Lateral Decubitus Position

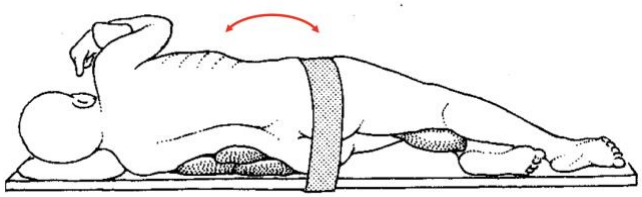
Richard Davis

Introduction:

The lateral decubitus position is used for operating on the patient's flank, in operations including nephrectomy or pyelolithotomy, thoracotomy, or reduction and fixation of an acetabular or hip fracture. Alternatively, operations on the back such as tumor excision can be done in this position to avoid the risks of full prone position.

This position takes time to set up, so it should not be used in patients who are hemodynamically unstable. For example, in an unstable trauma patient with ongoing bleeding from a chest tube, an anterolateral thoracotomy in the supine position is much more appropriate.

For operations on the kidney through a flank incision, the patient is positioned on the operating table such that the space between the iliac crest and the lateral costal margin can be expanded by hyperextending the table. This is sometimes called "breaking the table" because both the upper and lower parts of the table move downwards. We recommend that you "break the table" before draping rather than afterwards. By doing this, you can watch the patient and see how much their torso is being flexed. Stop before the position starts to look unnatural, to avoid injuries including lumbar spine fracture.



Hyperextending the bed causes the patient's torso to be hyperextended in the direction shown by the two arrows. Make sure this is not too far. Watch the patient while "breaking the bed" and stop before the extension becomes excessive, to avoid thoracolumbar spine injury. Source: Primary Surgery Vol. 1 : Non Trauma https://global-help.org/products/primary-surgery/ Accessed 8 May 2022

There are risks of positional injury in this position, especially to the brachial plexus on the side that faces downwards. This risk is decreased by using a shoulder roll, but the surgeon must be diligent to make sure that the roll is placed, and remains, in the right place.

Placing a patient in lateral decubitus position proceeds in the following steps:

- Equipment is prepared
- General anesthesia is induced in the supine position
- Patient is slid towards the side that is to face up and then that side is rotated upwards
- Axillary roll is placed and lower arm is extended
- The head is supported so that the neck is straight
- The beanbag, if available, is positioned and deflated
- The upper arm holder is placed
- The upper leg is flexed and padded
- A thorough inspection of the entire body is performed.

Steps:

1. Prepare the sandbag on the operating table before the patient lies on it. If a sandbag is not available, prepare four rolled up bedsheets. You will place these to the side of the patient's chest and abdomen so that they stay in the lateral position.

The sandbag is laid on the table and covered with a sheet before the patient lies on the table. The apex of the inset (Red dot) should be directly under the axilla.

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Make an axillary roll by rolling up sheets until they are about 15cm thick. Alternatively, a 1L IV bag can be wrapped in a sheet. If you do not have a beanbag, make 5 of these rolls; one will be the axillary roll and the other four will support the chest and abdomen on either side of the patient.

2. The patient lies on a sheet on the sandbag, on the operating table. General anesthesia is induced. The endotracheal tube is well secured and the eyelids are taped shut.

The endotracheal tube is doubly secured in place and the eyes are taped shut.

3. Get enough people to move all parts of the patient at the same time. Prepare the team to position the patient by telling them in advance the steps below.
4. Abduct the arm on the side that will be facing down to 90 degrees and place an armboard under it. Have an assistant hold the arm that will be facing up, keep this arm at the patient's side for now.
5. Slide the patient and the sheet they are lying on towards the side that is to face upwards. Stop when their side is a little past middle of the table.

Slide the patient and the sheet they are on towards the side which is to face upwards (in this case, the patient's right.) The Red line indicates the edge of the bed.

6. Rotate the patient upwards into the lateral decubitus position. They will now be centered on the table. Anesthesia leads this step while supporting the patient's head and protecting the endotracheal tube from dislodgement. During subsequent maneuvers, they continue to support the head until it is positioned as below.

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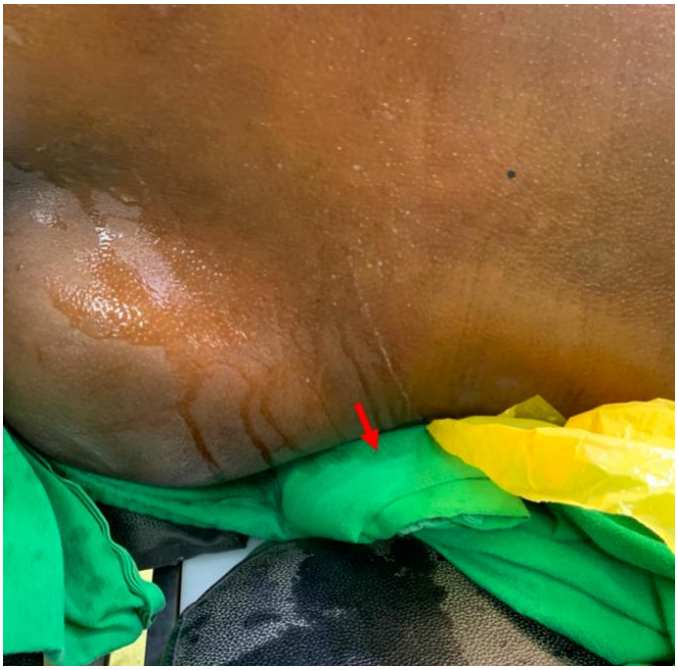
The patient and the sheet they are lying on are rotated 90 degrees so that they are again in the middle of the bed.

7. Two assistants raise the patient's chest while you slide the axillary roll into position. Be aware that there may be a groove between the operating table's cushions, that the axillary roll will settle into. If this is the case, have the team move the patient towards the head or foot to get the axillary roll out of this groove.

The patient's torso is elevated by several members of the team while another places the axillary roll, just caudal to the bulge of the shoulder (Red arrow.) The lower arm, abducted before the patient was rolled, rests on its armboard.



The axillary roll (Red arrow) seen from the patient's back. The roll has slid into a groove between two cushions on the operating table. The scapula is pushed medially and dorsally as a result of pressure on the shoulder. This condition should be corrected by repositioning the axilla so it is no longer over this groove, or by using a thicker axillary roll.

8. Assure that the lower arm rests well on the armboard. Check that there is no pressure on the ulnar groove at the elbow.
9. Have assistants on both sides push the sides of the beanbag against the downward side of the chest and abdomen. Apply negative pressure to the beanbag, sealing it in this position. Alternatively, place the four rolls that you made previously, one on each side of the chest and one on each side of the abdomen. "Wedge" these into place so they are supporting the torso. When you let go, the patient should not roll forwards or backwards.

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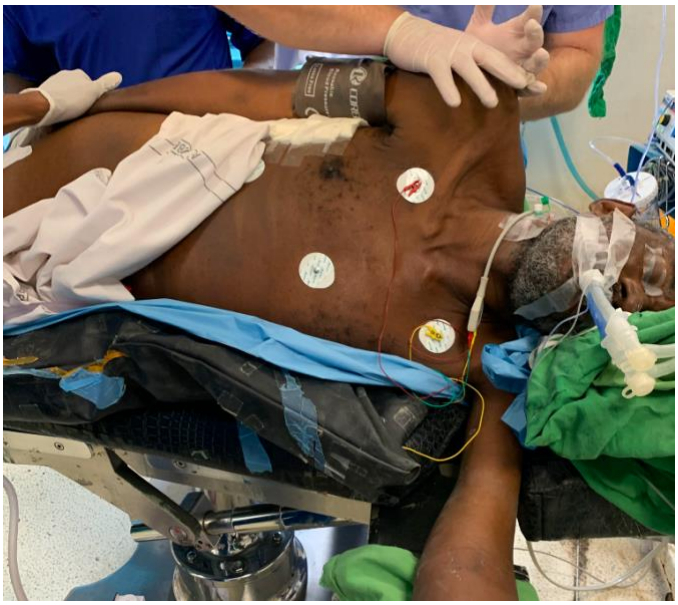
The patient is confirmed to be in straight lateral decubitus (not "slumped" ventrally or dorsally) and then the edges of the beanbag are raised so that they support the patient in this position. Several team members are needed at this stage, to support the edges of the beanbag all around the patient's torso.

Once the position is adequate, the sandbag is deflated by applying suction to the pinch-valve. Once this step is accomplished, the sandbag will support the patient in position.

10. Support the head definitively, with a head ring directly under it, held up by enough folded bedsheets until the neck is straight.



The patient's head is supported with a head ring. The head ring is placed on top of folded sheets, which are added or removed to adjust the height of the head until the cervicothoracic spine is straight.

11. Support the upper arm with the shoulder flexed and abducted 90 degrees. This is sometimes called "airplaning" the arm. If you have a device that clamps to the bedrail, use it. Otherwise, use a small table with adjustable height such as a Mayo stand, with a pad on it. Check the ulnar groove very carefully and make sure that the pressure of the forearm is spread evenly across the pad. There should be no place where the cushion or the edge of the table presses into the forearm or upper arm. Secure the upper arm loosely; if you have followed all the steps above, you should not need a tight restraint to hold it in place.

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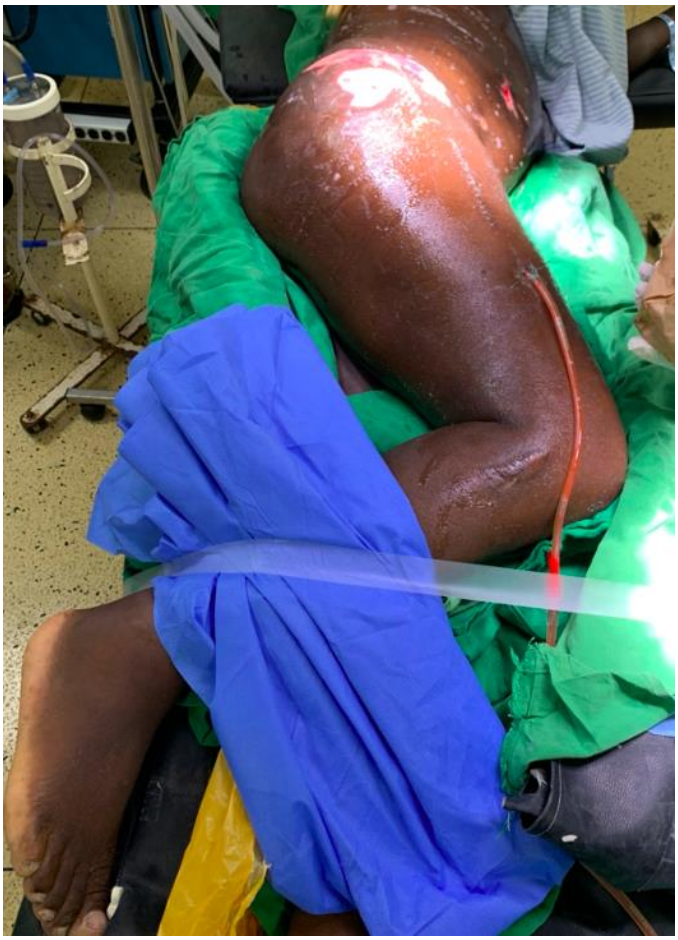
An upper armboard is attached to the bed frame and adjusted so that it maintains the superior arm extended anteriorly. The height of the board applies even, uniform pressure throughout the forearm, up to the midpoint of the upper arm. Assure no excessive pressure on the ulnar groove (Red dot) or the upper arm where it meets the armboard (Blue dot.) .

If a dedicated armboard is not available, a Mayo stand or other table with adjustable height, covered with a cushion, can be used. Again, adjust the height so that the arm is at a neutral and horizontal position and its weight is distributed evenly on the cushion.

12. Flex the upper leg and place a pillow or several folded sheets between the thighs and knees. Check the ankles and make sure they are not flexed too far. The upper foot should be resting lightly on the operating table. Tape over the leg loosely to hold it in this position. Some surgeons prefer to flex the lower leg, this is acceptable as well. In either case, it is important to be careful that pressure points are well padded and the joints are in a natural position and not under any stress.

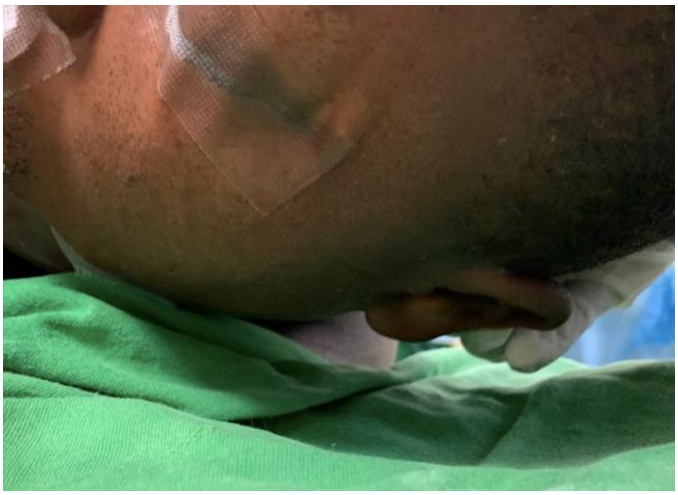


Keep the inferior leg straight and flex the superior one. Apply padding such as a pillow or folded sheets between the legs. Be sure the ankle and foot are supported, not hanging free. Here, the foot is supported by the sandbag. The hip should also be secured with tape to further prevent the patient from rolling dorsally or ventrally. (In this case the hip and thigh were part of the operative field so this was not possible.)

13. Look over all of the patient from head to toes, checking any pressure points. Genitalia should not be squeezed between the thighs, pulled or pinched. The urinary catheter should not be under tension. The axillary roll should still be in proper position.
14. Pay special attention to the head and face. The neck should be straight. The head should be supported by the headring under the temporal and occipital bones and the lower jaw. There

should be absolutely no pressure on the lips, nose or eyes. The eyelids should still be taped shut. Lift up the head to verify that the ear is not "folded over" and that it is not under undue pressure.

Examine the face carefully to make sure that there is no pressure on the globe; even a small amount of pressure over a long time could cause eye damage or blindness.



Gently lift the head to make sure that the ear is lying flat and there is no excessive pressure on it.

Pitfalls:

- Injury to the face from pressure on sensitive structures such as the eyes, ear, nose, or mouth. Carefully check the face after the patient's position is finalized. The anesthetist should check this area frequently during the surgery, as the patient's position can shift.
- Migration of the endotracheal tube after positioning the patient: auscultate the chest and make sure breath sounds are still equal after positioning. For thoracotomy and single lung ventilation, anesthesia will place the double-lumen endotracheal tube while the patient is supine, then repeat bronchoscopy to recheck the position of their tube once positioning is complete.
- Pressure injury resulting in bruising and ecchymosis from excess pressure on the hips, knees, ankles, and side of the head, especially if the patient is frail or the operation is prolonged. Be very careful that all supporting structures are soft.
- Thoracolumbar spine injury from sideways over-flexion, when attempting to widen the space between the iliac crest and the costal margin for flank incision. Always hyperextend the bed before you drape the patient, so you can see how far the hyperextension goes. The patient's position should look comfortable and natural to you.
- Brachial plexus injury due to incorrectly applied axillary roll: be sure the shoulder is supported by the roll; the shoulder should not be supporting the entire torso.
- Nerve injury due to pressure, especially to the ulnar nerve at the elbow or the peroneal nerve at the fibular head.

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