A guide to assisting at surgical operations 1: general principles

Introduction

This short series of articles is intended to help junior doctors in their attempts to be good surgical assistants. It does not describe specific operations, but instead describes some general principles of assisting that apply to most surgical operations.

The first article will deal with some general points about assisting, while the second will cover some of the more technical aspects, such as how best to use surgical instruments.

Assisting at a surgical operation is an important task; the more difficult the operation, the more important the assistant's task. Therefore, if you are asked to assist at an operation, ensure you arrive on time.

Individual surgeon's preferences

Surgeons sometimes attach considerable significance to their own variations in surgical technique. Indeed, some distrust any variation from their routine, even if this variation may be perfectly reasonable practice. If you will be assisting one particular surgeon on more than one occasion, learn 'your' surgeon's routine. Moreover, if you intend to pursue a career as a surgeon, consider making notes describing these variations, and other practical aspects of how the operation was done. These notes will be very helpful in future when you come to do the operation yourself.

Preparing for the operation

Try to read up in advance about the operation. Aim to understand the key points about the patient, the disease and the proposed operation.

Most operations have one or more 'key points' (for example, in thyroidectomy, avoid injury to the recurrent laryngeal nerve). If possible, aim to read up on these key points before the operation. They are an important feature of textbooks of operative surgery, but are usually absent from pure anatomy texts.

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Pagers and mobile phones

Unless it is essential that you be contactable immediately (for example, if you are on emergency call), try to keep these devices either outside the operating theatre, diverted elsewhere, or switched to the 'off' or 'silent' position. If you have no alternative but to take your pager or mobile phone into the operating theatre, other staff will be much more understanding if you explain your situation, and apologize in advance for any inconvenience it may cause.

Scrubbing and asepsis

Learn your hospital's approved scrub method. Generally, the best time to scrub is at the same time as the surgeon, unless you are told otherwise. For example, you may be more helpful by doing some other task (such as shaving the operative site) while the surgeon scrubs.

Apply strict aseptic principles. If you accidentally breach the sterile field, admit your mistake straight away, and correct it.

Activity *vs* passivity

When assisting at operations, try to steer the middle course between being a passive retractor-holder, and being overly helpful to the point that you become intrusive and the surgeon feels you are trying to take over the operation. This is comparable to a good restaurant waiter, who steers the middle course between ignoring customers and omnipresence.

Concentration and talking during operations

Although surgical operations obviously require the surgeon and assistant to concentrate continuously, the intensity of this varies. For example, while it is common for the surgeon and staff to chat about unrelated matters during straightforward parts of the operation, do not allow yourself to become distracted even at these times. This situation may be likened to driving a car; although it is reasonable to carry on a conversation while driving on an easy stretch of road, it is inadvisable to take your hands off the steering wheel and stop watching the road while doing so. Similarly, most operations have 'tricky bits' at some point. These may be likened to driving a car on a slippery mountain road on a dark foggy night; both situations require full concentration.

It can be difficult to know when to talk, and when not to. Generally, this will depend on the surgeon's individual preference, the complexity of the operation about to be performed, and whether or not it is an emergency. Your intended subject matter is also important: discussing technical points about the operation, during easy parts of an operation (such as suturing the skin) is reasonable, while chatting about football during a difficult part is not.

Anticipation

This word is commonly used to describe the actions of a good surgical assistant. It is really another way of saying 'be prepared'. It means that you predict what the surgeon is going to do next, and are already prepared for this when it occurs, so that no time is wasted. Most surgeons resent having even a few seconds of theatre time wasted unnecessarily.

In some ways, anticipation starts before the operation. For example, if you have read about the operation beforehand in an operative text, and learnt its different steps, you will find it easier to predict what the surgeon is about to do next, and prepare for it.

Some opportunities to anticipate the surgeon's actions are more obvious. For example, when the surgeon is tying a suture, do not wait until the surgeon holds the suture up, ready to be cut, and only then ask the scrub nurse for the suture scissors. Instead, ask the scrub nurse for the suture scissors as soon as you see the surgeon tying the suture. Hold the scissors ready, with their tips about 10 or 20 cm away from the suture. Support the scissors on the fingers of your opposite hand (*Figure 1*).

Try to see what the surgeon is doing at all times, but without interfering with his

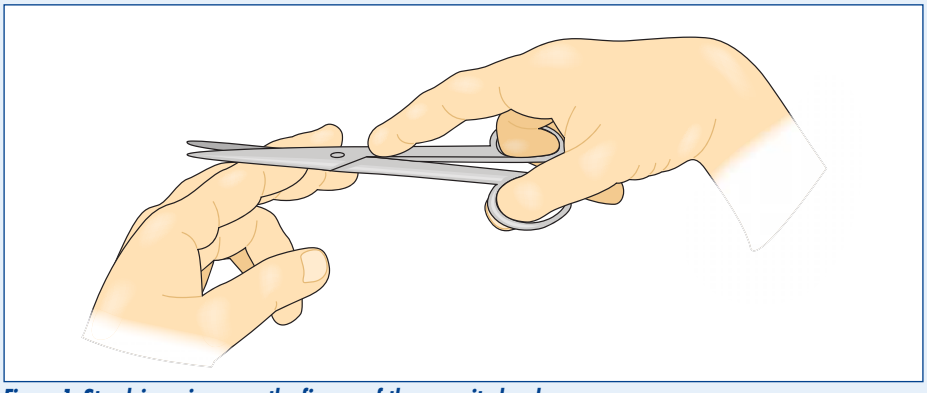

Figure 1. Steadying scissors on the fingers of the opposite hand.

or her view. Sometimes this is difficult when the surgeon is operating at the end of a deep narrow wound.

Manual dexterity

In the author's opinion, anyone capable of writing neatly probably has enough manual dexterity to do most surgical operations. However, there are ways to maximize your dexterity during an operation.

For example, any physical task is easier if you are comfortable; therefore, except in dire emergencies, it is wise to enter the operating theatre with a full stomach and an empty bladder.

Stand at the operating table with your feet about shoulder-width apart. If possible, steady yourself by resting your pelvis or lower abdomen gently against the table. In effect, the table then forms a tripod with your two legs, stabilizing your lower body (the same 'triangle principle' applies to the correct scissor grip – see subsequent article). Avoid bumping the table and leaning on the patient excessively.

Any delicate manual task is much harder if you hold your hand at arm's length, than if the arm is supported, so rest your hands gently on the patient's draped body. Do not allow your hands to cross over each other. This looks (and is) clumsy, as movement of one hand interferes with the other.

Tissue planes: traction and counter-traction

Finding the correct tissue plane is a key to many operations. Anyone who has ever peeled an orange is already familiar with the concept of tissue planes; by pulling the peel in one direction, and the edible flesh in the other, the orange is peeled. In many parts of the body, a similar plane exists between two structures, which the surgeon aims to dissect apart. They are sometimes called avascular planes, but this name is not always accurate. While they may contain few or no blood vessels, they often contain some small vessels, and occasionally quite large vessels.

Often, the correct tissue plane can be confirmed by the appearance of flimsy loose connective tissue in the 'valley' between the two pieces of tissue being separated. This connective tissue looks vaguely like spider-web. It is seen, for example, when mobilizing the colon or duodenum from the posterior abdominal wall, when dissecting the breast off the thoracic wall, and between the muscular layers in an inguinal hernia repair.

Unfortunately, most tissue planes in the human body are more difficult to identify than in an orange. Sometimes, the planes may be partly or even completely obliterated, for example by cancer, inflammation or scarring from previous surgery.

If you can see the correct tissue plane, you can greatly help the surgeon by providing counter-traction. This is an important technique in surgery. While the surgeon grasps the tissue on one side of the plane, grasp the tissue on the opposite side, and retract it gently away. The surgeon will then complete the dissection by dividing the bridging connective tissue with diathermy, scissors or scalpel (*Figure 2*). Counter-traction must be done gently, to avoid tearing the tissues, but firmly enough that you are not merely holding the tissue. Sometimes the tissues provide a clue that the strength of your retraction is correct. This occurs when you retract just firmly enough that, as the surgeon divides the tissue in the middle, the tissues on either side spring apart slightly. BJHM

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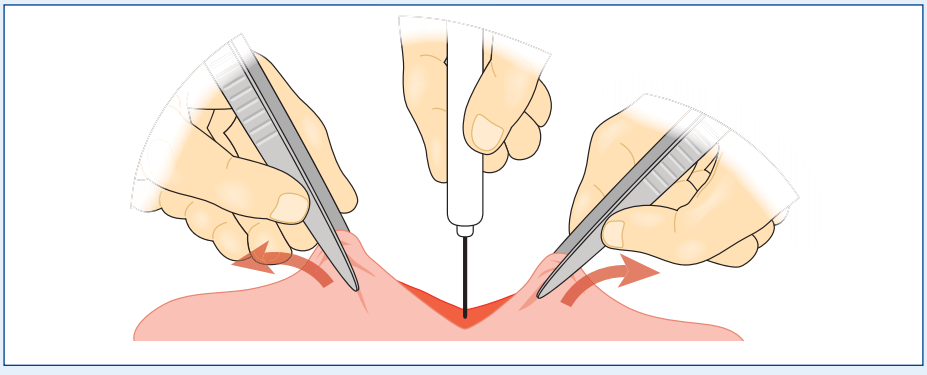
Figure 2. Providing counter-traction for a dissection. The surgeon's hands are on the right, holding forceps and diathermy, while the assistant's hand is shown on the left.



KEY POINTS

- Prepare for the operation beforehand. Know the patient and disease, and read about the operation in a textbook of operative surgery.
- Avoid distractions to yourself and the surgeon.
- Maximize your manual dexterity.
- Give the surgeon the best view of the operation that you can.
- Try to anticipate the surgeon's actions, to avoid wasting time.
- Learn to provide counter-traction.