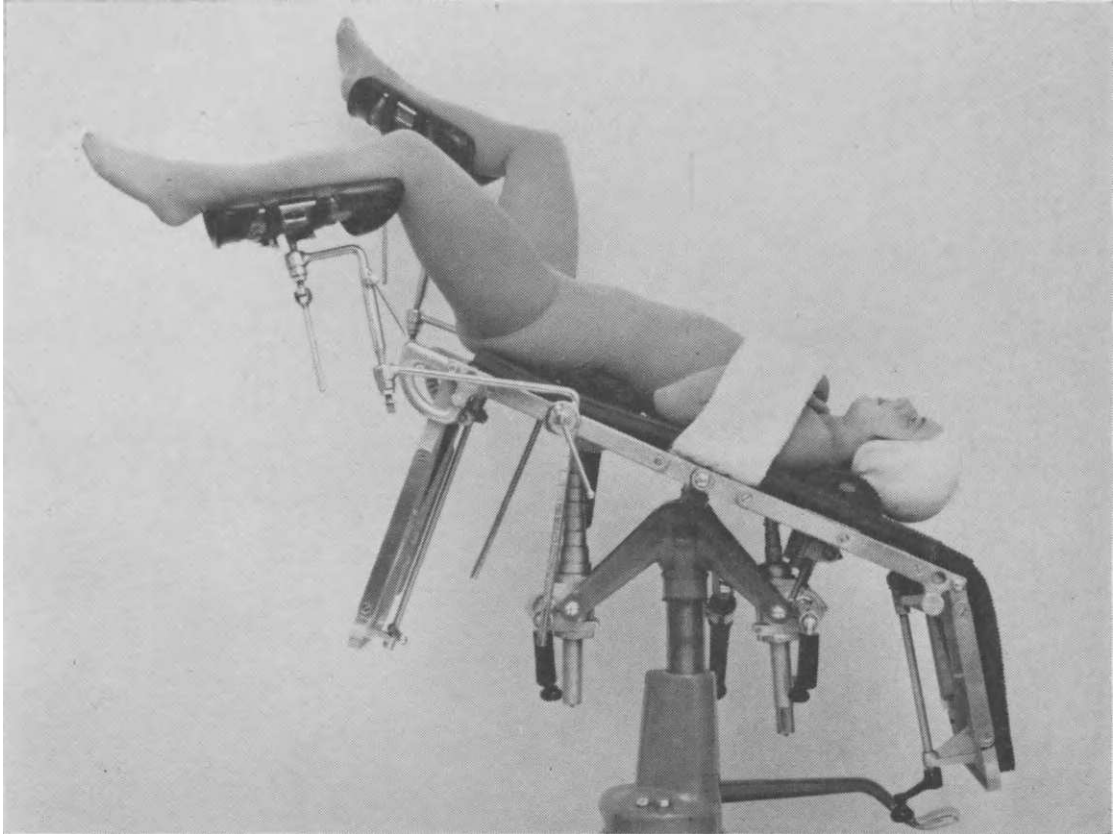


*Reverse Trendelenburg position*, for operations on (a) diaphragm via abdomen—the abdominal viscera fall away, (b) face and nose, particularly in conjunction with hypotensive anaesthesia; bleeding is decreased. Fix padded foot rest to table. Place padded strap over knees to prevent flexion.

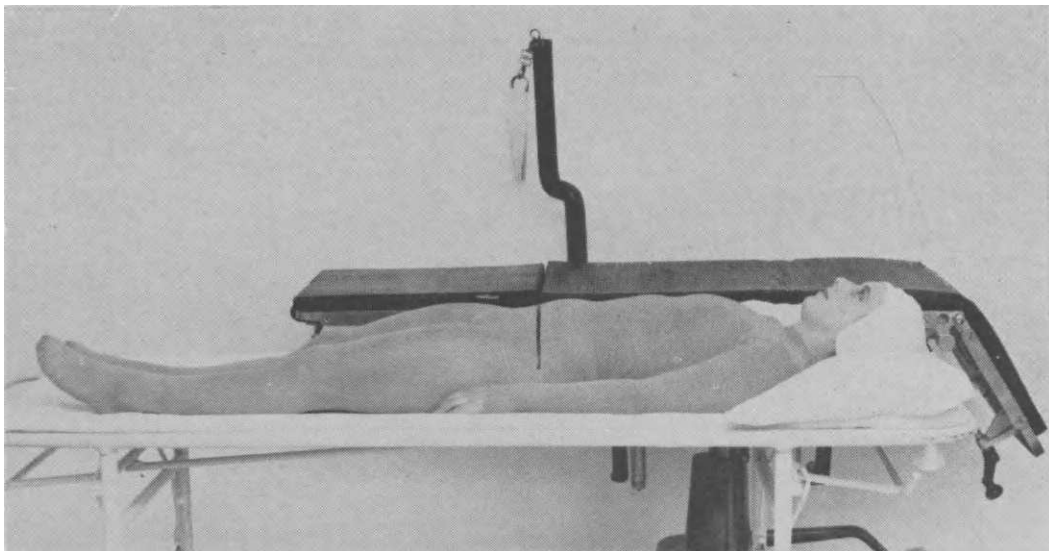


*Lateral tilt*, for operations on the liver. Tilt patient to left by placing sandbags under right shoulder and buttock. Secure right arm across chest with towel. Tilt table down to right so that patient is flat. Strap thighs to prevent lateral slide. Entire position can be reversed for total gastrectomy or splenectomy through thoraco-abdominal incision.





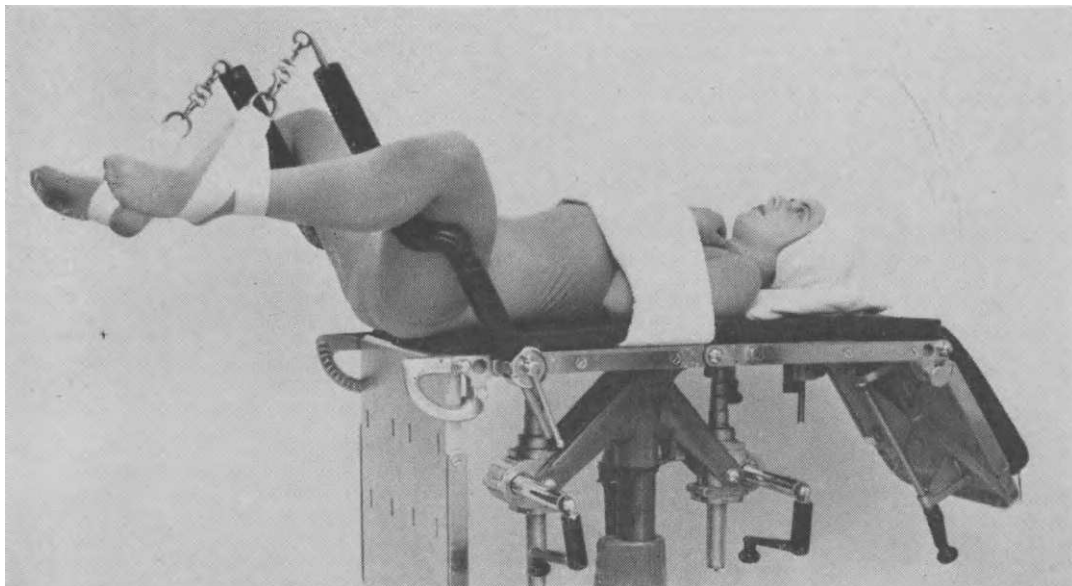
*Combined Trendelenburg and lithotomy position, for synchronous abdomino-perineal operations. Hook corrugated mattress onto table. Place lumbar and neck cushions in position. Put legs in padded supports; bandage in place. Flex left hip less than right to allow access to abdominal incision from patient's left side. Drop leg section of table; see that buttocks project beyond table. Tilt table slowly.*



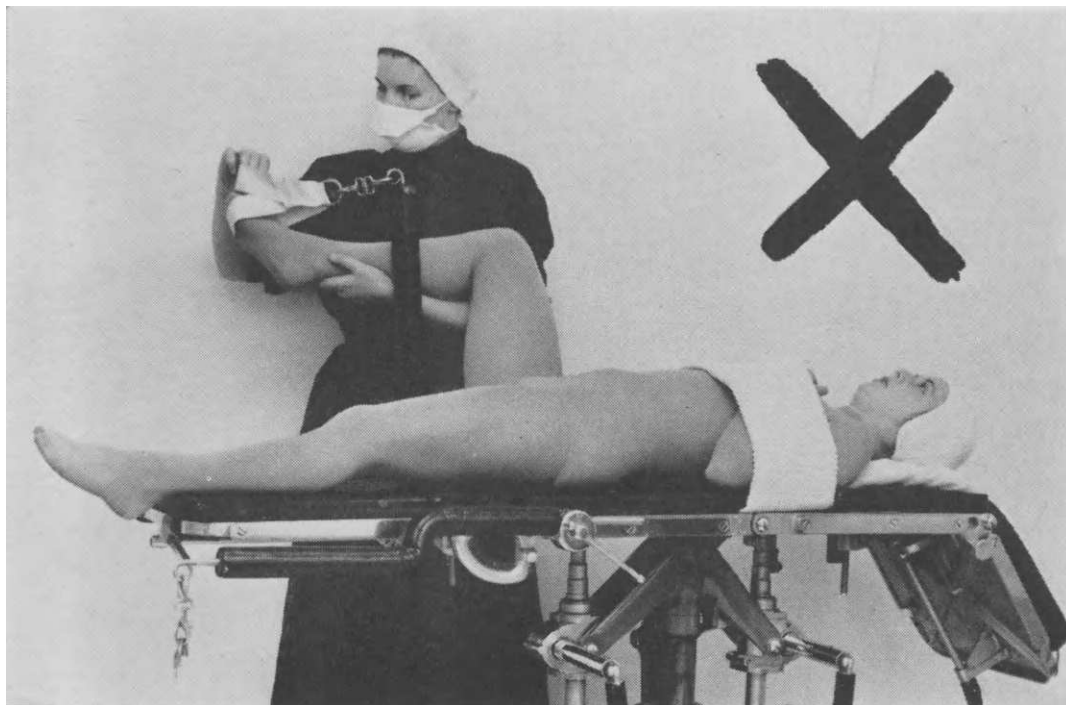
*Lithotomy position, for operations on (a) pelvic organs by perineal route, (b) anus and external genitalia. Fix one padded adjustable stirrup to table. Place patient's trolley alongside table so that anterior superior iliac spines, as marked, are level with lower break.*



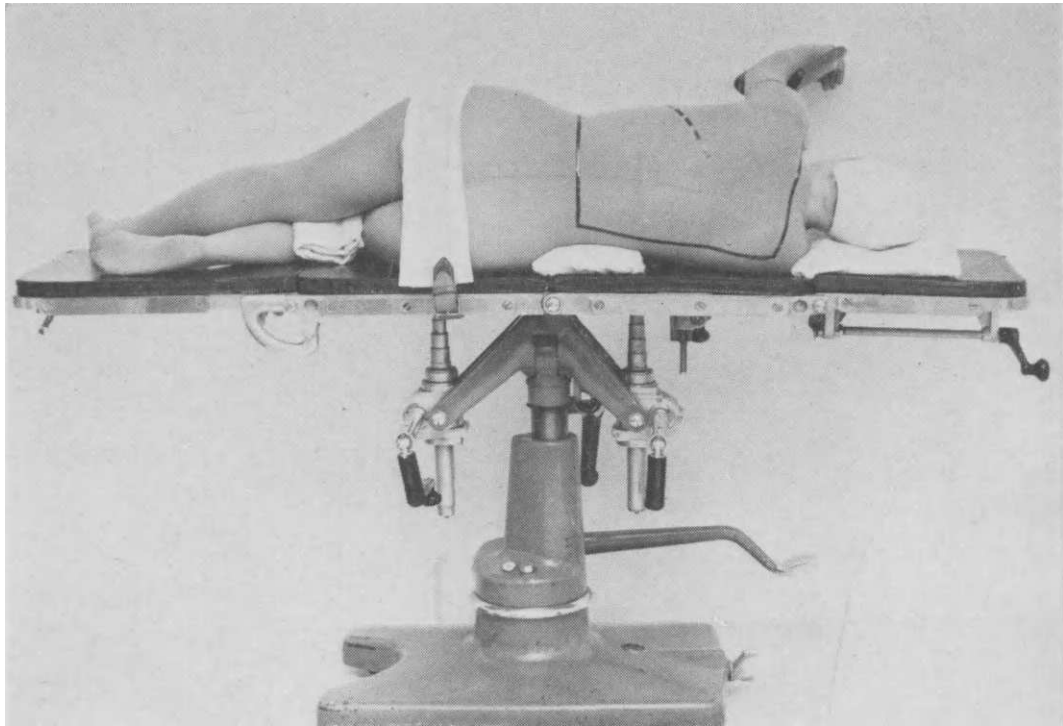
Transfer patient, supporting feet in process. Fix second stirrup level with first. Flex patient's hips and knees simultaneously—two people are required for this. Put feet in slings.



Adjust stirrups to avoid pressure. Drop foot section of table. Buttocks will be projecting beyond end of table.

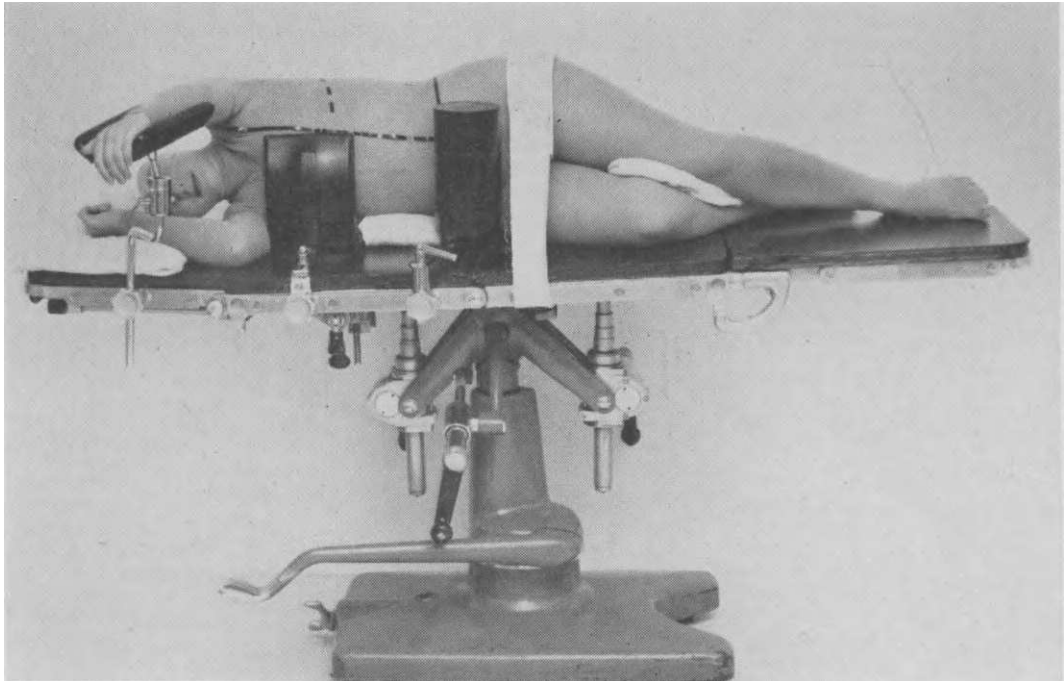


Sacro-iliac strain caused if legs raised independently. Pressure on Achilles tendon. Patient too far up table. She will have to be dragged bodily down so that the buttocks project beyond break of table.



*Lateral position, for thoracotomy (incision and area of skin preparation marked).*  
Surgeon's view.

See that patient's back is perpendicular and at edge of table. Put pillow under loin to keep spine straight; often unnecessary for men. Put padded strap round hips. Flex lower leg; put small pillow between knees. Support upper arm on gutter rest reaching beyond wrist. Put small pillow under head.



*Lateral position. Front view. Fix chest and pelvic supports. Flex lower arm easily.*

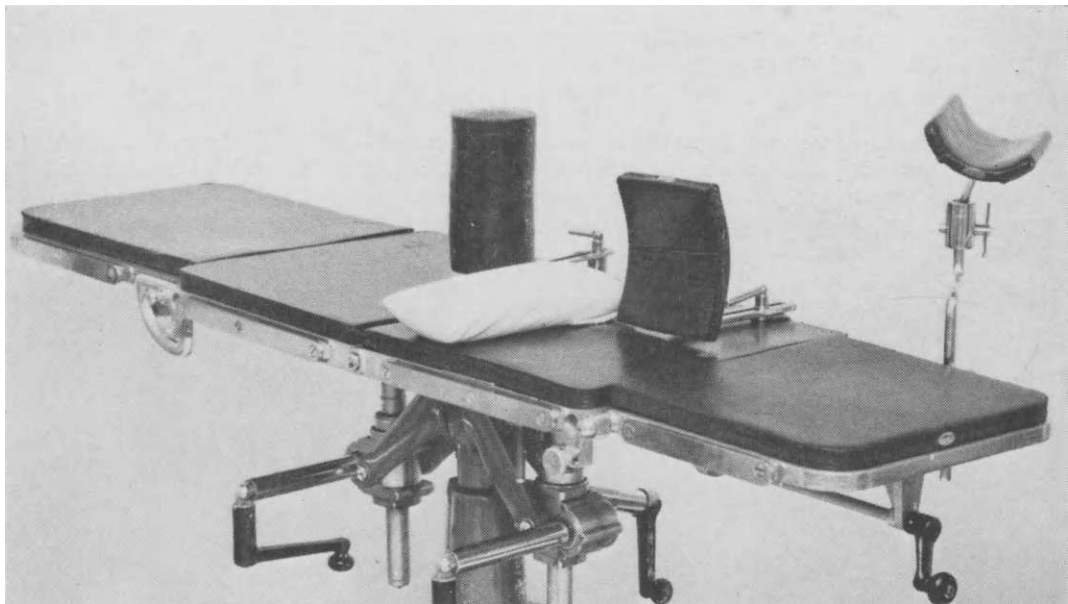
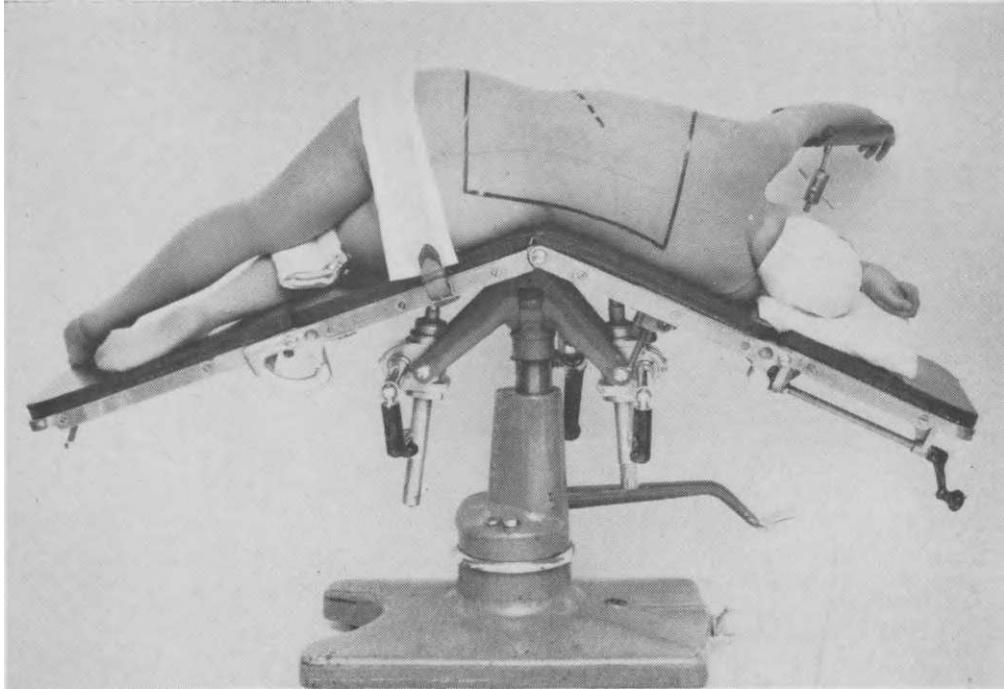


Table showing supports. The whole position is reversed for operations on the other side.

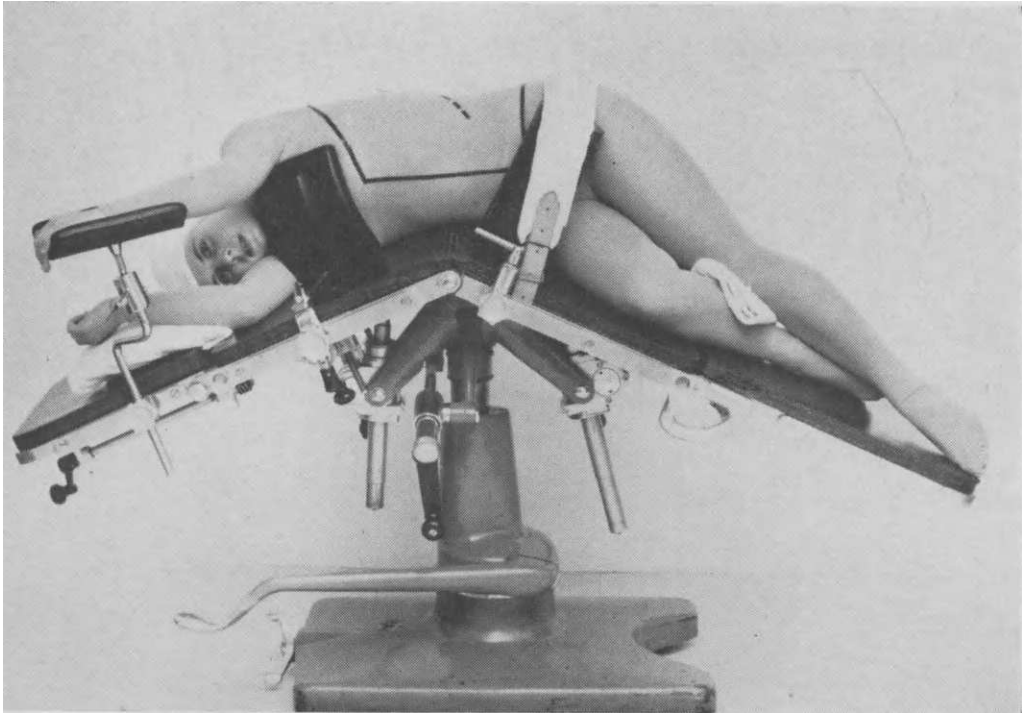


*Extended lateral position*, for operations on the kidney region. Space between lowest rib and iliac crest widened by lateral extension giving the surgeon good access. The whole position is reversed for operations on the other side.

Incision and area of skin preparation marked.

Surgeon's view.

Transfer patient from trolley to unbroken table with twelfth rib level with centre break. See that patient's back is perpendicular and at edge of table. Put padded strap round hips. Flex lower leg; put small pillow between knees. Support upper arm on gutter rest reaching beyond wrist. Put small pillow under head. 'Break' table before final adjustment of supports.



*Extended lateral position. Front view. Fix chest and pelvic supports. Flex lower arm easily.*

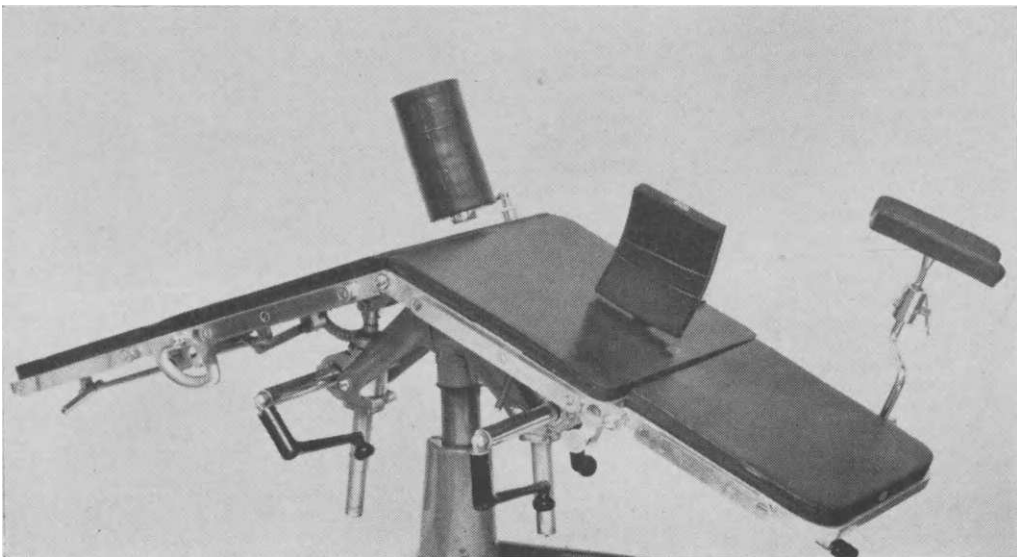


Table showing supports.

# *Applying a diathermy plate*

*Diathermy is used to seal small vessels by coagulation and to divide tissue by cutting.*

The circuit consists of the active electrode used by the surgeon with its flex to the transformer, and the indifferent electrode and flex from transformer to patient. There must be no break in this circuit. The active electrode is usually a needle or forceps with insulated handles. Both electrode and flex are sterilized. The indifferent electrode is a plate made of malleable lead and is not sterilized.

The area of contact of the active electrode is very small causing high density current; coagulation will therefore take place. The area of contact of the indifferent electrode should be as large as possible to produce low density current and prevent burns.

Good contact between plate and patient is obtained by the following:

1. Covering the plate with thick material which is soaked in concentrated saline solution. The higher the concentration of salt, the better the contact.
2. Moulding the plate round calf or thigh and bandaging it in place so that its whole surface makes contact. This cannot be done adequately elsewhere on the body.
3. Fixing the terminal firmly to the plate.

The chief danger when using diathermy is burns which may occur when the patient touches the metal of the operating table.

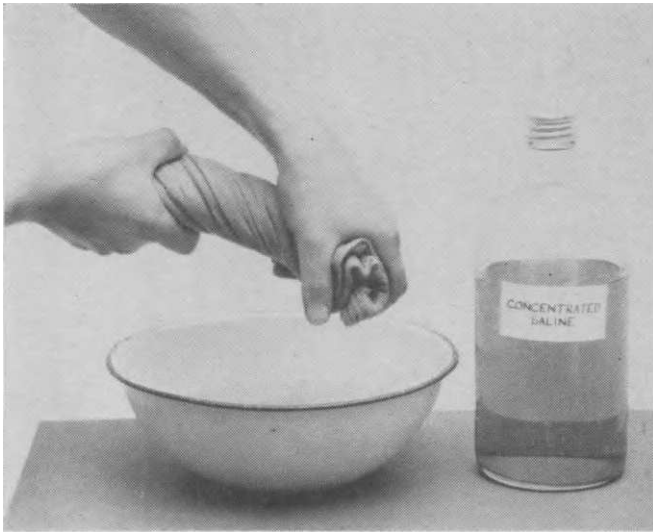
Burns will also occur when there is poor contact between plate and patient. This happens if:

1. The plate is not bandaged firmly in place so that only part of it is in contact with the patient.
2. The terminal is faulty or loose.
3. The plate cover is dry.

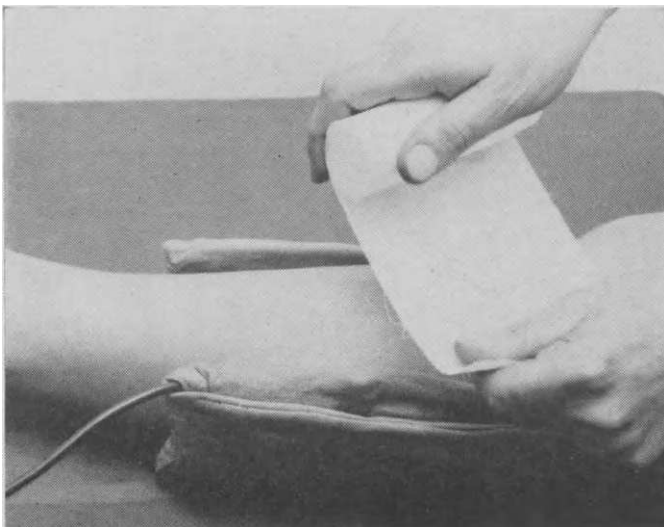
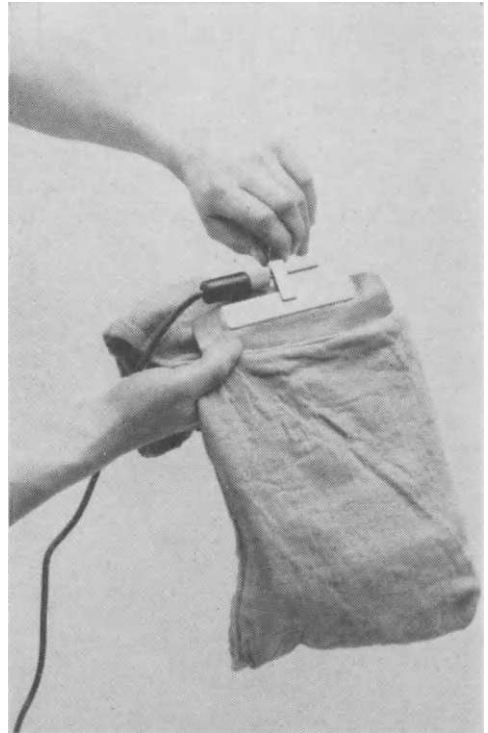
Danger of fire or explosion occurs when inflammable or explosive gases are in use. Diathermy must not be used in conjunction with these.

Danger of electric shock occurs if there is an earthing fault in the transformer. As with any other electrical equipment it must be examined and maintained regularly by experts.





Check screw attachment of terminal.



Mould plate to calf. Bandage.

# Applying a tourniquet

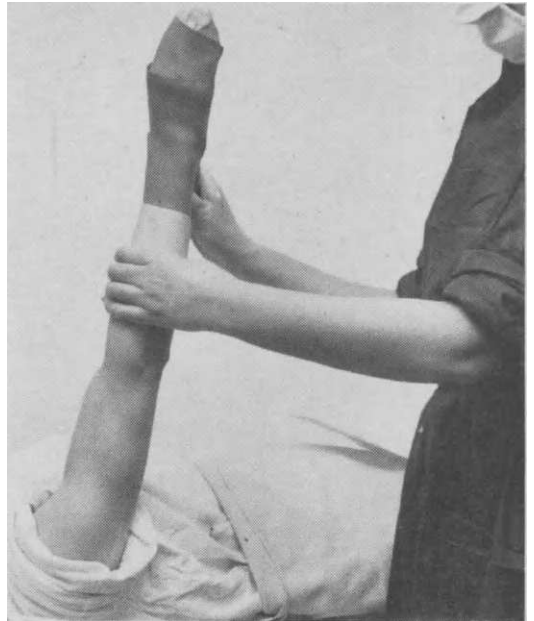
*A tourniquet is applied to a limb to give the surgeon a bloodless field. The illustrations show a sphygmomanometer cuff used on an arm. Larger pneumatic cuffs must be used for legs.*

The dangers of tourniquets are:

1. Damage to nerve trunks and arteries caused by a narrow band of constriction, particularly over two bones.
2. Irreversible ischaemia caused by prolonged arterial occlusion.
3. Death of a limb caused by failure to remove the tourniquet at the end of the operation.

These dangers can be avoided by observing a strict routine.

1. Distribute the pressure evenly with a wide cuff over mid-thigh or upper arm.
2. Tell the surgeon at regular intervals how long the tourniquet has been on. He decides the safe duration of arterial occlusion; this will depend on the bulk of the limb and the pressure used. The pressure should be about 200mm Hg for an arm and 260mm for a thigh.
3. Fix the tourniquet to the table so that it is impossible to take the patient off the table without removing the tourniquet.



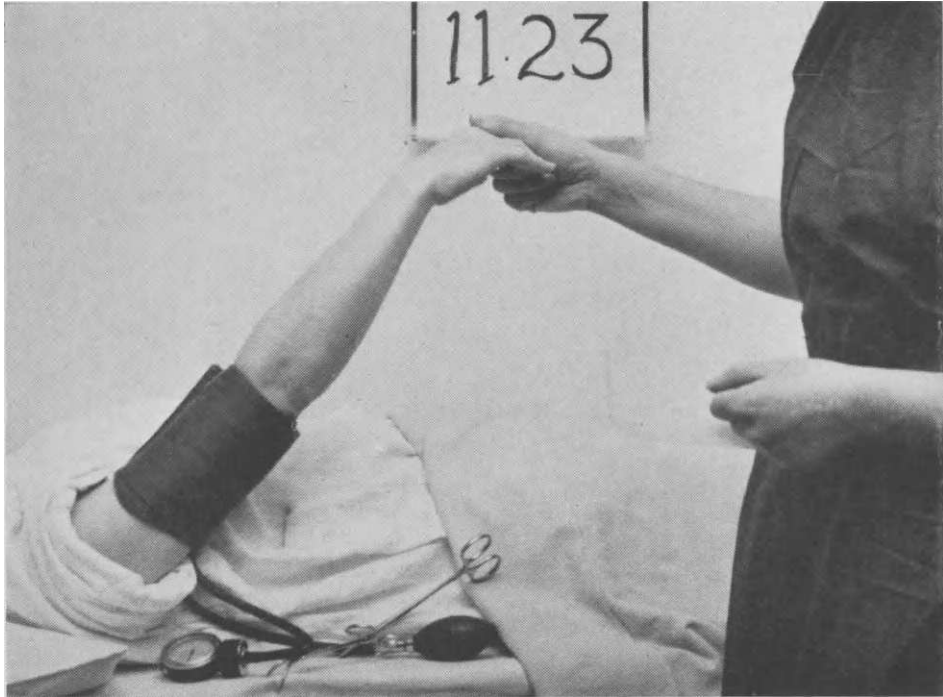
Raise limb. Bandage tightly with rubber bandage to exsanguinate it.



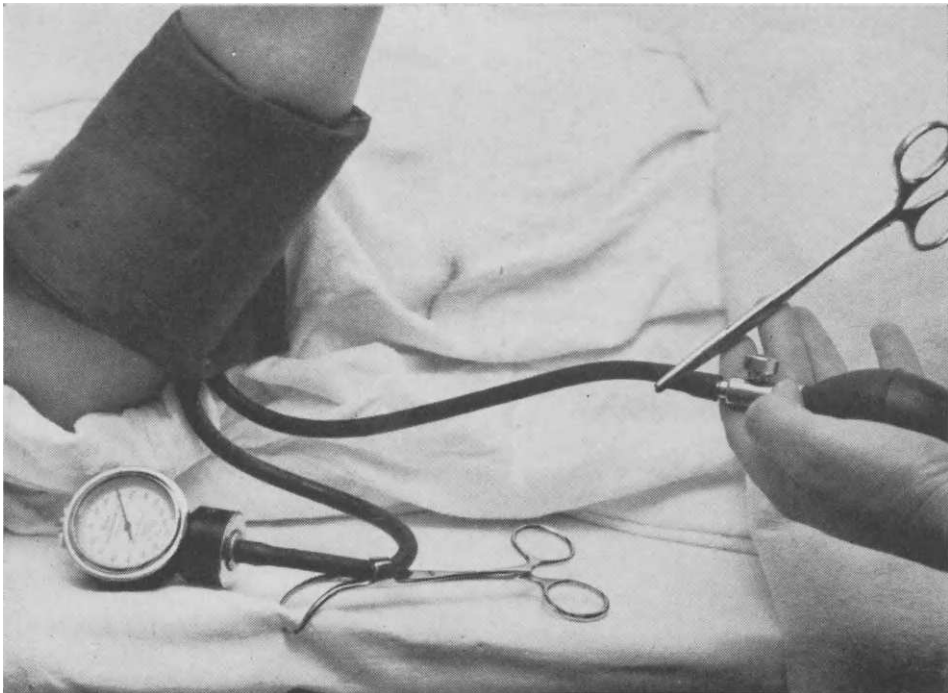
Place cuff round upper arm. Inflate to 200mm mercury to occlude arterial flow.



Remove bandage.

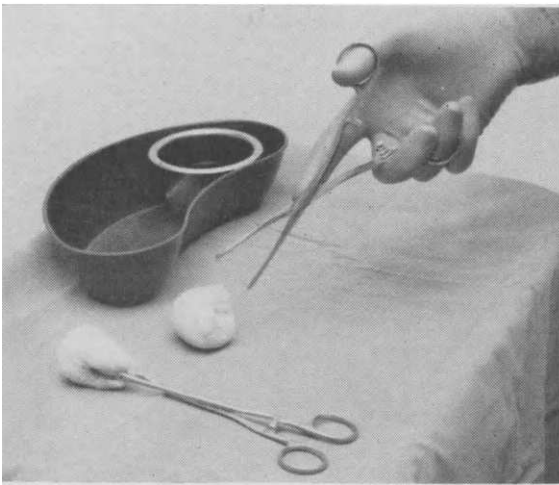


Fix tourniquet to table. Write time of application on board.



# Preparing the patient's skin

*Skin cannot be sterilized but surface bacteria must be reduced by thorough cleaning with an antiseptic solution to help prevent wound infection. A large area is cleaned (a) because the towels near the incision will become wet, presenting a less efficient anti-bacterial barrier, (b) the incision may be enlarged during operation. The procedure is usually carried out by a scrubbed person and must therefore be done without affecting the sterility of gloves or gown. The incision area is prepared first and any potentially dirty area left till last.*



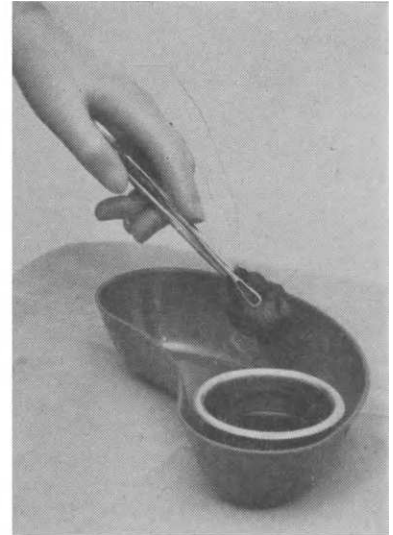
Use ball swabs.



Paint with swabs held at arms length to keep gown sterile by standing well back from the table. Keep forceps at right-angles to skin to protect gloves. Use both hands.



Paint wide area without dripping.

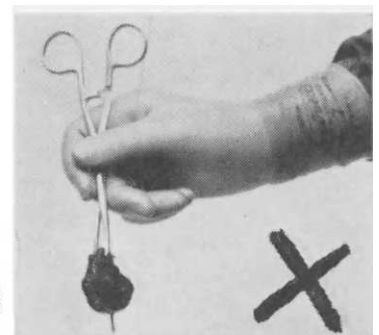


Discard used, now contaminated swabs.

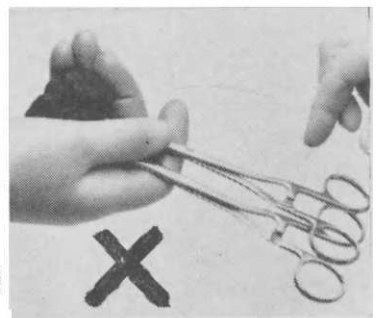
### FREQUENT MISTAKES



(a)

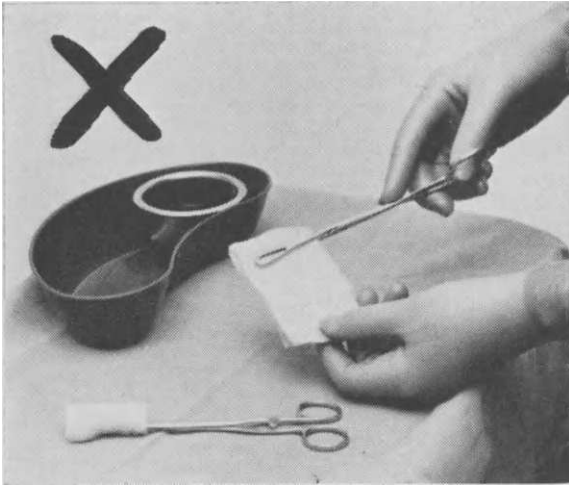


(b)

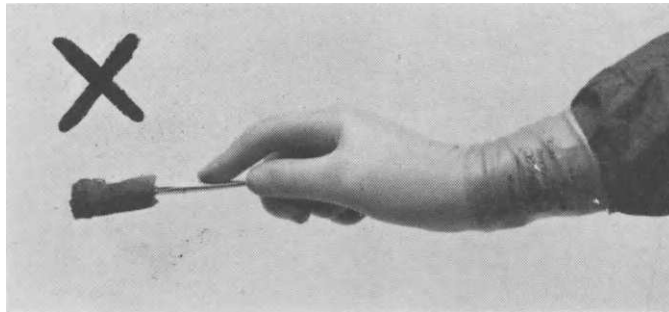


(c)

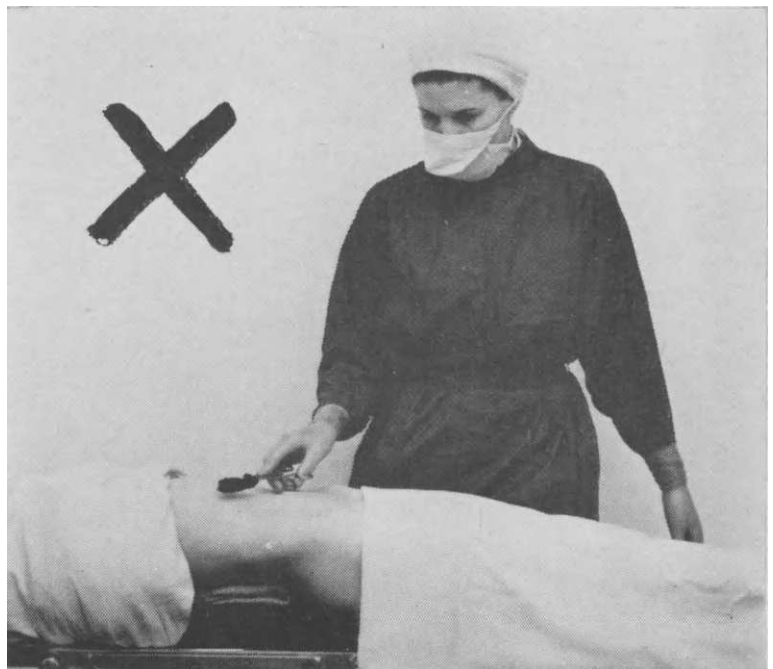
(a) Gown contaminated by standing too near table. Gloves in danger of contamination. Swabs returned to incision area after cleaning periphery. Runnels of fluid pooling under patient. (b) Swab dripping wet, hand too near it. (c) Gloves contaminated by handing used swabs to nurse.



Rolled swabs are bad as they need to be held horizontal for maximum painting width.



Fingers contaminated. Left hand unoccupied and in danger of contamination.



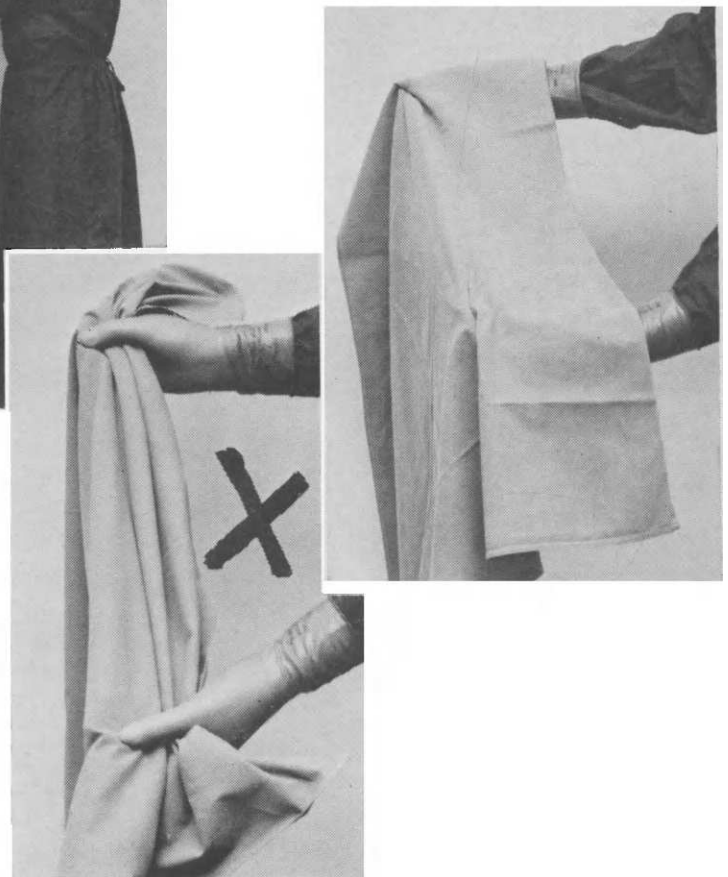
# Towelling

*The whole patient, except the incision site within the painted area, is covered with sterile towels. If an unsterile instrument table is used over the patient, a sterile waterproof sheet must be put under the towel. The procedure is carried out by scrubbed persons and must be done without affecting the sterility of gloves, gowns and the upper surface of the towels. The towels must be placed accurately without unnecessary movement and without readjustment. They must be fixed securely.*

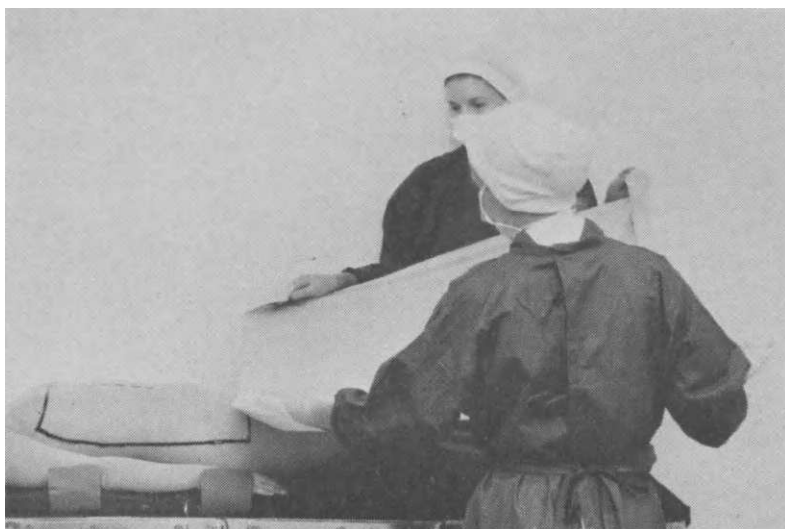
Start with a sterile towel.



Finish with sterile gloves.

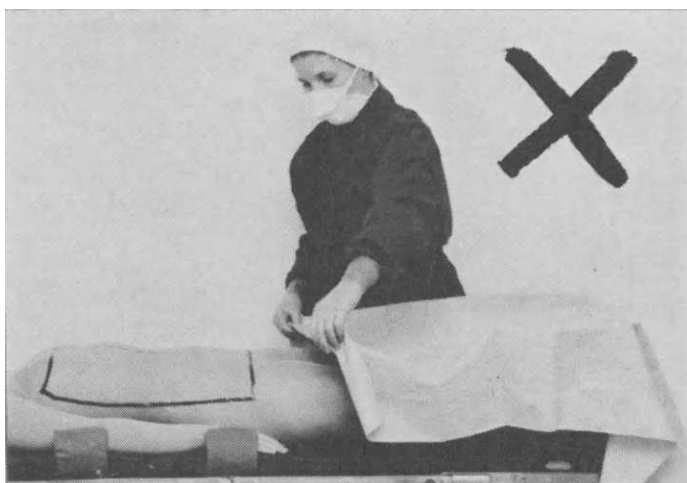


## TOWELLING FOR AN ABDOMINAL OPERATION



Handle large waterproof sheet only with assistance and protect gloves.

Sheet placed too low. Gloves not protected and contaminated.

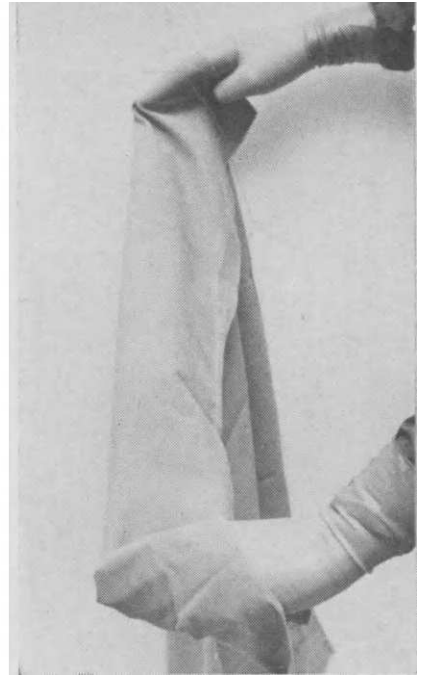


Place centre fold of large towel to centre of instrument table to ensure even draping. Then hand one end to assistant.





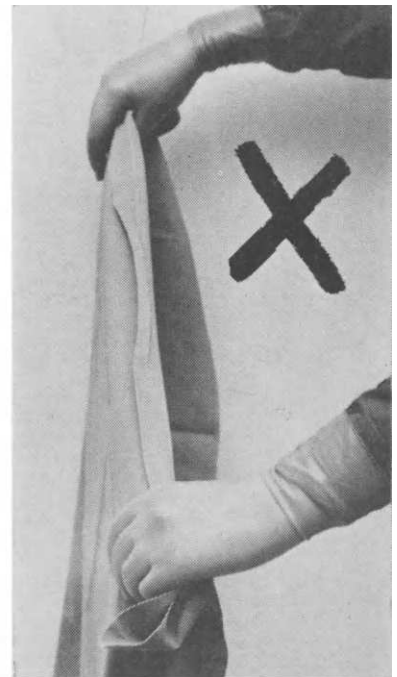
Place head towel, away from you, protecting gown and gloves.



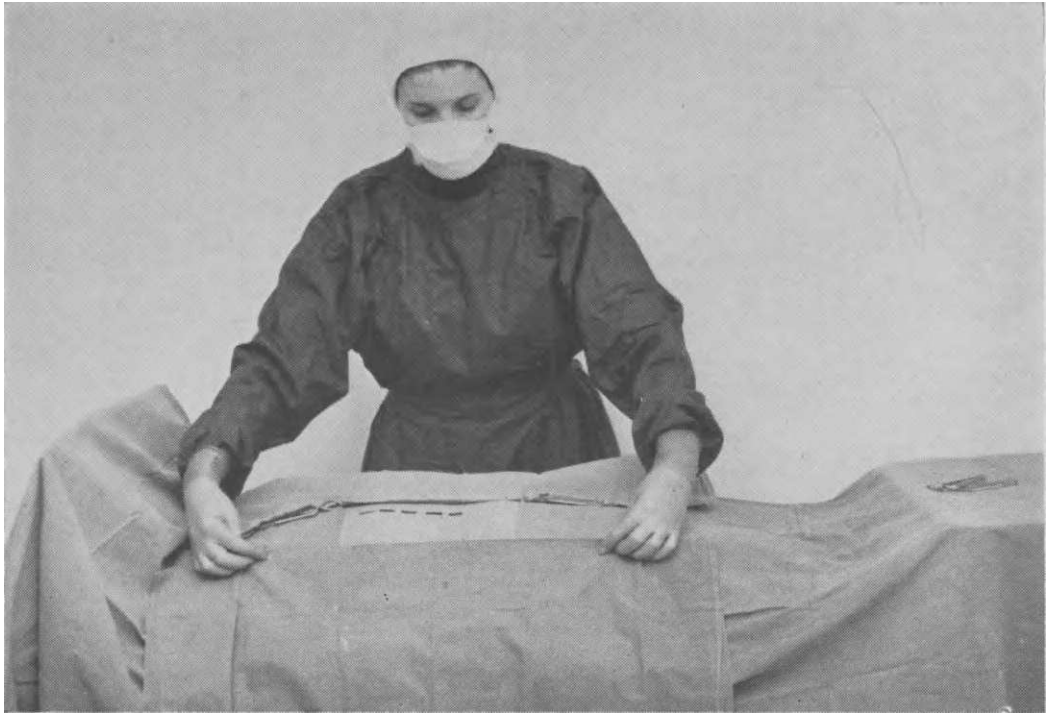
Detail of protected hands.



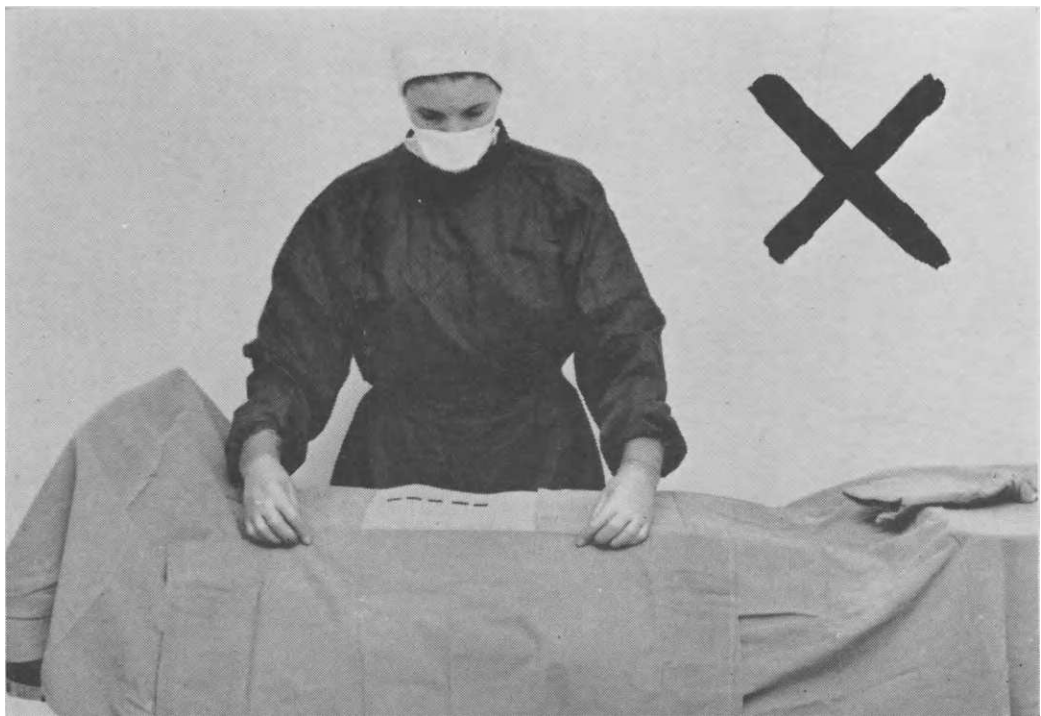
Incorrect placing of head towel. Gloves unprotected.



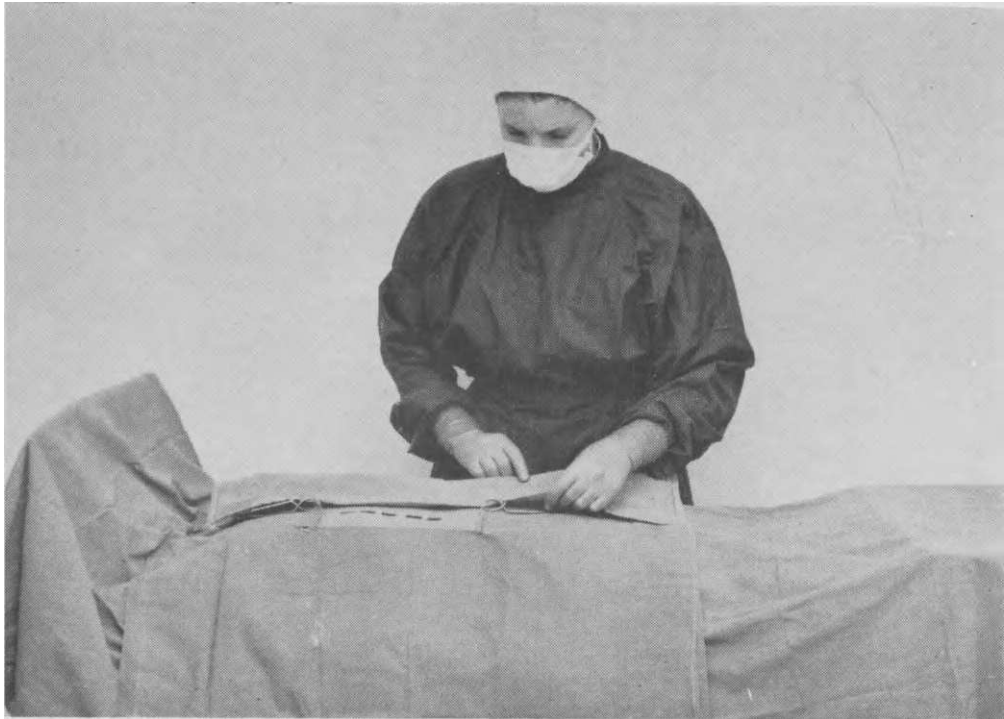
Detail of unprotected hands.



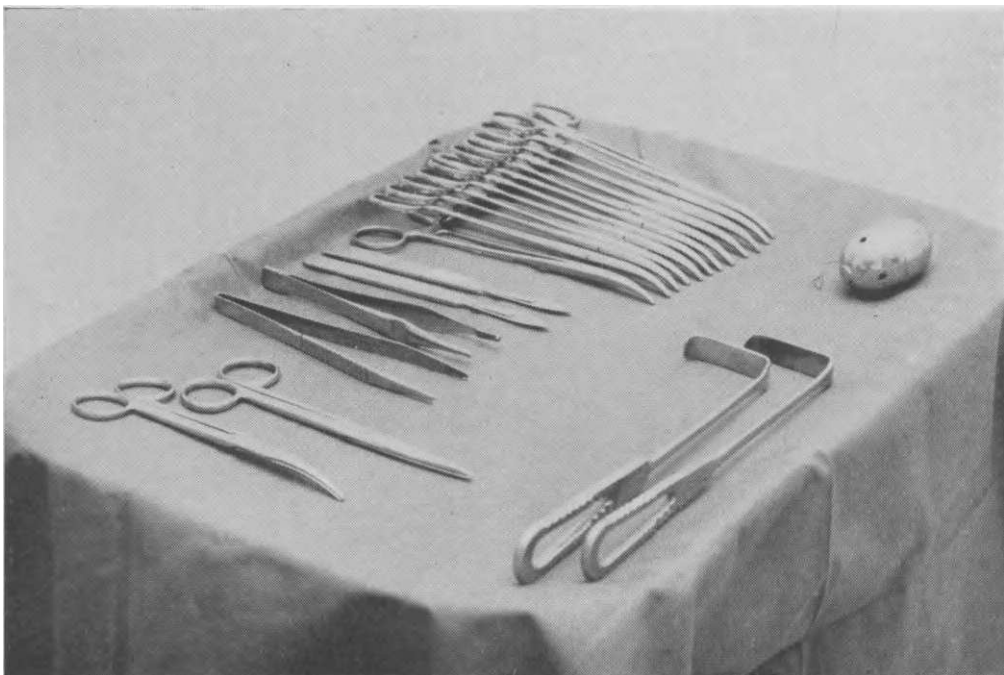
Position side towels, the nearer one first. Have towel clips to hand.



Further towel placed first. Gown contaminated.

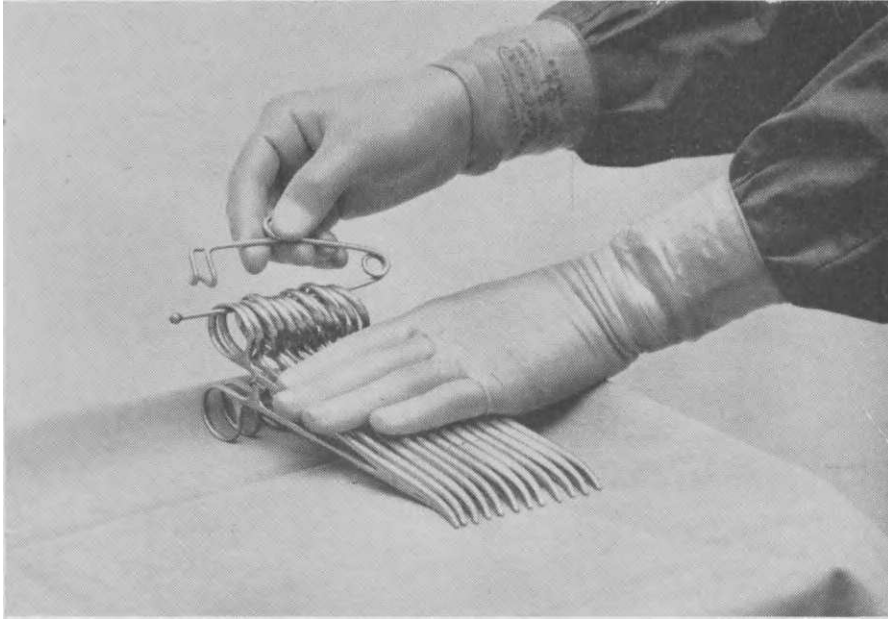


Cover towel clips if possible when securing towels.



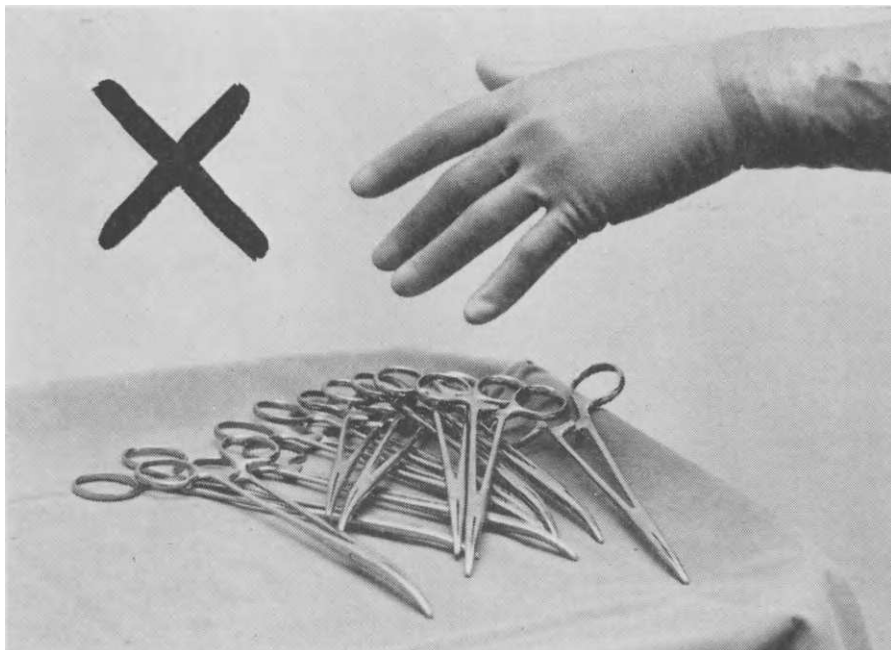
Put the surgeon's immediate requirements on the instrument table.

# Moving a bunch of artery forceps



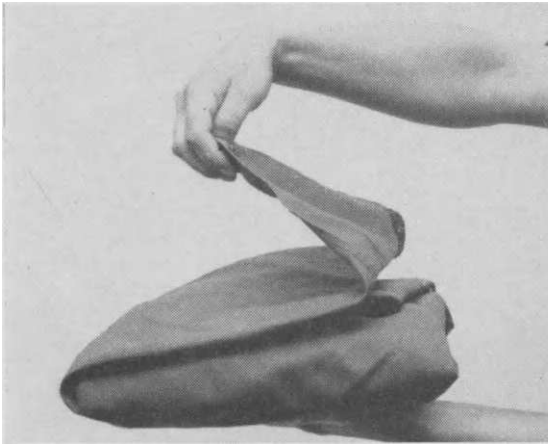
Put them on the table, *then* remove the pin . . .

. . . otherwise this will happen.

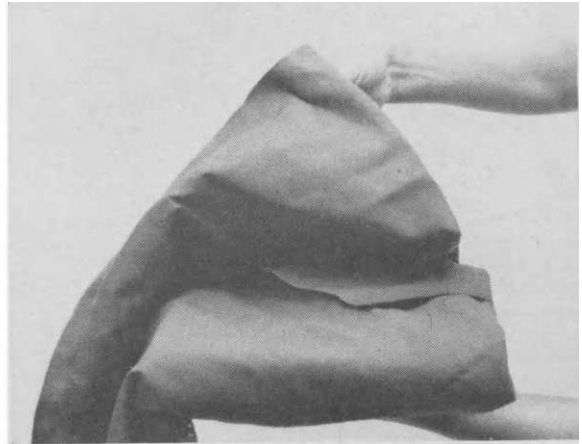


# Presenting a tray of instruments

*Provided that it is properly wrapped, a tray of dried, autoclaved instruments can be removed from the autoclave by an unscrubbed nurse, unwrapped by hand and presented to the scrubbed nurse, without contaminating instruments or gloves. This is most easily done by using a square wrapper folded diagonally, with corners turned back for unfolding.*



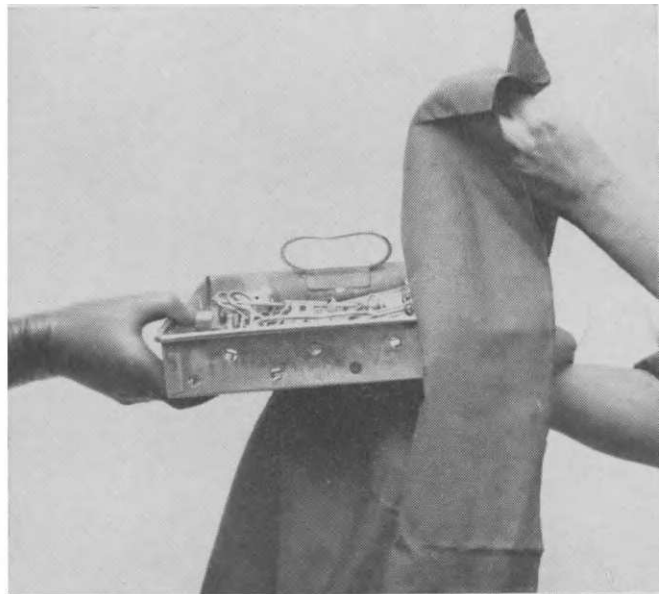
Hold tray with point of wrapper away from you. Lift point and drop.



Unfold right side.



Unfold left side.

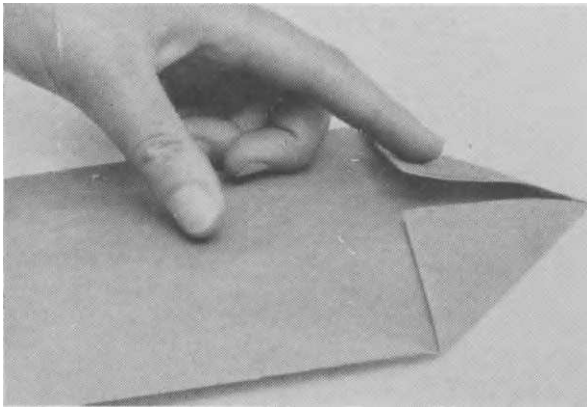


Lift last point towards you.

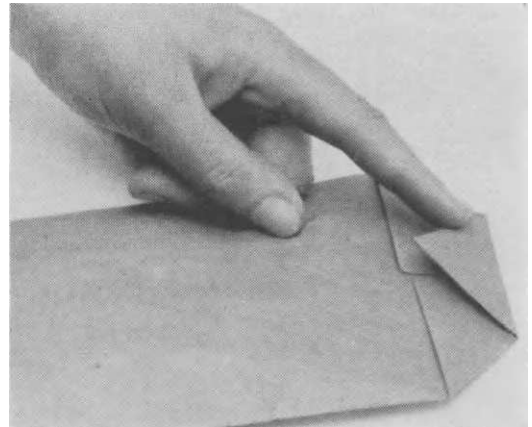
# *Paper envelopes*

*Paper is cheap, disposable, permeable to steam under pressure and is a good anti-bacterial barrier when stored in a dry, dust-proof cupboard. The envelopes are folded so that they can be unfolded by an unscrubbed nurse without the open edge becoming contaminated. The sealing tab must bear proof of sterilization.*

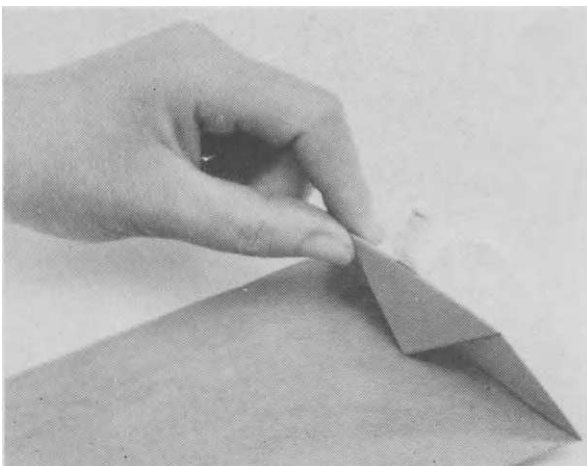
## SEALING



Fold corners.



Fold point.



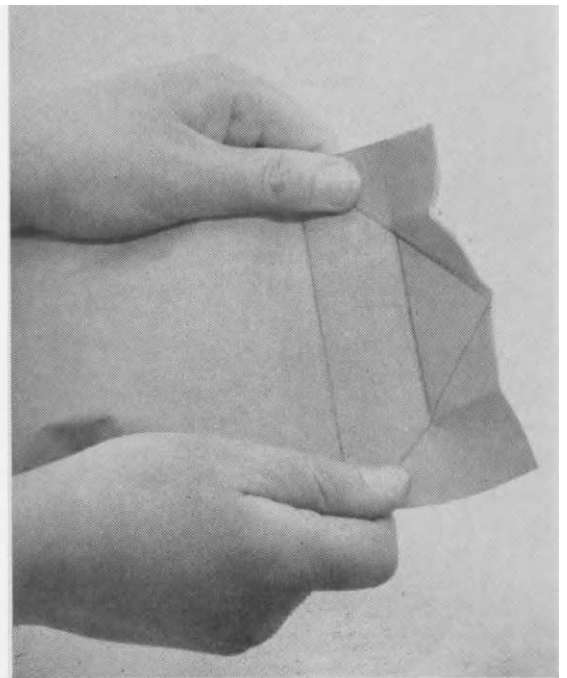
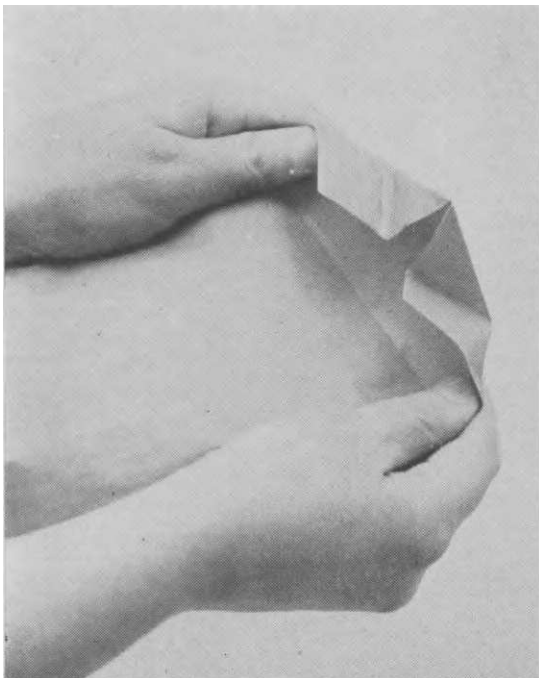
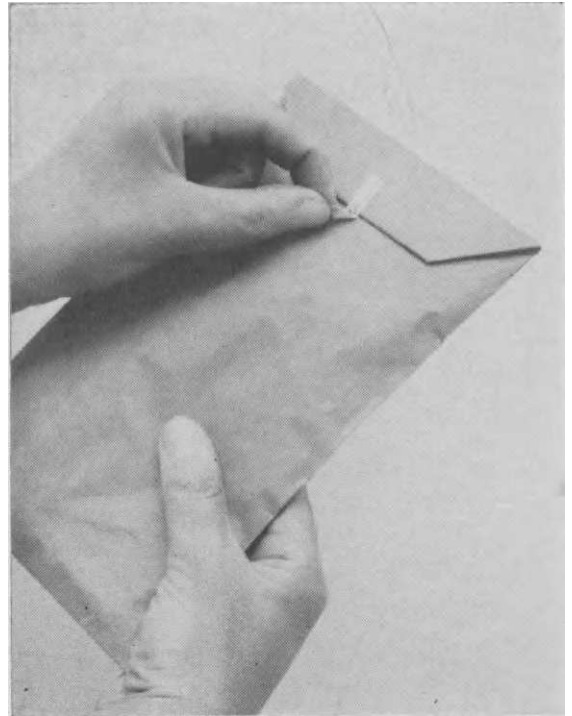
Fold again and seal with tab.

## UNSEALING

(1) Pull tab to raise first fold.

(2) Put thumbs under folded corners.

(3) Separate thumbs to raise corners.



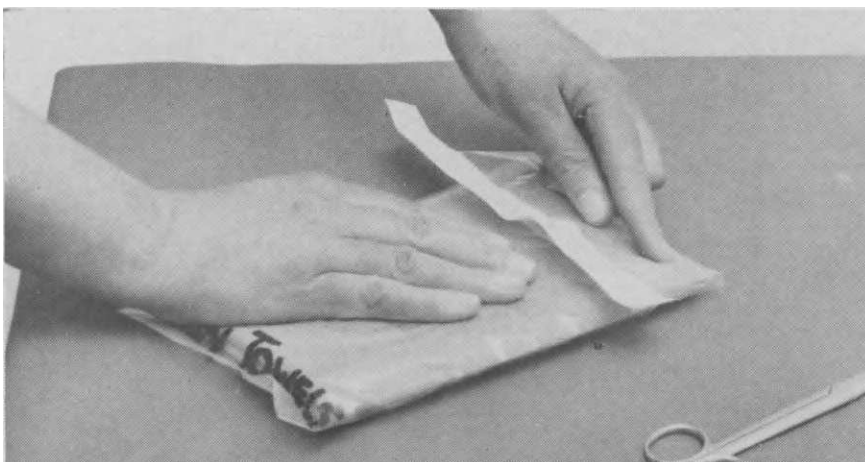
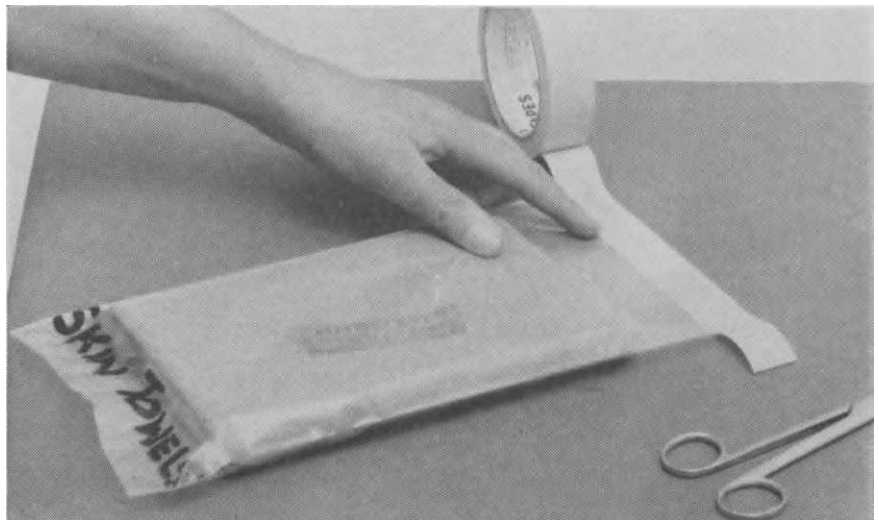


# Nylon bags

*Extra sterile articles will be needed in addition to the contents of a bundle during operation. These can be sterilized in Portex nylon bags. Nylon is fairly cheap, strong, transparent, permeable to steam under pressure and is a good anti-bacterial barrier. The bags are sealed so that they can be opened by an unscrubbed nurse without the open edge becoming contaminated. They are sealed with steam-permeable adhesive tape. Each bag must contain a label which changes colour when exposed to the correct steam pressure and temperature.*

## SEALING

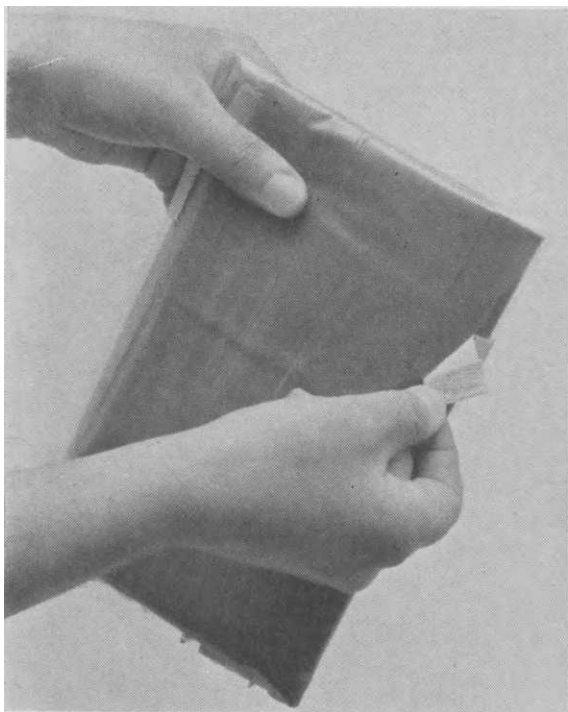
Press edges firmly  
along middle of tape.



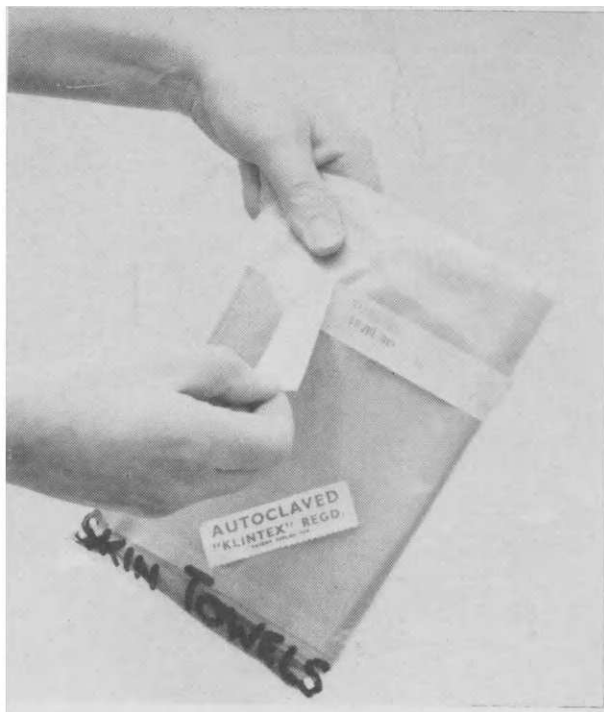
Press on contents to  
expel air. Fold bag  
and seal taking tape  
round sides of bag.  
Make tab at one end of  
tape.



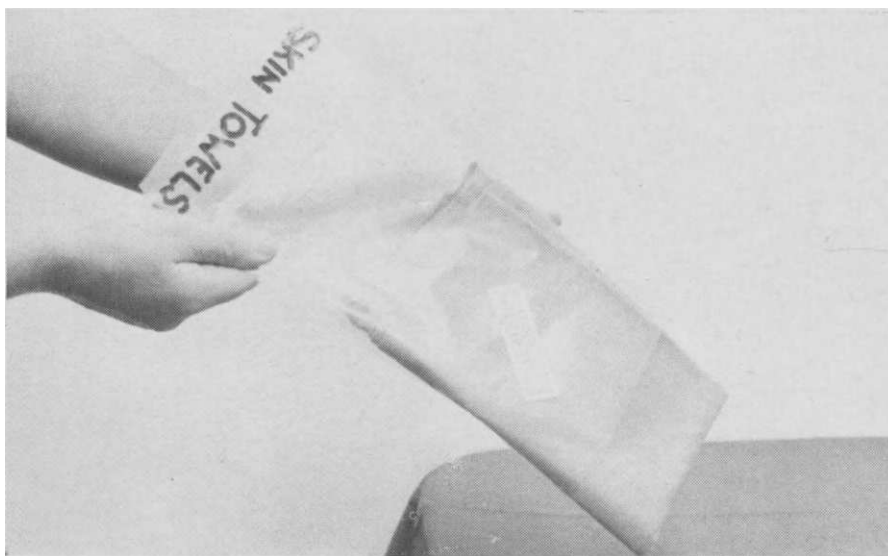
## UNSEALING



Take tab at back of bag. . .



having checked 'Autoclaved' label, hold top of bag, peel tape off.

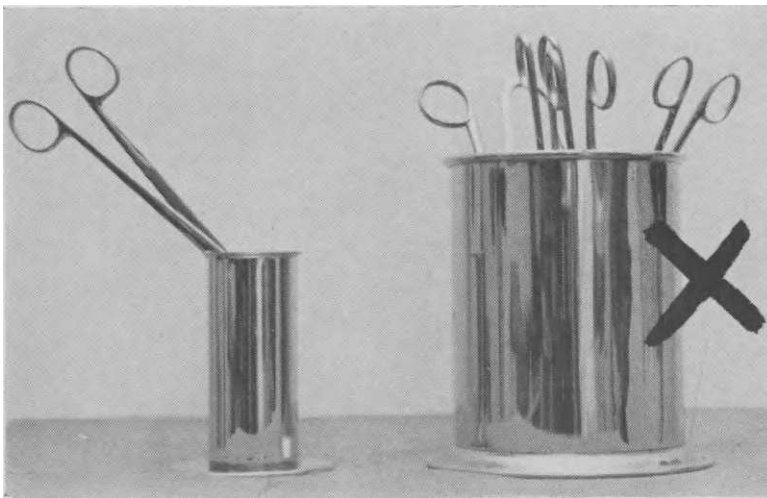


Expel contents.

# Using lifting forceps

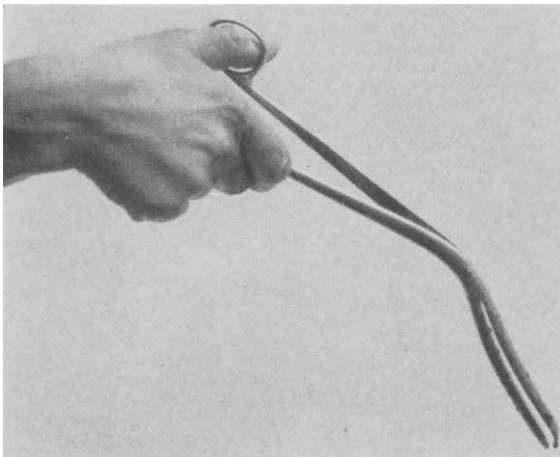
## CHEATLE FORCEPS

*An unscrubbed nurse may handle sterile articles with Cheatle forceps. These forceps have, however, been proved dangerous. If they are used they must be used properly. They are sterilized and kept in a disinfectant solution in a sterilized jar. The jaws are sterile, the handles and the jar above fluid level are not. The forceps must be taken from the jar, used and replaced without touching an unsterile object.*

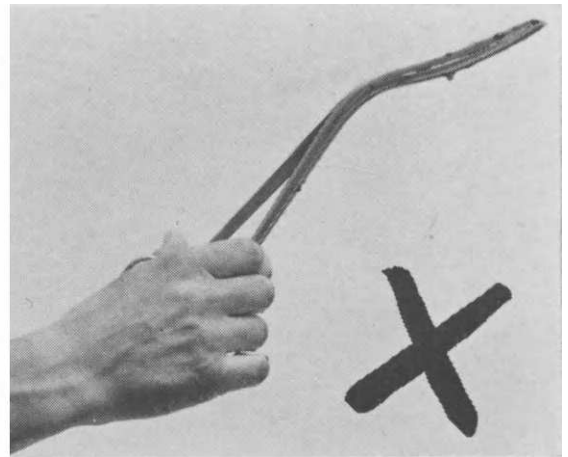


Correct.

Impossible.



Uncomfortable but correct; wet sterile jaws lower than unsterile handles.

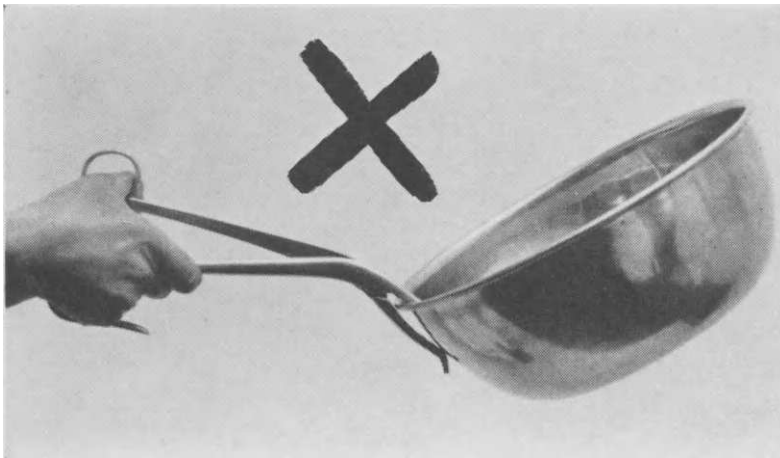
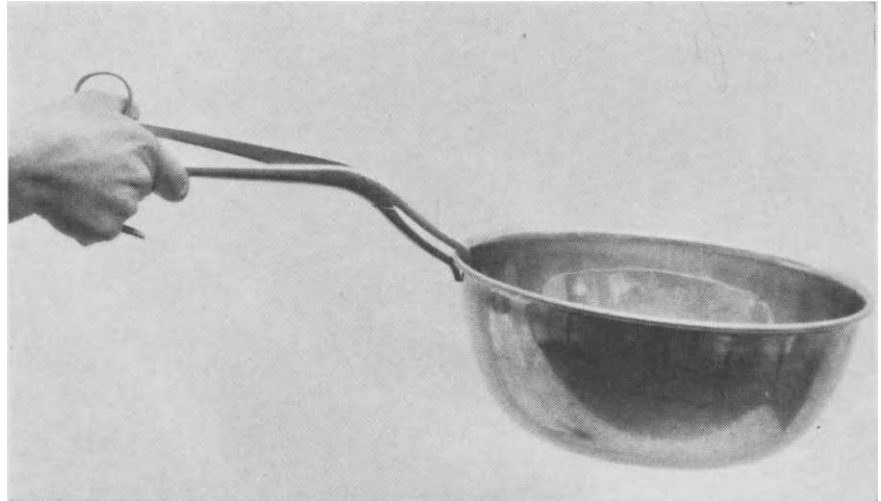


Comfortable but wrong; watch the drips.

## BOWL FORCEPS

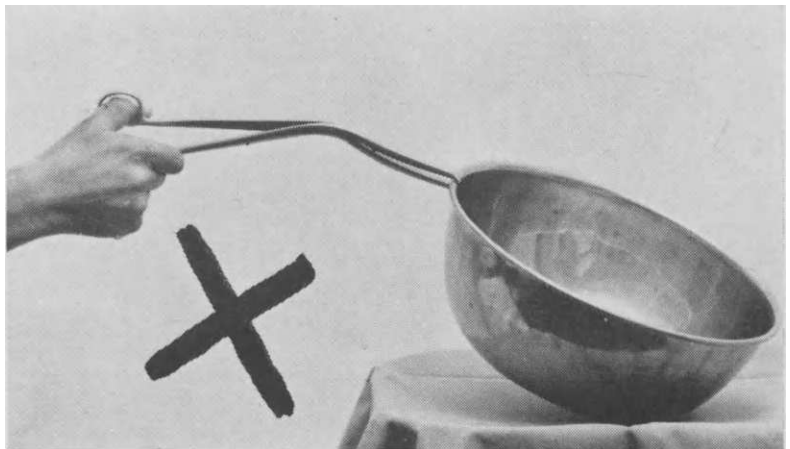
*Use the proper forceps for the job and use correctly.*

Like this . . .



. . . not incorrectly like this.

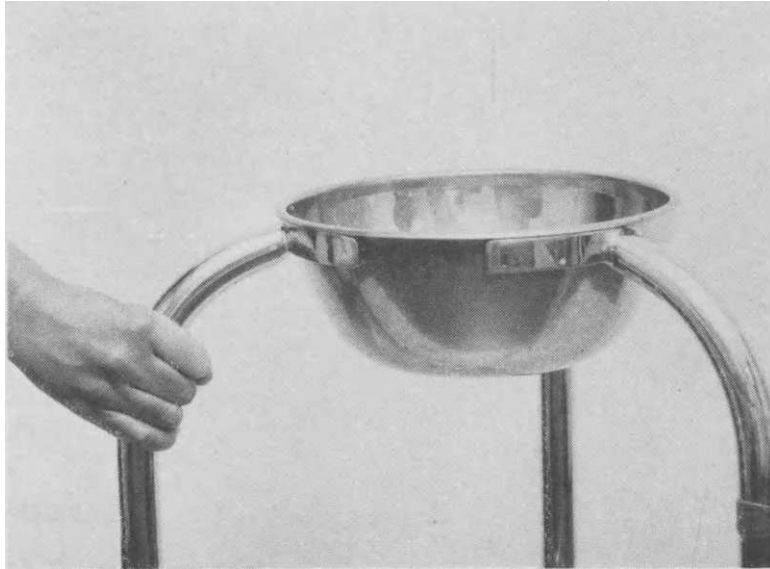
The wrong forceps are useless even if held correctly. These lighter forceps are for swabs not bowls.



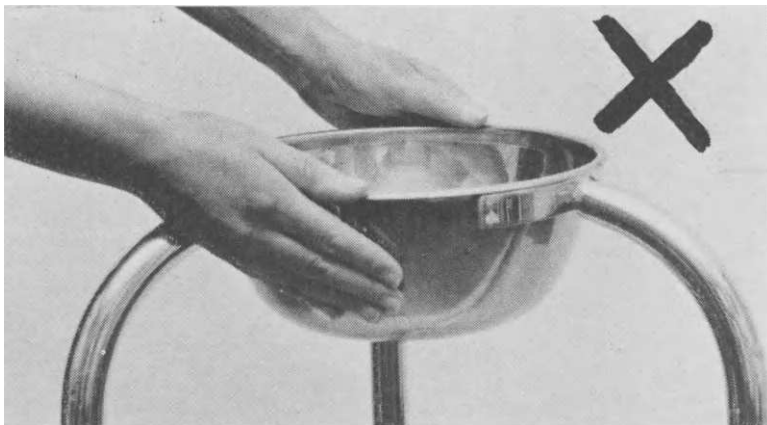
# Dip bowls

## MOVING A DIP BOWL

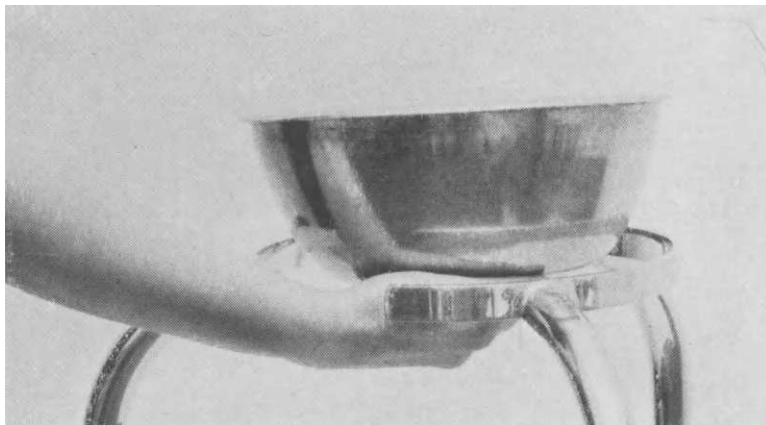
*The surgeon rinses his gloves in a sterile bowl. After use, the fluid must be changed without contaminating the bowl.*



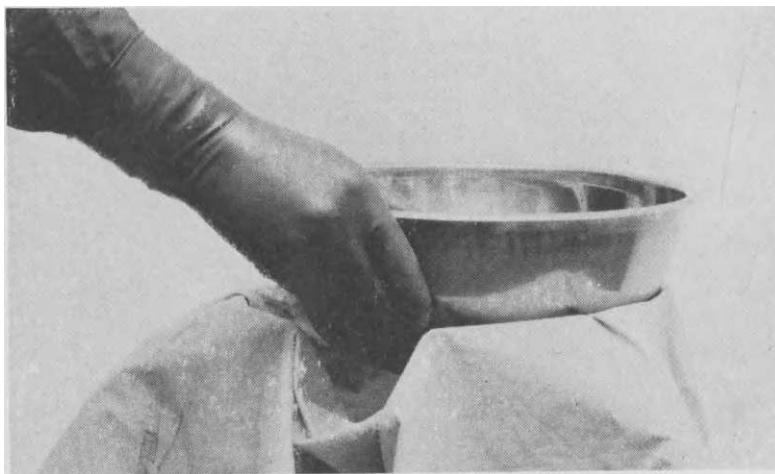
Moving a dip bowl by an unscrubbed nurse.



## CHANGING A DIP BOWL



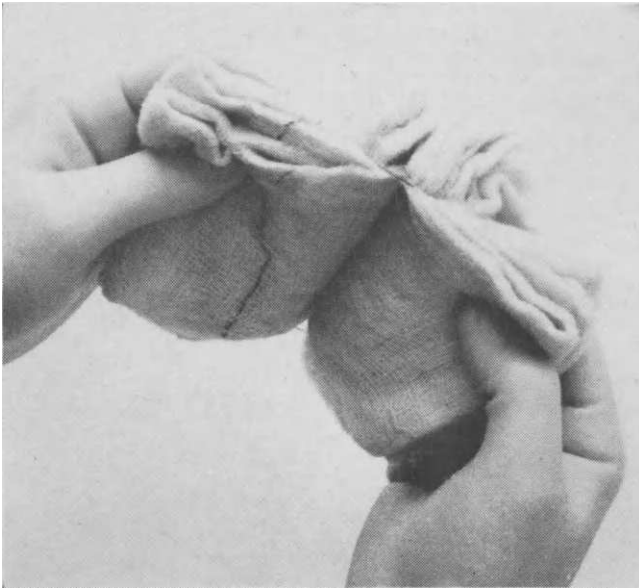
Raise or lower bowl from underneath.



Changing a dip bowl by a scrubbed nurse.

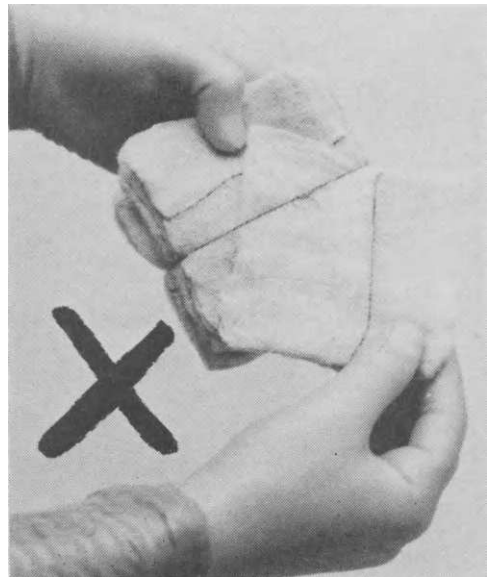
# Loose swabs

*There are many methods of counting swabs. Each should have clear and concise written rules which must be carried out to the letter. Only one method is permissible in a department. The rules must include instructions as to the operations for which swabs must be counted, and the stages during each operation when this must be done. X-ray detectable gauze is available and should be used. These are Ray-Tec\* swabs.*

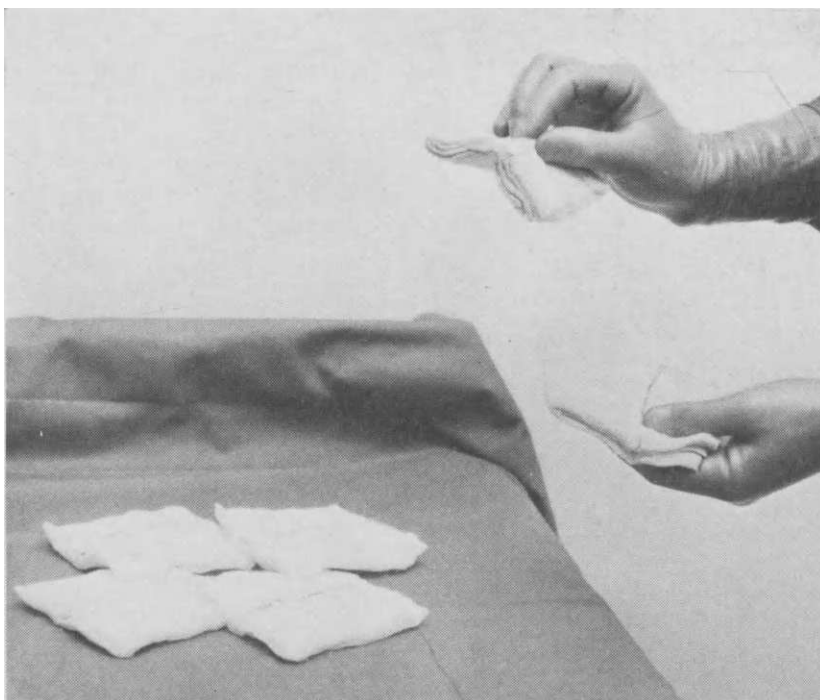


Always break open bundle completely.

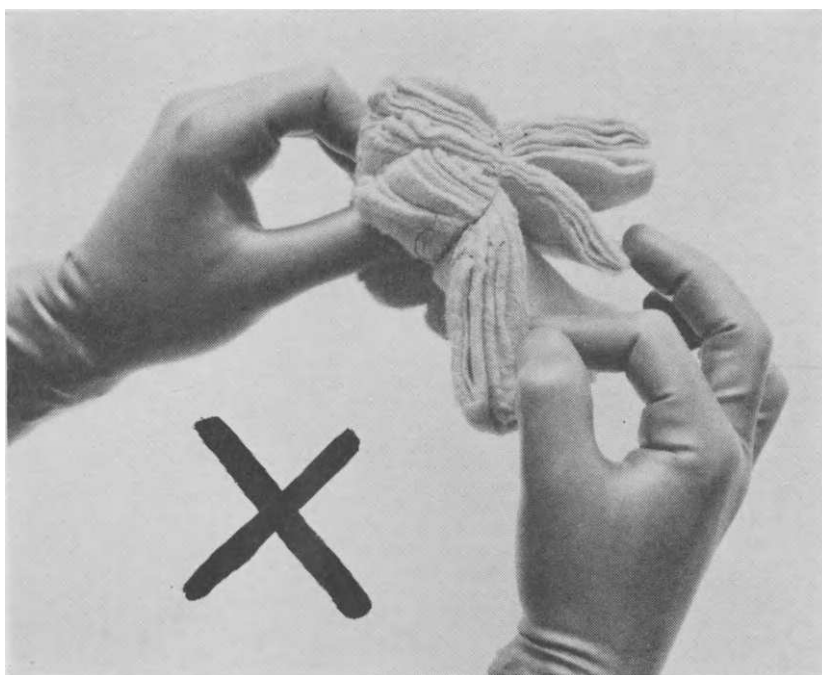
Never remove one swab leaving the remainder tied, they will look like a complete bundle.



\* Ray-Tec—Registered Trade Mark of Johnson & Johnson, Ltd.



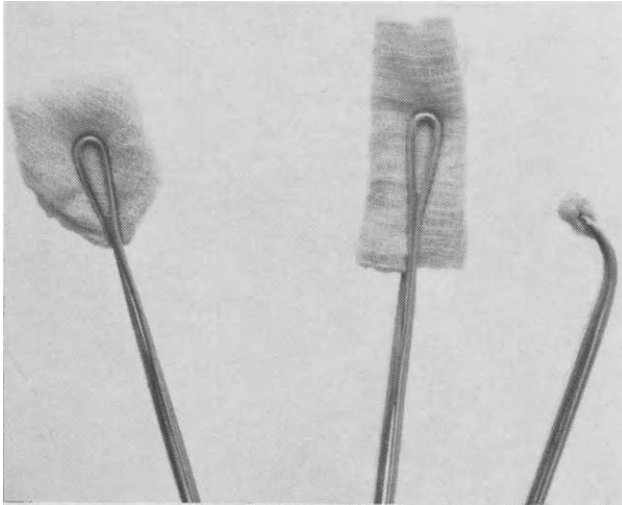
Always count swabs separately, dealing them out one by one, so that each is clearly visible.



Never count swabs leaving the bundle tied as the folds are confusing.

# Stick swabs

*Some surgeons prefer to use swabs mounted on holders instead of loose. They must be counted, and should be made of x-ray detectable gauze.*

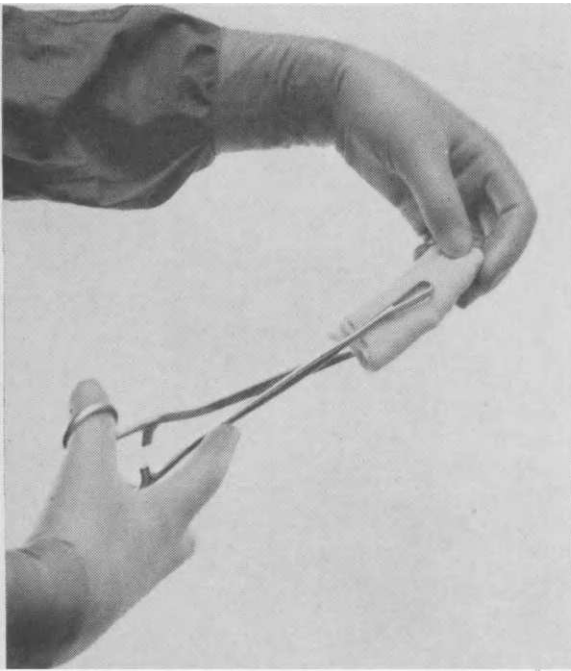


(a)

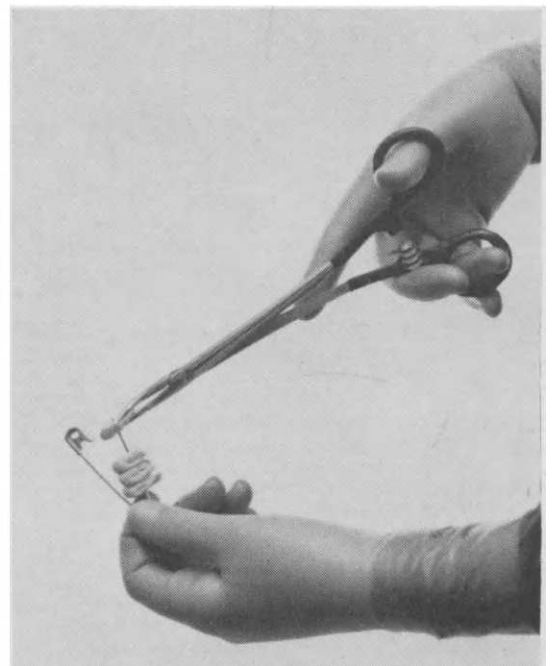
(b)

(c)

- (a) Folded; for skin preparation or deep swabbing.
- (b) Rolled; for deep swabbing, not skin preparation—which see.
- (c) 'Peanut' or 'Lahey'; for delicate blunt dissection. These are miniatures of folded swabs, and are conveniently made in advance and loaded on a safety pin.



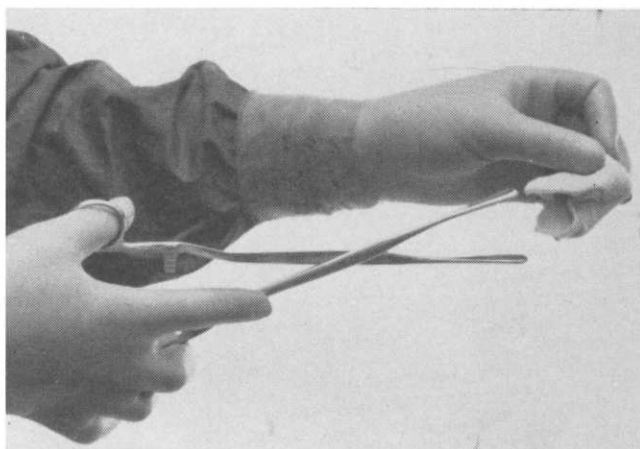
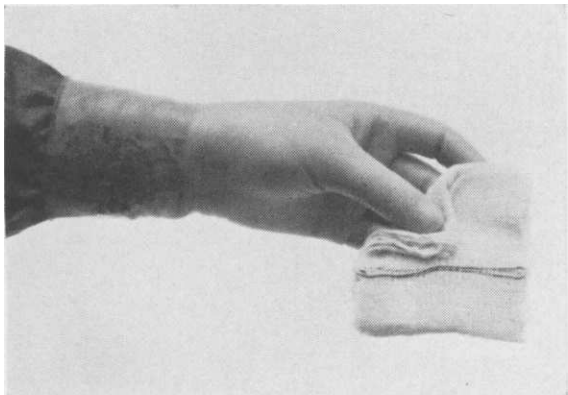
Rolled swab.



'Peanut' or 'Lahey'.

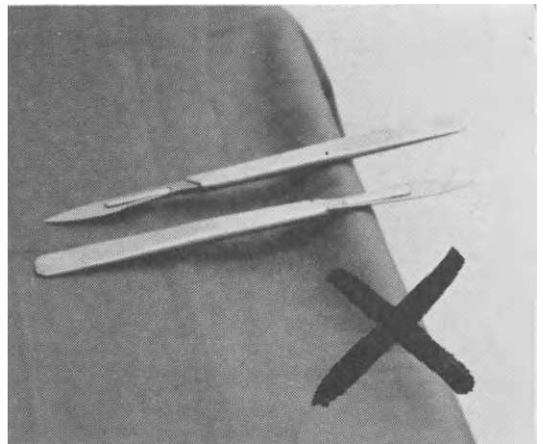
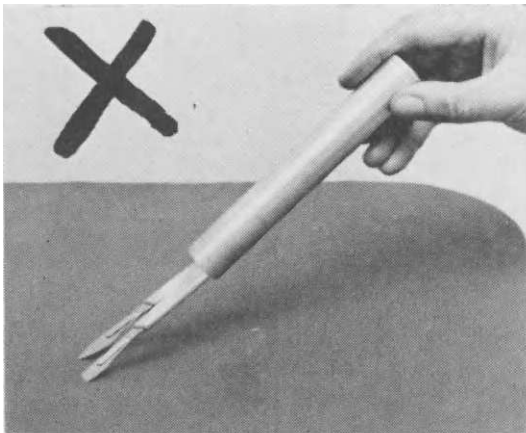
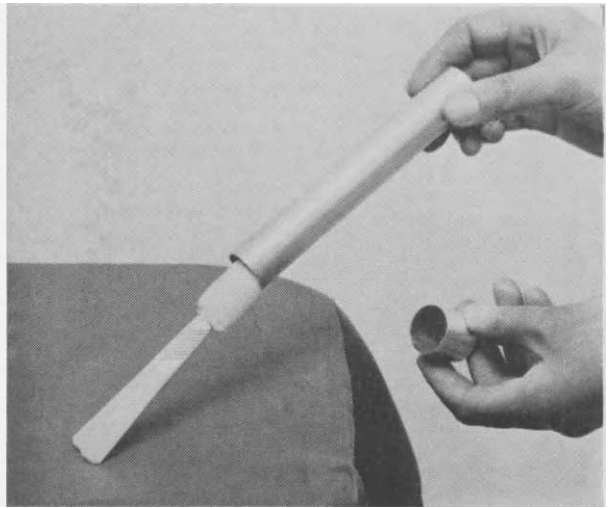
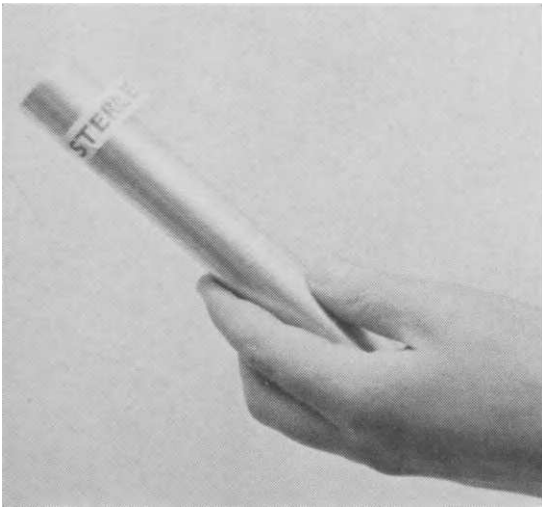


## FOLDED STICK SWAB



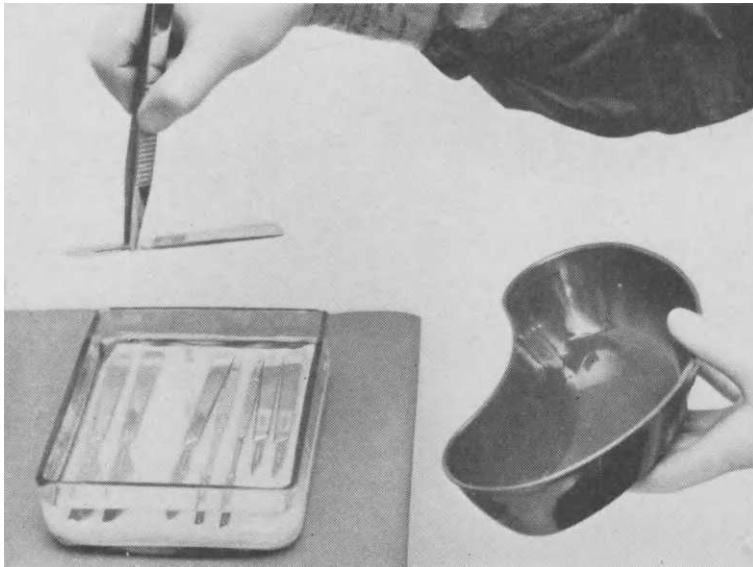
# *Presenting sterile knives*

*The knife must be both sterile and sharp. This is best achieved by sterilization in metal tubes in a hot air oven. In presentation the blades must be protected and everything else must be protected from the blades.*



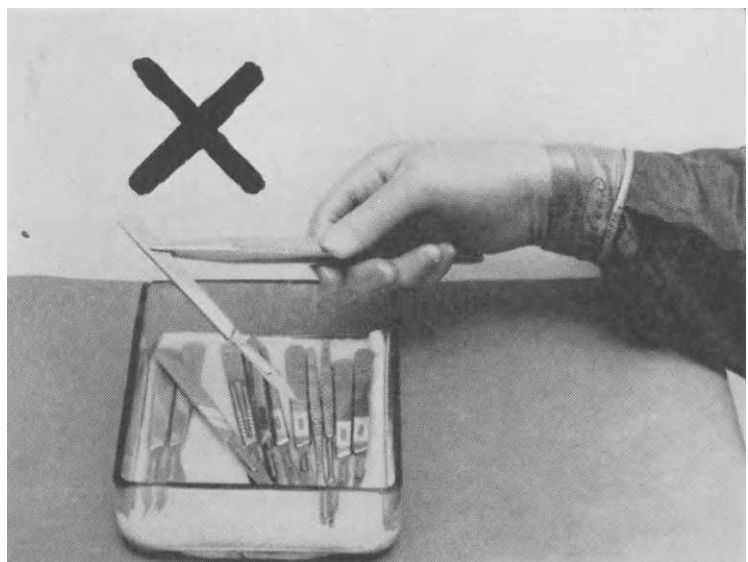
Damage will be caused if knives are placed like this. Always put them flat on table.

*Sterilization by chemical means is less effective, tends to blunt the cutting edge and presents the scrubbed nurse with practical difficulties. However, if hot air ovens are not available this method may be used.*



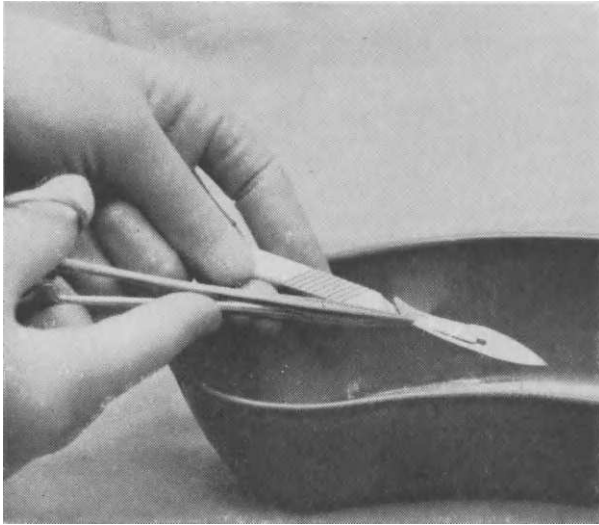
Have dish near front of shelf, containing few knives well covered with disinfectant. Hold forceps correctly with sleeve and glove well clear. Grip knife firmly and put straight into receiver.

Dish too far back. Many knives and little disinfectant. Unsafe grip on knife with wrongly held forceps therefore sleeve and glove contaminated. No receiver.

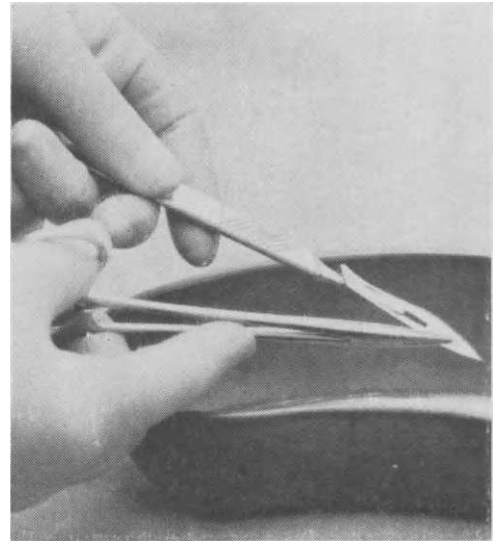


# *Removing a detachable blade*

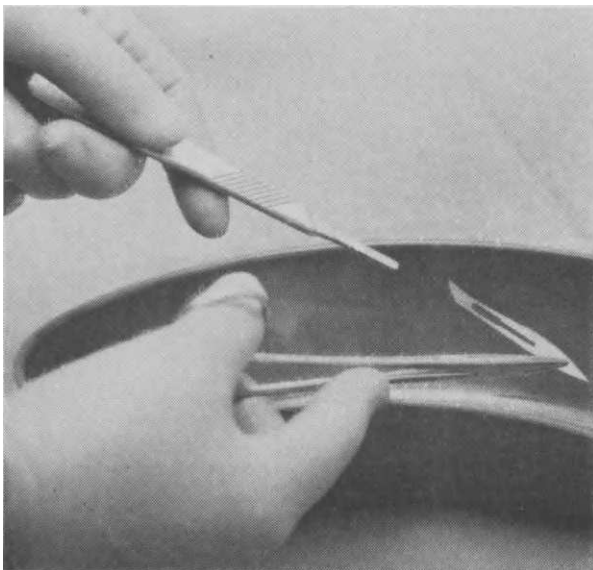
*A knife should always be handled with the cutting edge away from the moving hand.*



Lift and disengage blade with forceps which grip.



Change grip to pull blade off handle.

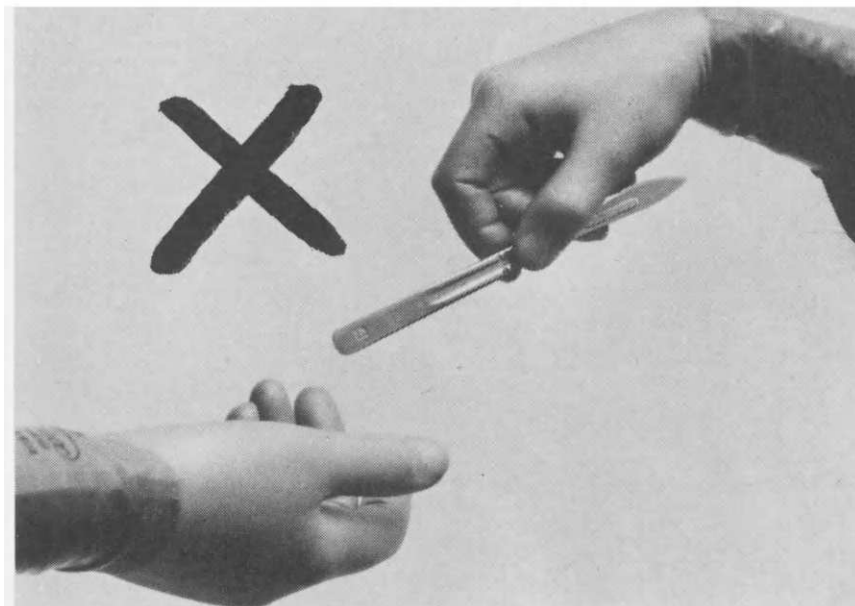
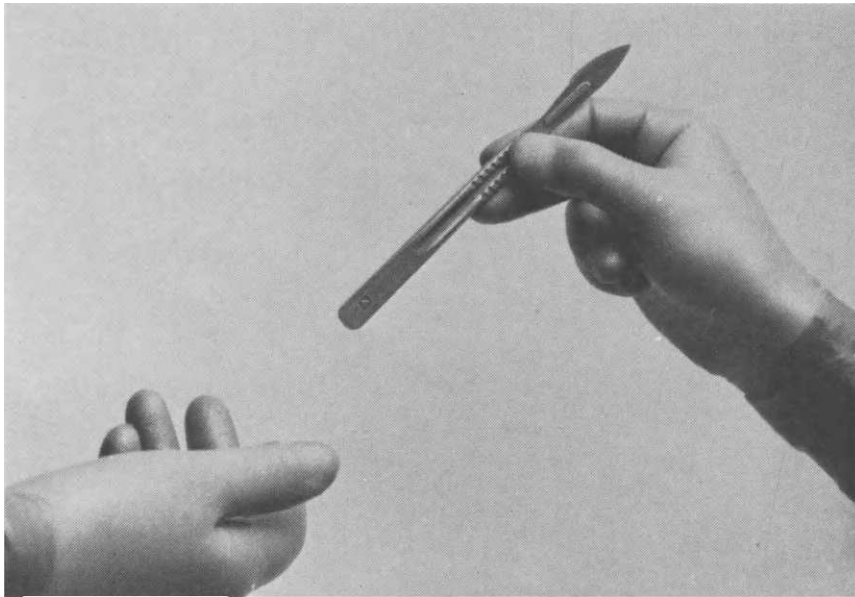


Discard blade into proper receptacle, not among swabs or other instruments.

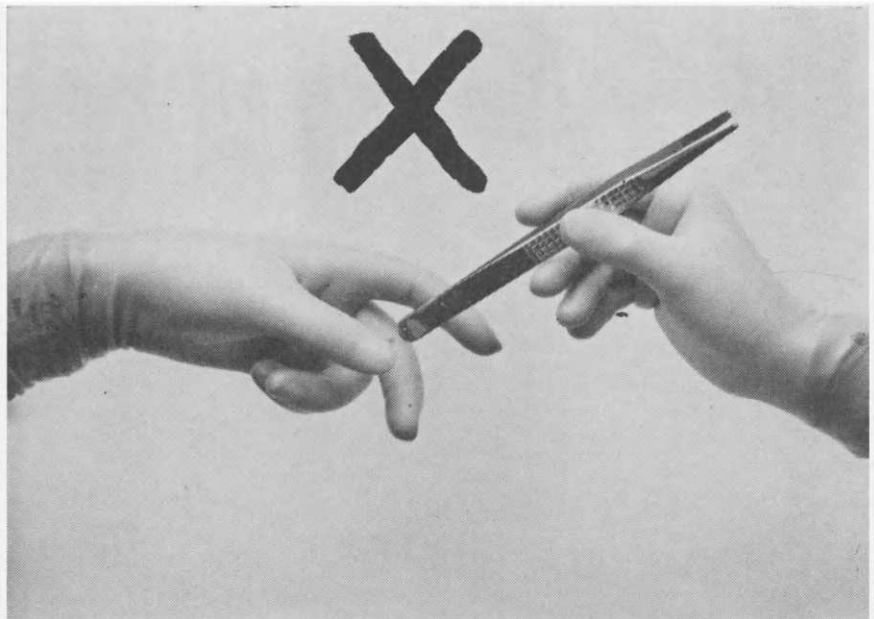
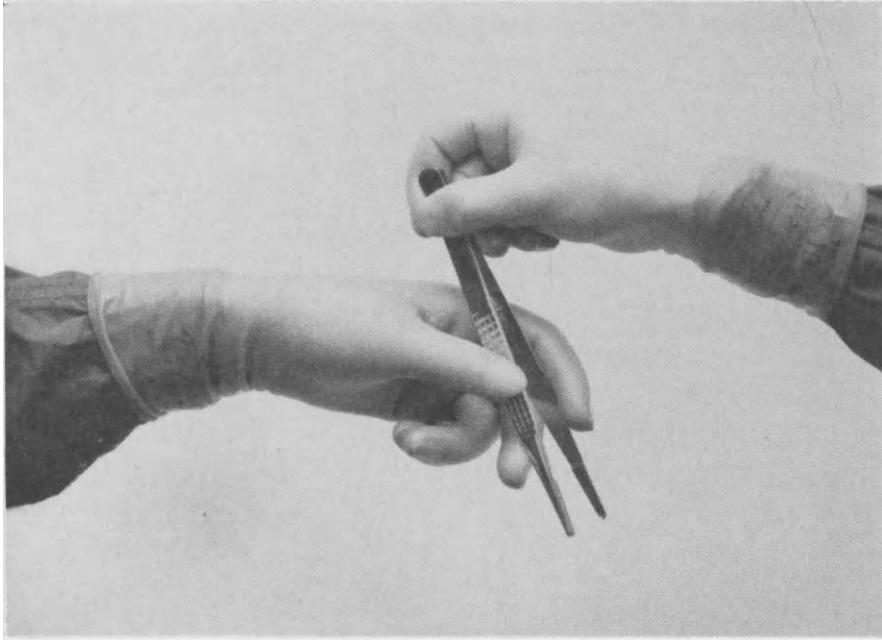
# Handing instruments

*Instruments must be put into the surgeon's hand in the position in which he will use them. In the case of sharp instruments this must be done without injuring gloves or hand.*

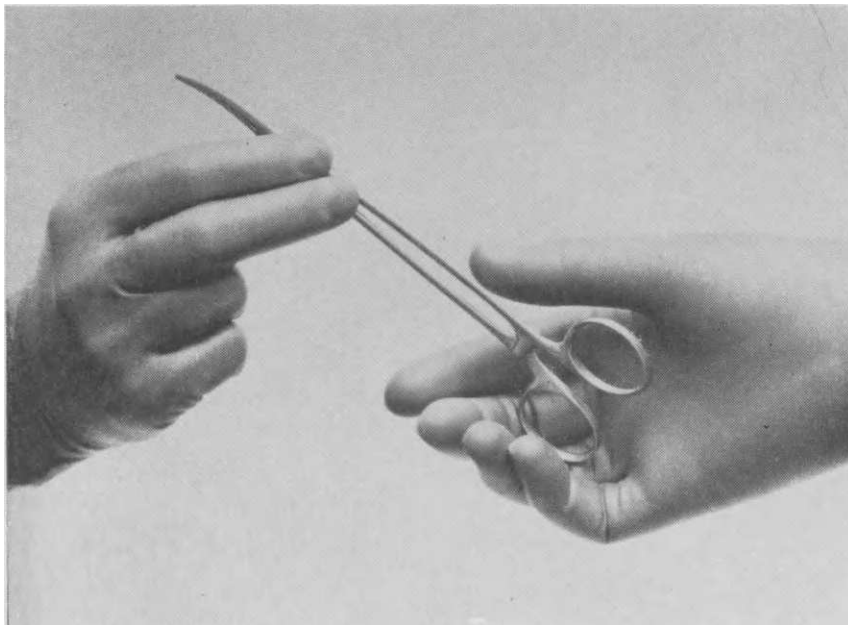
## A KNIFE



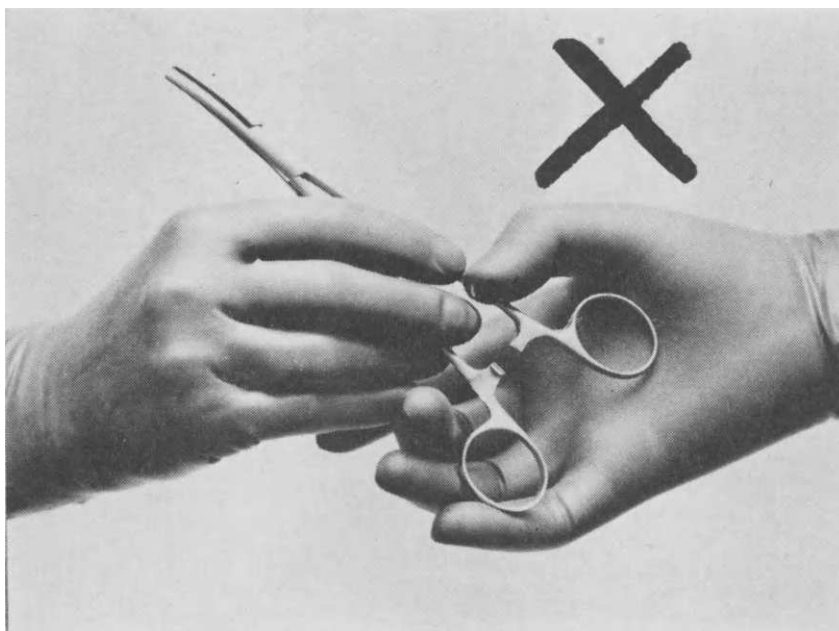
## DISSECTING FORCEPS



## *CURVED ARTERY FORCEPS*

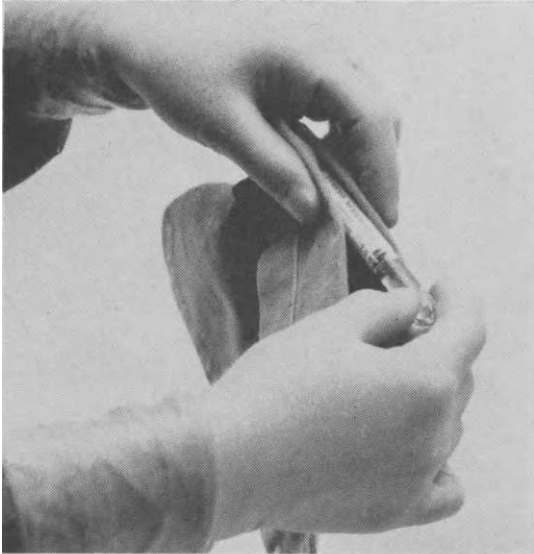


Hand forceps with ratchet closed and curve towards surgeon.

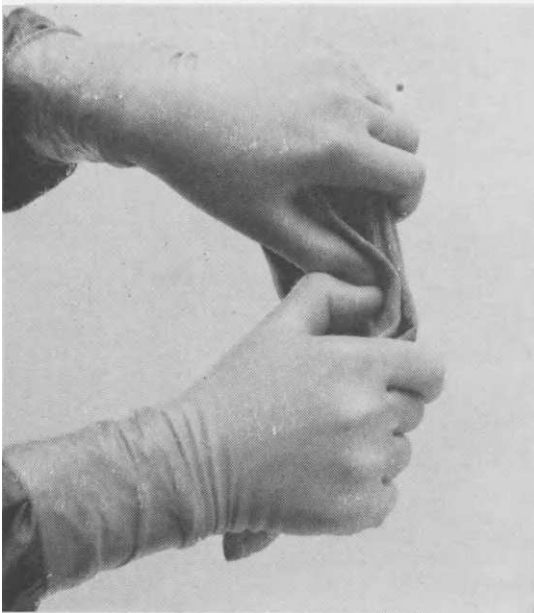


# Opening catgut tubes

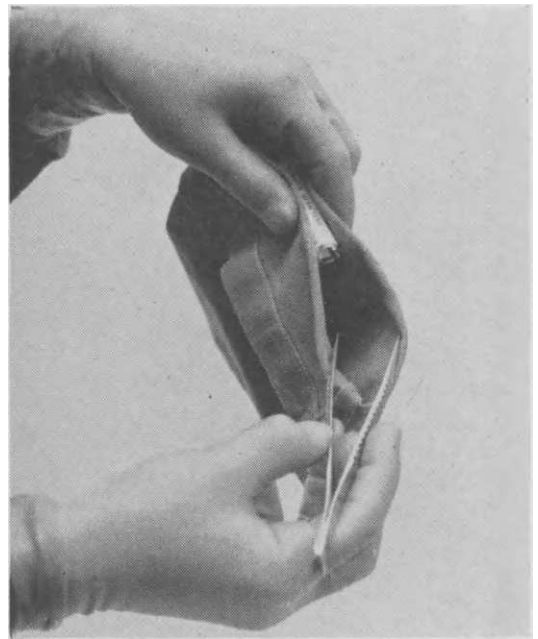
*Broken glass is dangerous; fragments can easily be carried into the wound on gloves or swabs. This must be avoided. 'Waisted' tubes, which are less likely to splinter, are available.*



Place tube in bag; catgut at left end of tube.



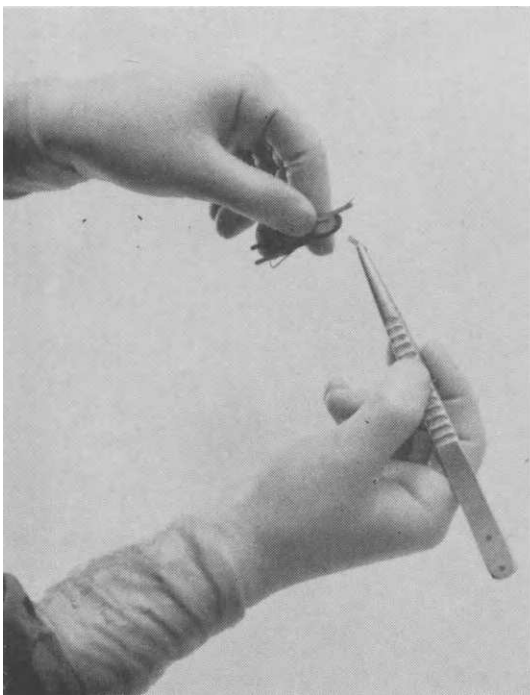
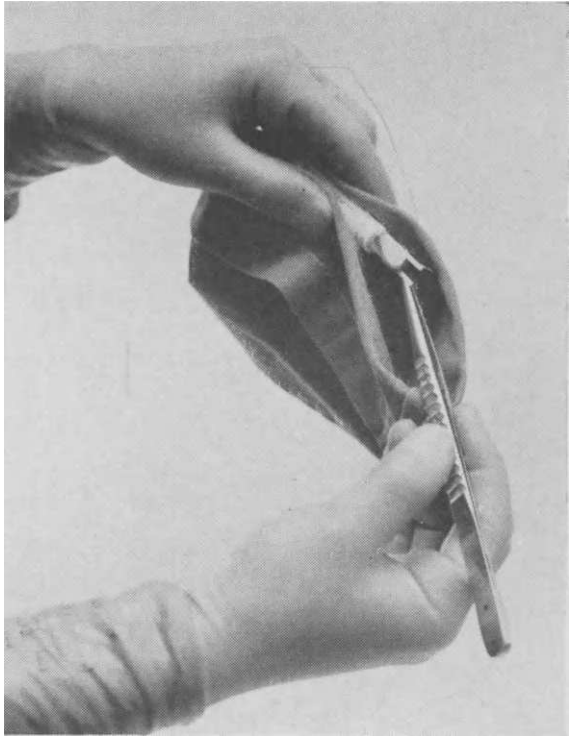
Break tube. Let right end fall into bag.



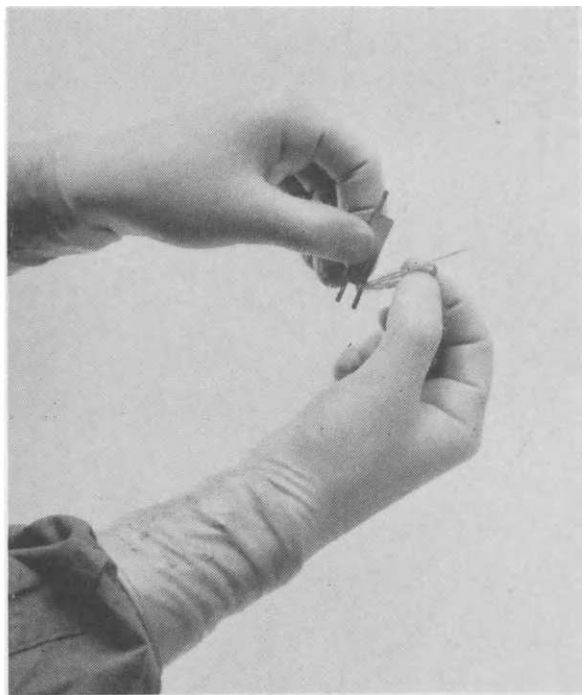
Use forceps to spread bag open.



Grasp catgut former, remove from tube.



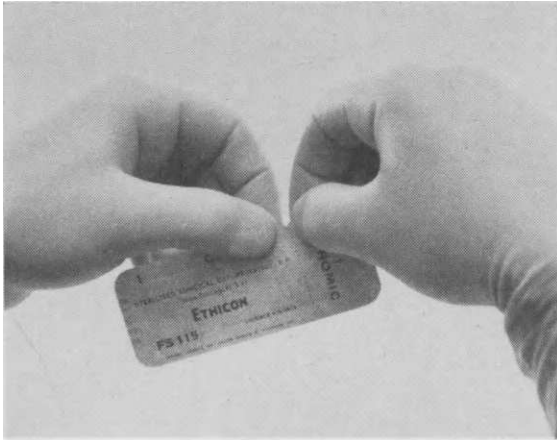
Pull off prong.



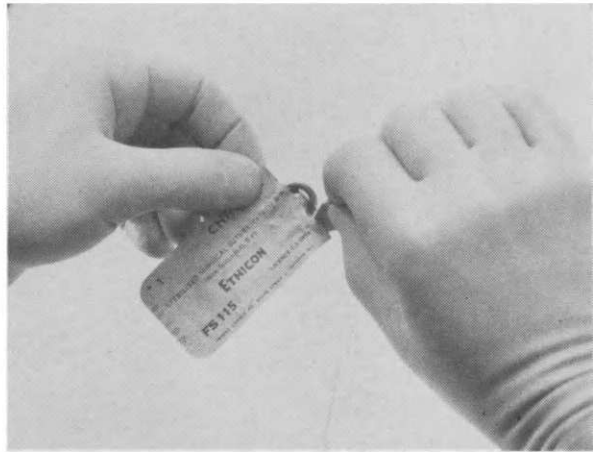
Slide catgut off former.

# Catgut from foil packs

*The use of catgut from foil packs eliminates the dangers of broken glass.*



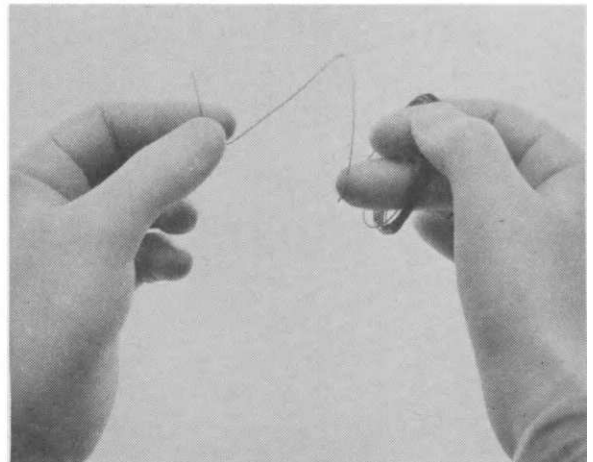
Grip flattened edge.



Tear on dotted line.



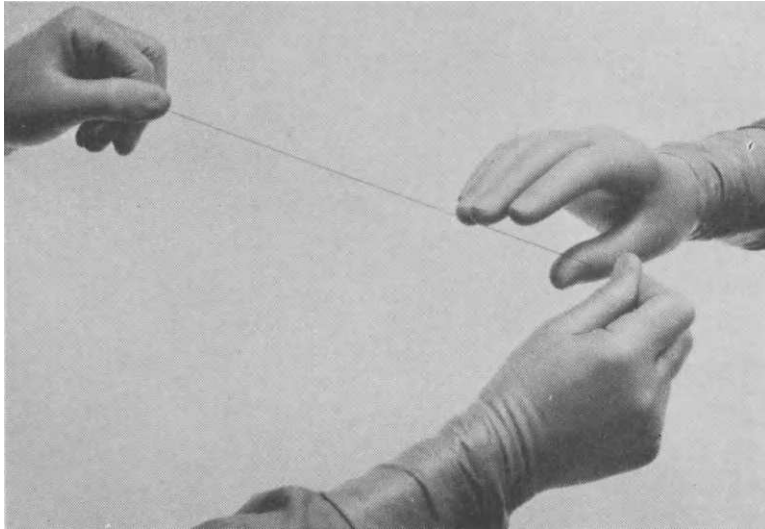
Slip fingers through coil while removing it.



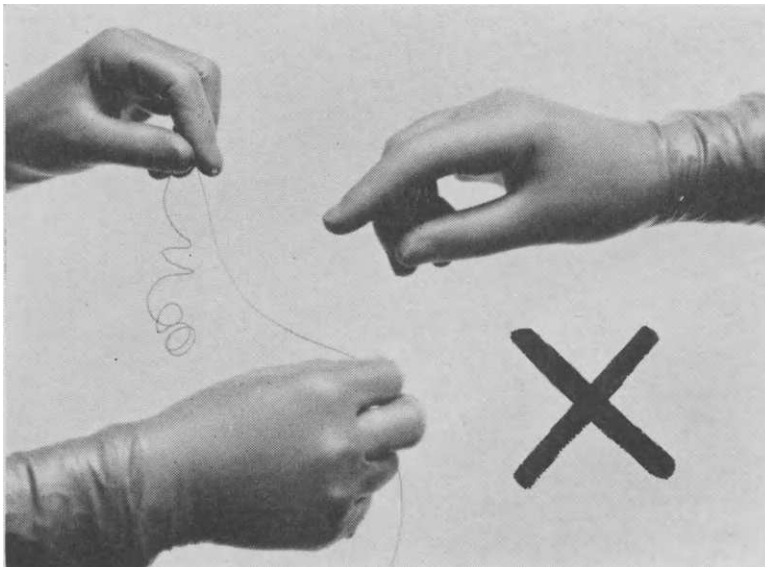
Take end and unwind required length.

# Handing a free ligature

A free ligature should be of manageable length. If it is too long it may become contaminated or knotted.



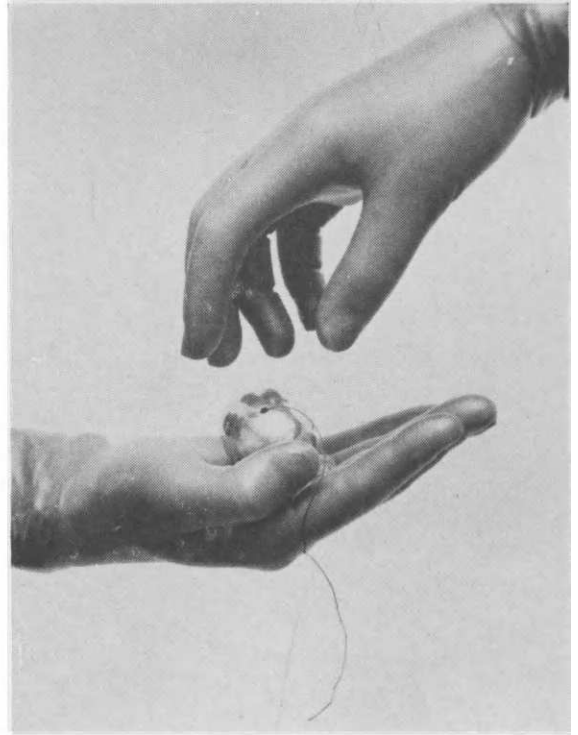
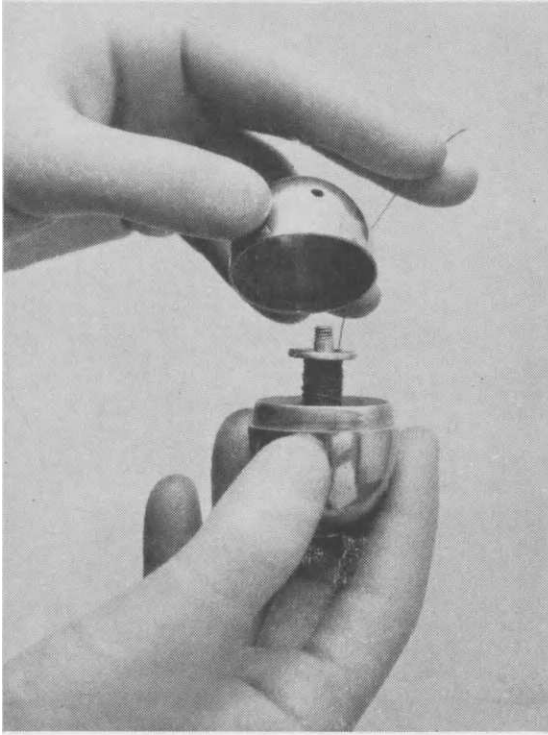
Hold ligature taut; guide one end into surgeon's hand.



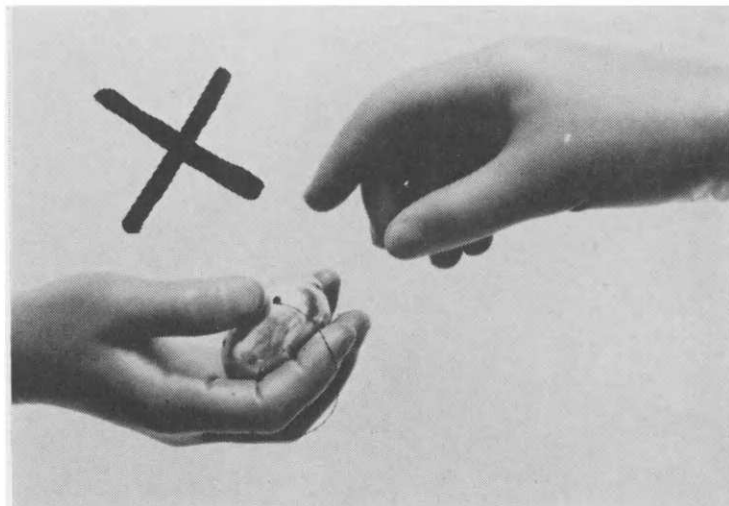
Ligature slack, too long and kinked.

# Ligature eggs

LOADING AND HANDING



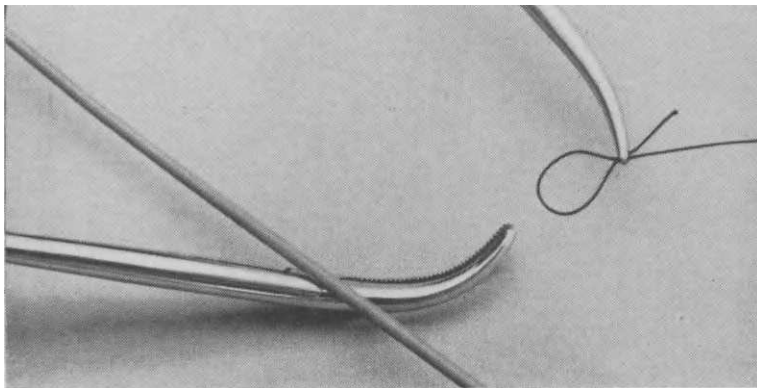
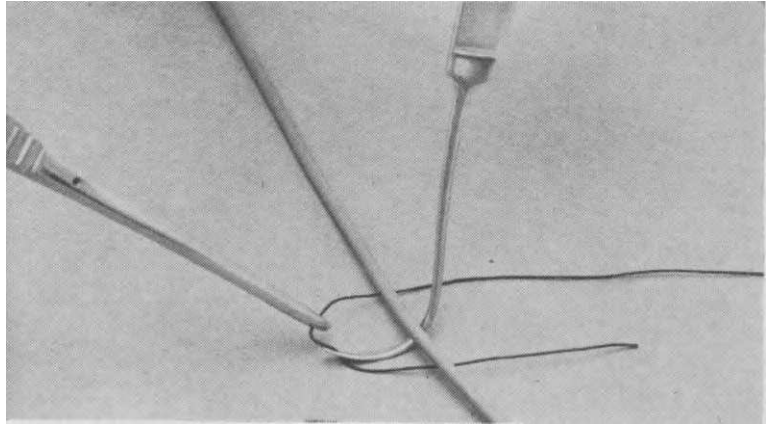
Thread through lateral hole.



# Mounted ligatures

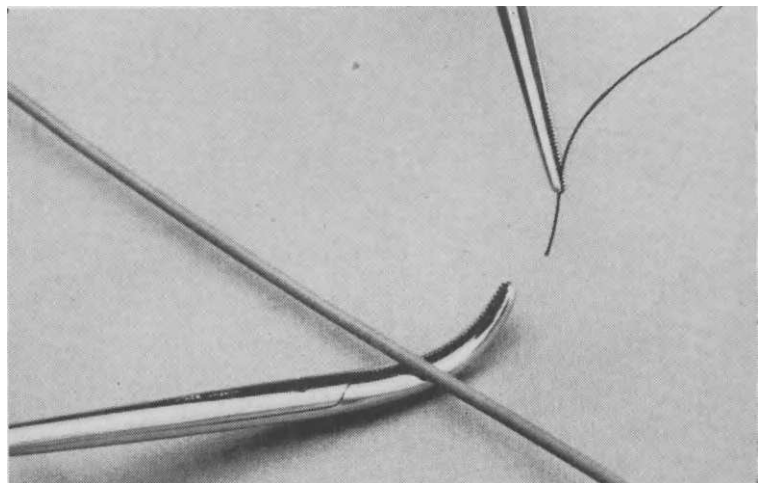
PRESENTING THREE TYPES FOR PASSING BENEATH A BLOOD VESSEL

Aneurysm needle with dissecting forceps.



Curved artery forceps with cholecystectomy clamps.

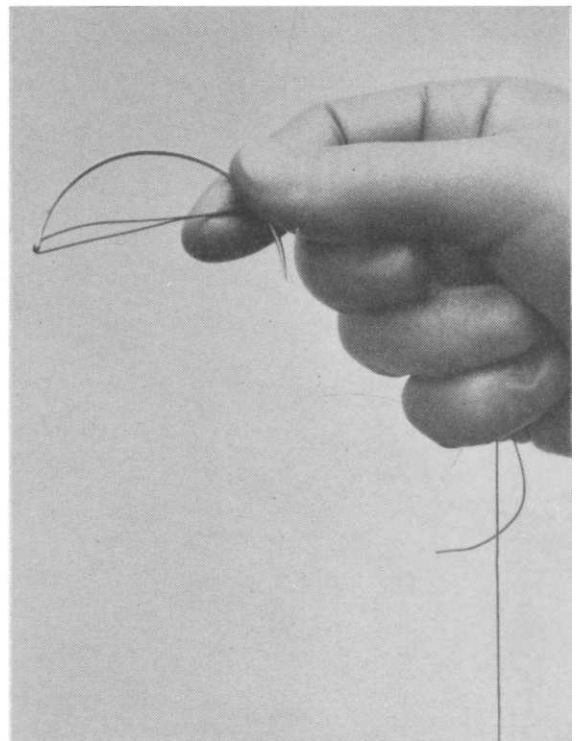
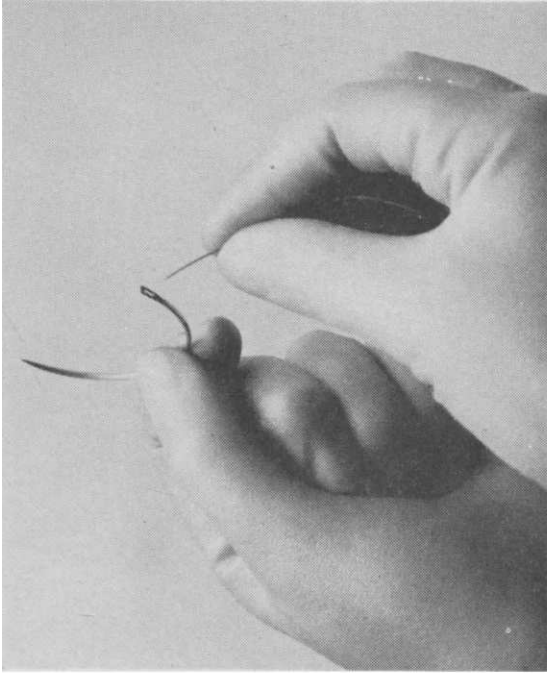
Dissecting forceps with cholecystectomy clamps.



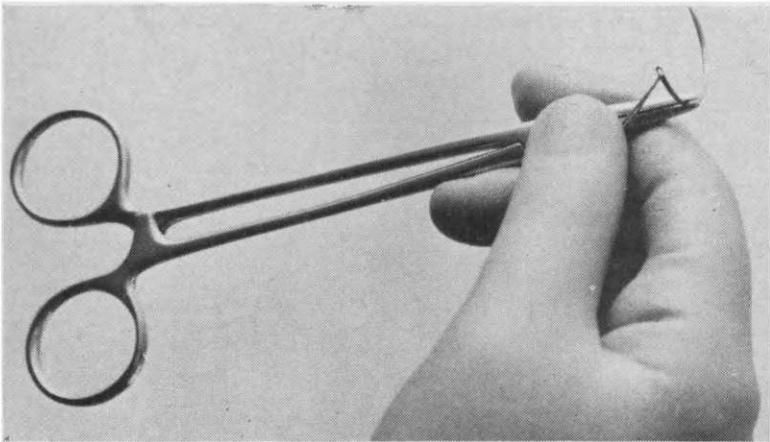
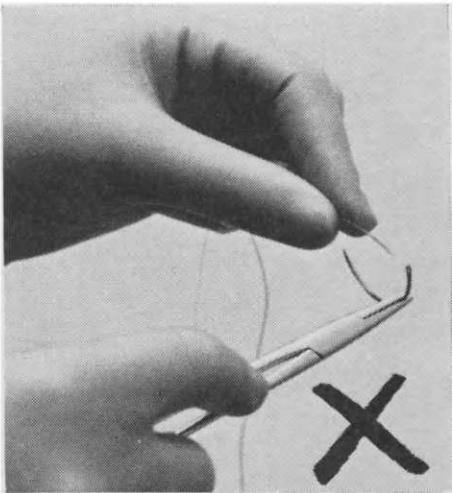
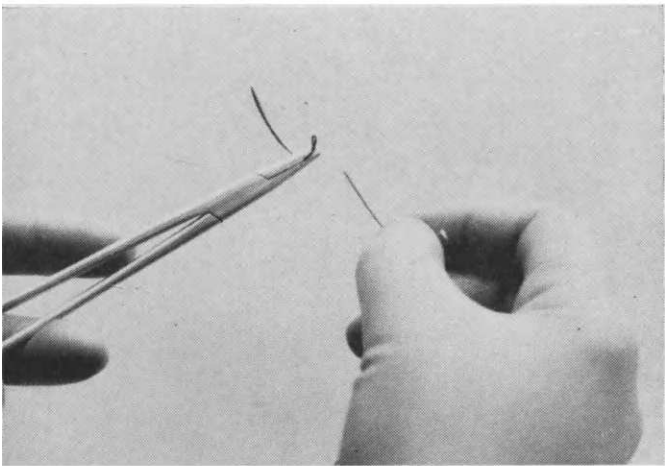
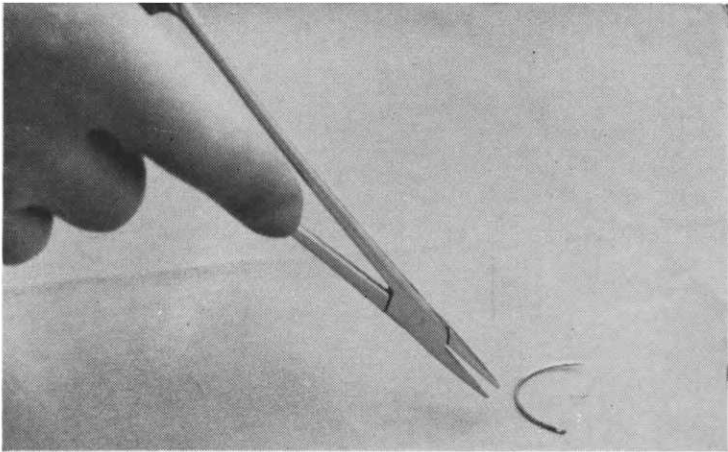
# Threading and handing needles

*All needles should be threaded from outside the curve to avoid injuring the nurse's gloves and should be handed as shown to avoid injuring the surgeon's gloves.*

## HAND NEEDLES



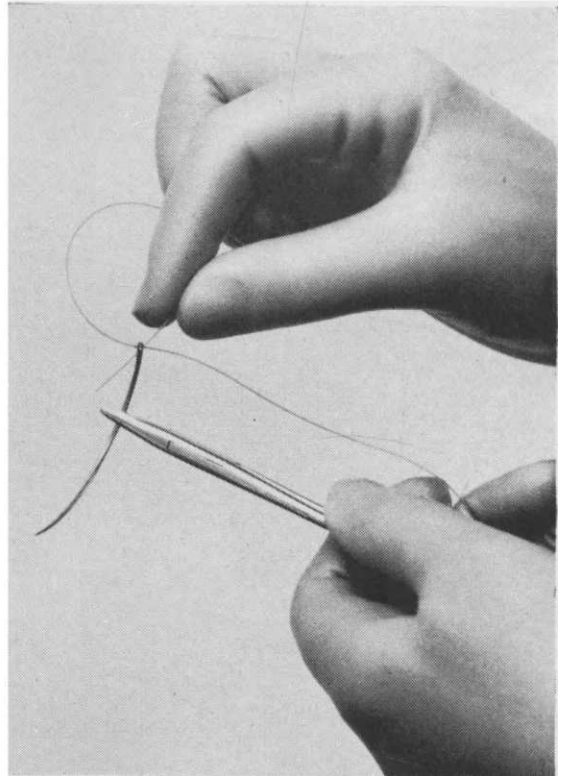
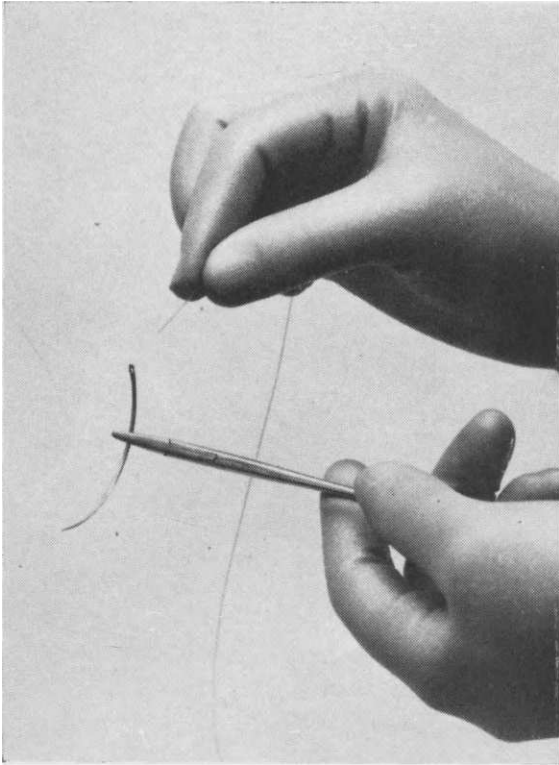
NEEDLES ON HOLDERS



# Monofilament nylon

## DOUBLE THREADING

*Nylon is springy and will come out of the eye unless it is threaded twice.*

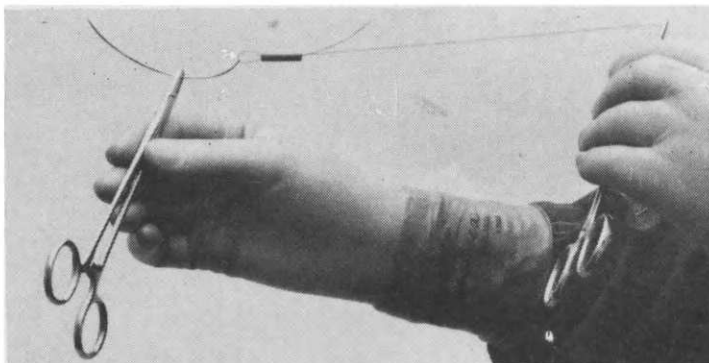
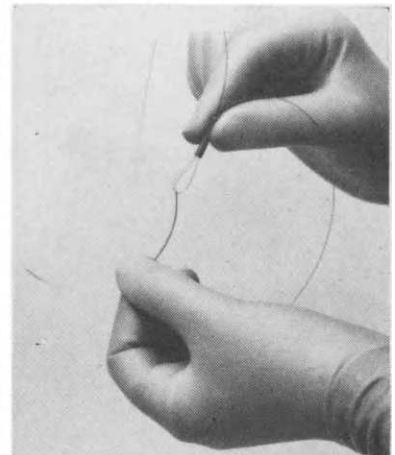
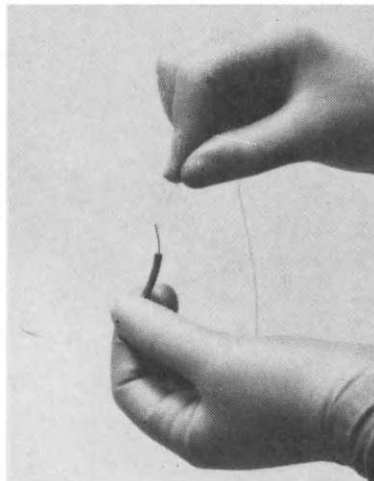
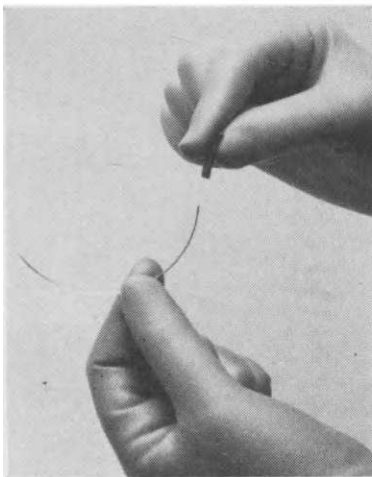
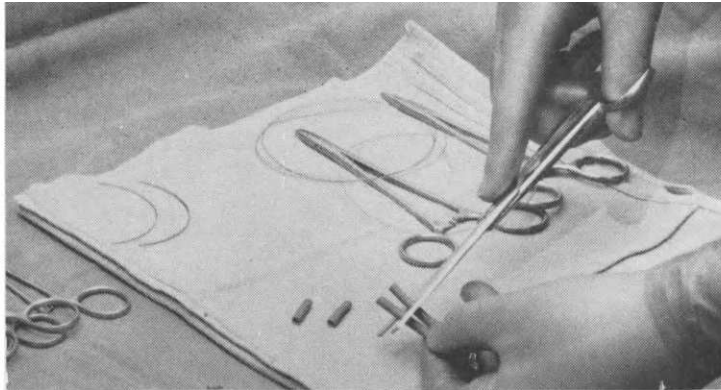




# Tension sutures

## MAKING AND HANDING

*These deep sutures may be used to reinforce the main wound repair if post-operative distension is expected. They are often made of strong nylon. Rubber 'buffers' of equal length prevent their cutting into the skin.*

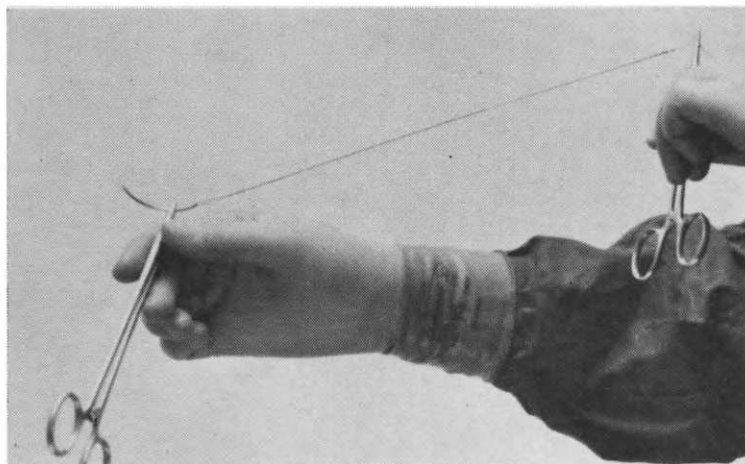
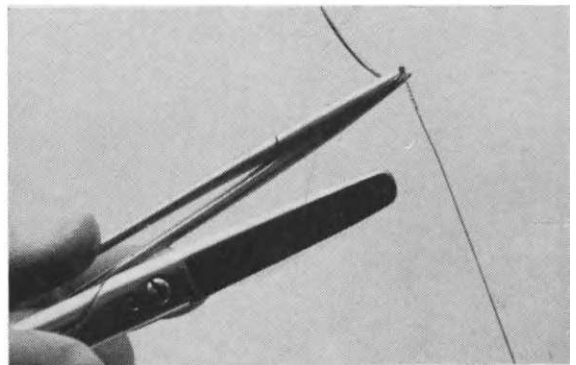
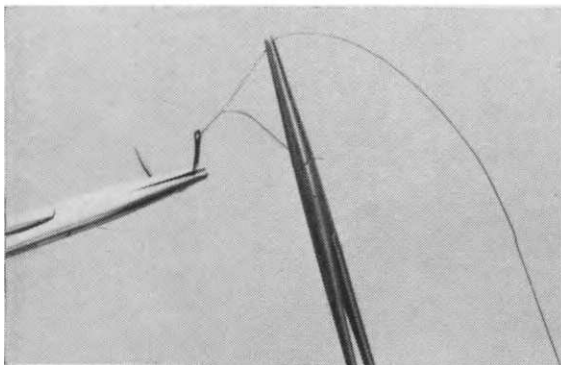
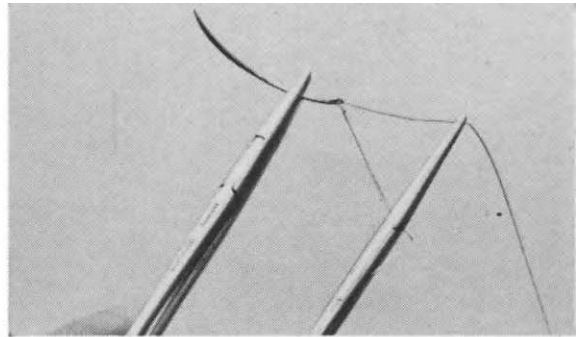
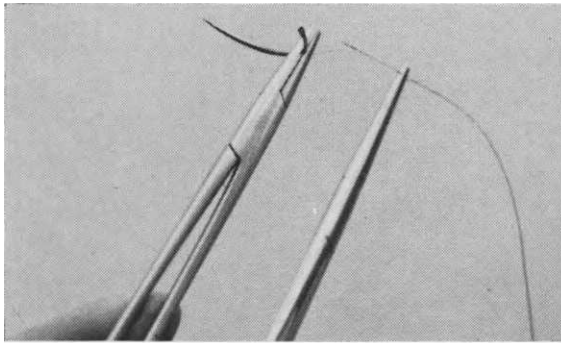


Control end with  
artery forceps.

# Wire sutures

## THREADING AND HANDING

*Wire is most easily kept in place by twisting it on to the needle.*

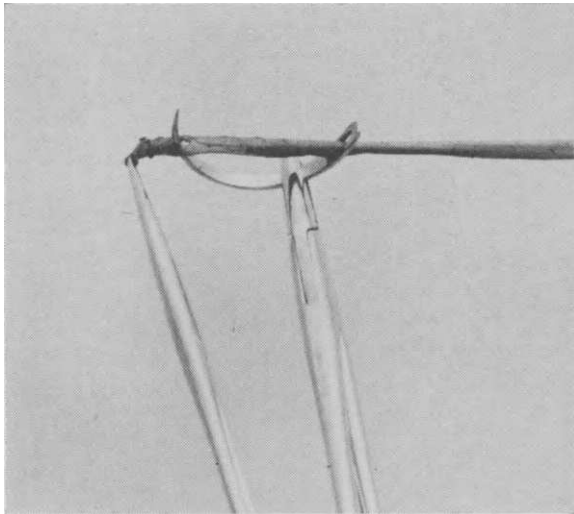
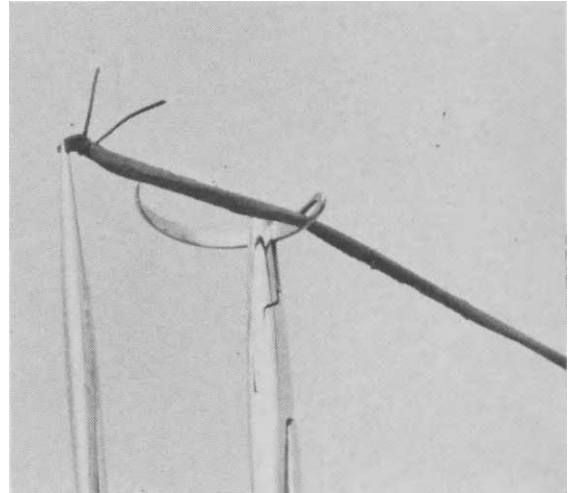


Keep taut while handing to prevent kinks.

# Threading fascia

*Fascia must be used on a wide eyed needle. It is slippery, bulky and only short lengths are available. It splits easily longitudinally. It must be fixed in the eye of the needle economically and compactly.*

Tie end.



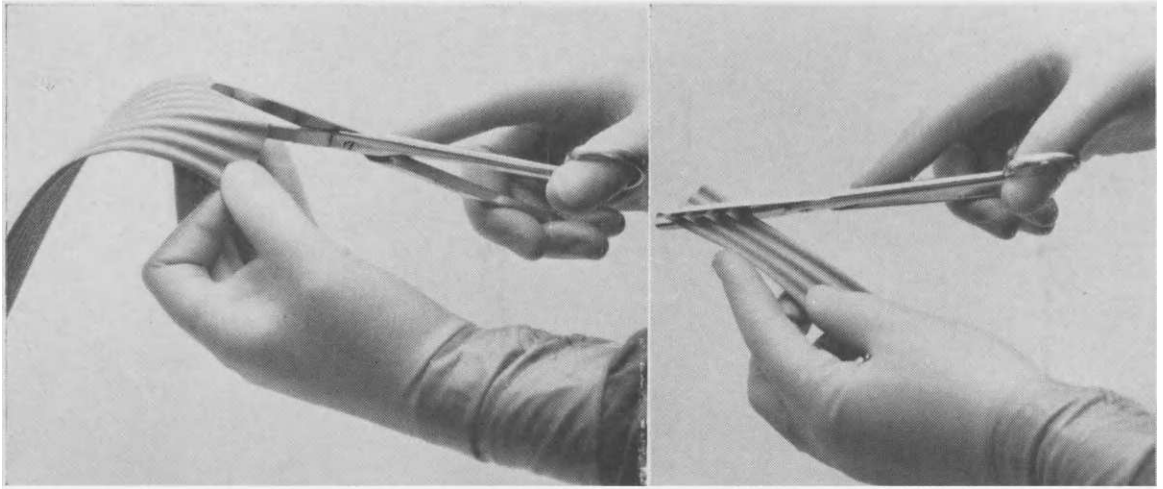
Pass end over point of needle.

Pull fascia tight.



# Drains

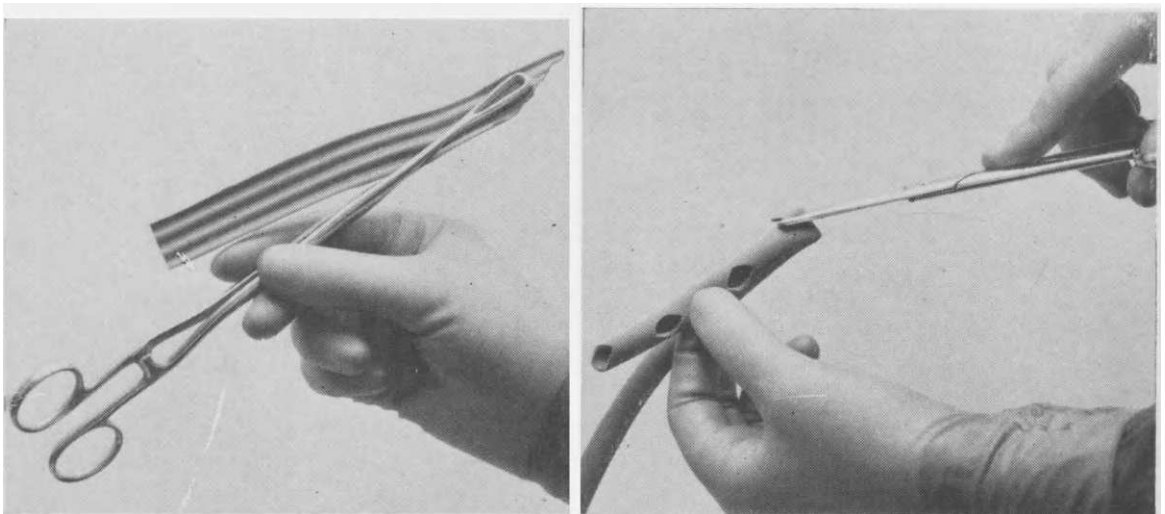
## CORRUGATED DRAIN



Cut in a 'hill', not a 'valley', to guide scissors.

Cut end obliquely to increase drainage surface.

## TUBE DRAIN

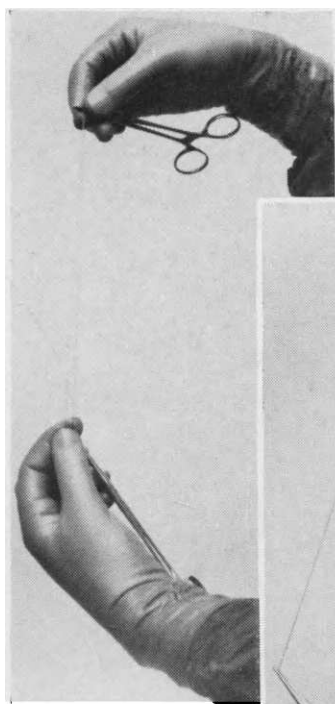


Handling a corrugated drain.

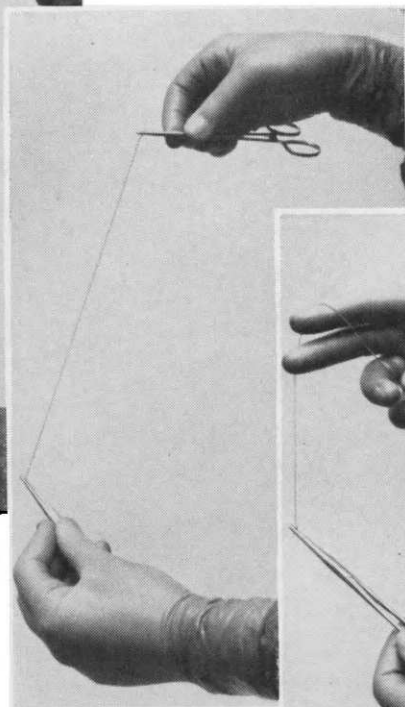
Cutting lateral holes in a tube drain.

# *Nylon twist drains*

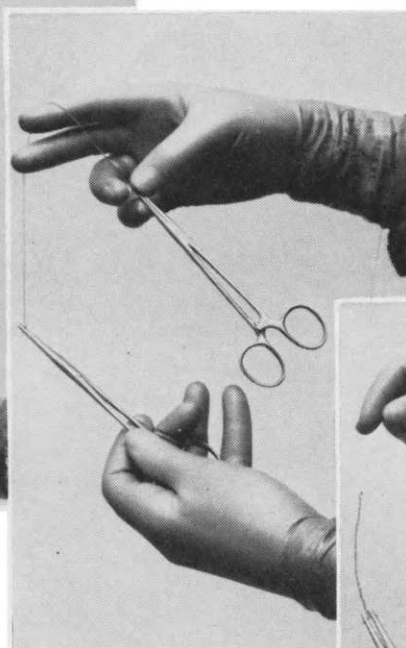
MAKING AND HANDING



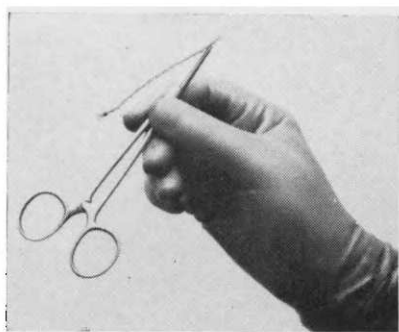
Take loose strands.



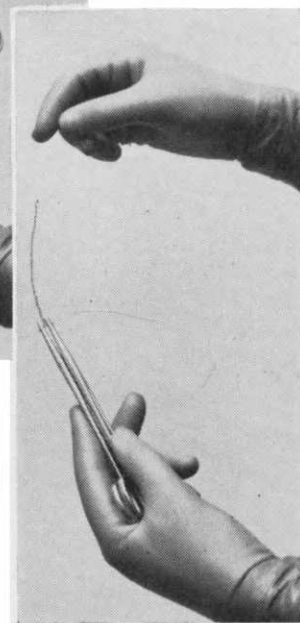
Twist tightly.



Fold in half under tension.



Tie ends and hand to surgeon.



Release.

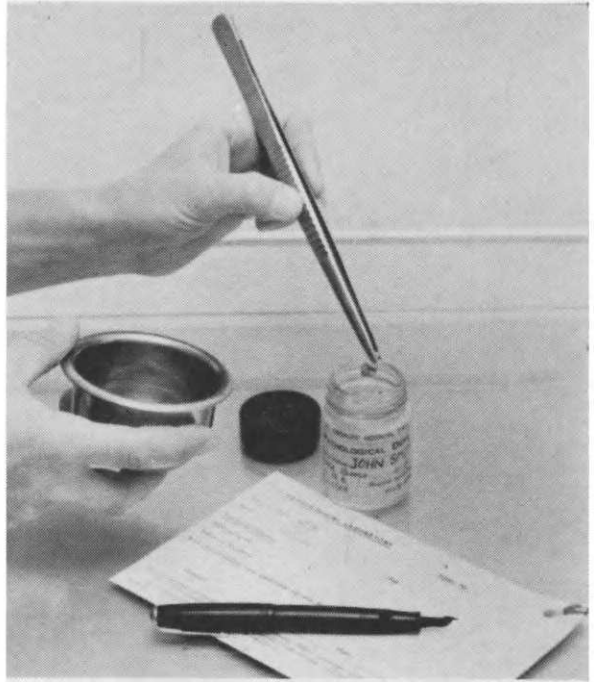
# Pathology

## PRESERVING SPECIMENS FOR INVESTIGATION

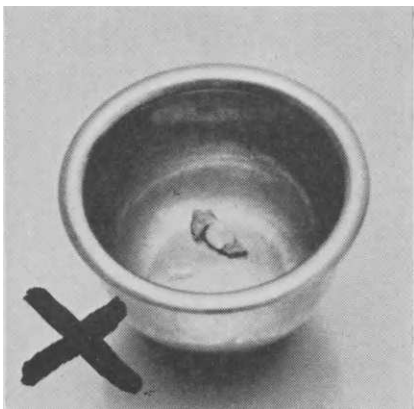
*The patient's future treatment may depend upon the pathologist's report on tissue taken for biopsy. It must reach him quickly and safely.*



Receive specimen from scrubbed nurse.



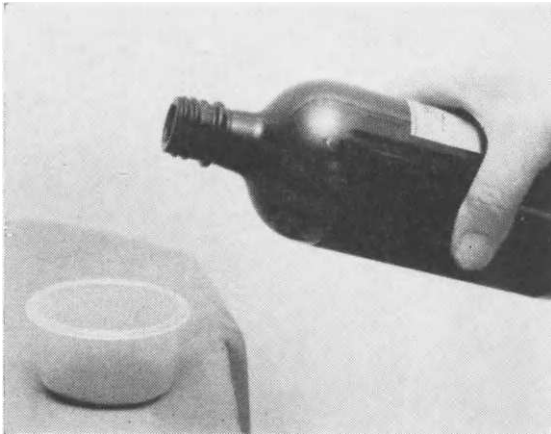
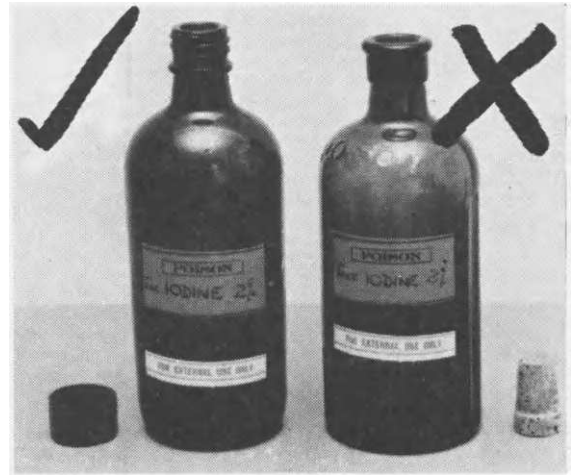
Bottle immediately in preservative solution. Label accurately and clearly.



NEVER leave a piece of tissue like this. It is quite unidentifiable.

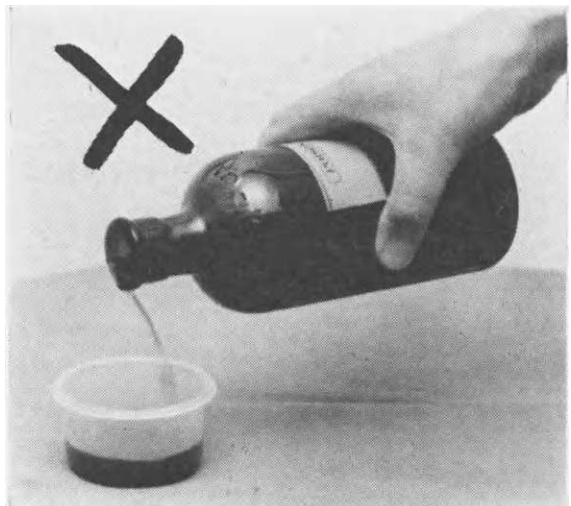
# Pouring solutions

*Antiseptic solutions must be stored in capped, not corked, bottles to protect the rim of the bottle from gross contamination. Sterile solutions must be stored in capped, sealed bottles. Solutions will be poured out by an unscrubbed person into a sterile bowl on a sterile surface and must not affect the sterility of either.*



Pour quickly into bowl at edge of sterile table.

Fluid poured slowly will drip along outside of bottle and so onto sterile table.



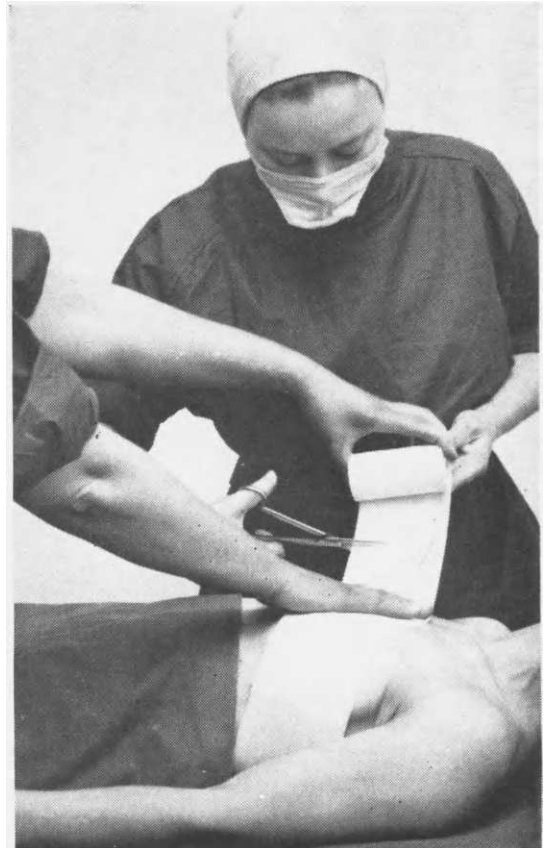
# Elastoplast pressure dressings

*A pressure dressing is used to prevent haematoma formation.*



Anchor generous length firmly over bony structure if possible. Unwind roll under tension.

Cover dressing with stretched Elastoplast. Press Elastoplast to skin with hand, relax tension and again stick good length of unstretched Elastoplast to bony structure. Cut.





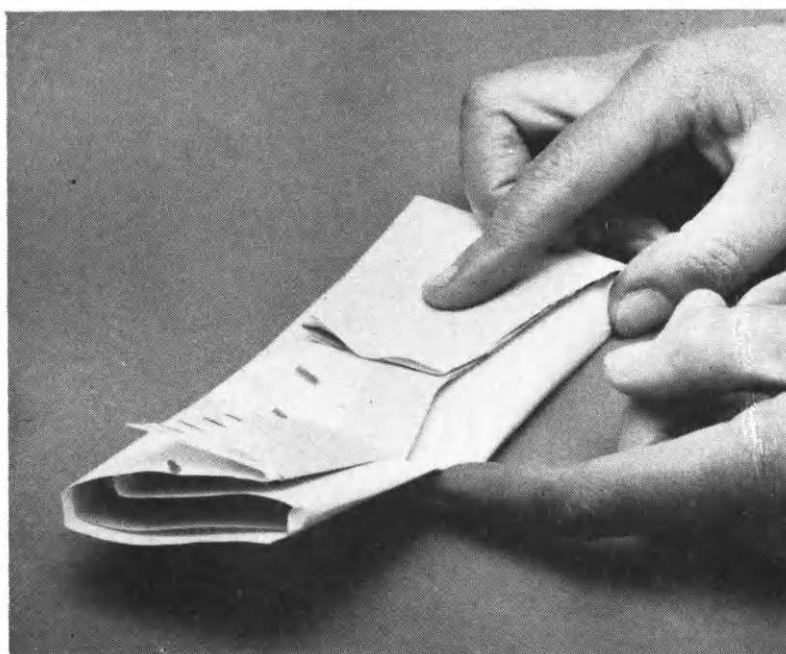
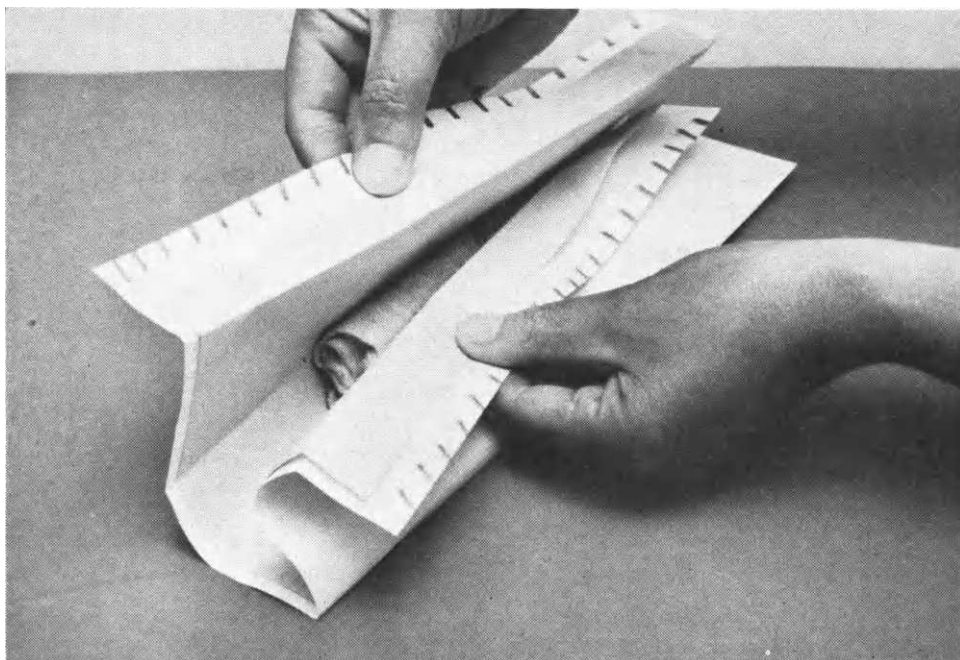


A short length cut off roll and stretched before application will not apply pressure and will not stick.



# *Wrapping a bundle*

*This we have shown in miniature, using paper. The marked paper indicates nylon film.*



# *Folding a trolley cover*

*For the sake of clarity, this has been demonstrated in miniature, using two sheets of paper. The waterproof is marked.*

