

The sterile zone

Claire Crabb* shares her expertise in creating a sterile field for implant dentistry from the dental nurse's perspective.

Interest in implants

The provision of dental implants in general practice has rapidly grown in the UK over the past ten years. The increase in patient awareness and expectation, and indeed the GDC's insistence that if appropriate implants must be offered as a treatment option, has led to a surge in interest by the profession to provide implant dentistry. As dental nurses we are expected to be familiar with the techniques of surgical nursing. This skill is often only taught and practised in teaching dental hospitals, or you have to learn theory techniques by attending a dental nurse implant course.

Understanding the basics

It is important that you understand what you are trying to achieve when we talk about creating a 'sterile field'. Too often I see practices going through the motions of creating a surgical environment without understanding the basic principles and despite everyone's best effort, the sterile zone has been broken even before you begin placing a dental implant. The term 'sterile field' means 'free from live bacteria or other micro-organisms' and another common term widely used when talking about surgical nursing is 'asepsis', the 'prevention from contact with micro-organisms'.

So where do we begin? Well, ideally, the dental practice should include a room designed and designated for surgery alone (Fig. 1), but as I live in the real world, I know that this is often limited to specialist practices and hospitals. Most dentists make use of their normal surgery and this may be adequate (it is

important to remember that carpets and the soil around house plants act as reservoirs of pathogenic fungi and should not be included in the design of any surgery). Any portable equipment should be removed in order to clean the surgery in preparation for surgery and the door kept closed to prevent unnecessary traffic during the procedure.

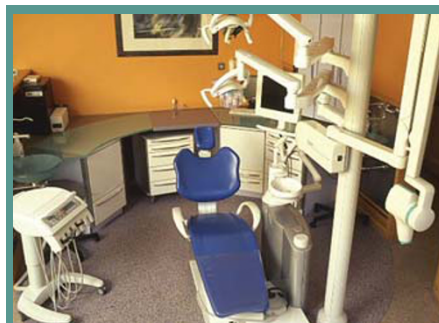


Fig. 1 A designated implant surgery

Protective clothing

Tunics and uniforms act as a protective barrier; they are not usually made of materials that are impermeable to body fluids. As there is a high risk of being splashed with blood during implant surgery, disposable, impermeable fluid repellent surgical gowns are advised. Protective clothing should not be worn in designated eating and rest areas within the practice and should be removed when eating and drinking or leaving the practice.

Protective glasses and disposable masks act as a physical barrier helping to protect the wearer from splashes of blood, saliva and other potentially infectious substances. These should be worn during surgery preparation and during the procedure.

Scrub hats (scrub caps) are standard wear when creating and operating in a sterile field. They help protect patients from contaminants in our hair. They will also stop the sterile field

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from becoming contaminated with nurses'/surgeons' hair. Several styles are popular, including the 'bouffant', a utilitarian hairnet-like hat, and the 'milkmaid', a bonnet-like wrap-around hat. The choice is yours!

Surgery preparation

Wearing protective glasses, a mask and scrub hat ensures that the surgery is as clean and uncluttered as possible. Wipe down all work surfaces with your normal hard surface disinfectant prior to laying out the surgical drapes. Scrub all the surfaces of the fixed or permanent equipment with your disinfectant in accordance with the manufacturer's instructions.

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Recommended contents of a basic surgical drape pack

- 1 x patient bouffant cap
- 1 x surgeon's cap with ties
- 2 x nurses' caps
- 2 x gowns
- 4 x absorbent towels
- 3 x drapes (75 cm x 75 cm with adhesive edge)
- 1 x patient u-drape
- 3 x hose/tubing covers
- 2 x light handles
- 2 x motor unit covers.



Figs 2-4 Opening the surgical drape pack

How to create a sterile field for dental implantology

The surgical drape pack is placed on the work surface and opened by the 'dirty' nurse (nurse who does not gown and remains non-sterile, opens packages for surgeon and scrub nurse and takes clinical photographs for dental records) so that the outer wrap completely covers the table (Figs 2-4).

If you have brought a procedure pack containing gowns and drapes you will find two inner packages labelled 'drapes' and 'gowns'. Depending on your practice policy the scrub nurse (nurse who gowns and gloves, only touches sterile items and assists with the procedure) can put on a sterile gown and gloves to create your sterile field, or just gloves. Both methods have advantages and disadvantages. The 'gowned and gloved' method normally involves creating a sterile field around the patient, putting time pressure on the nursing team and stress for the patient whilst they are waiting for the procedure to start. 'Gloved only' requires extra care and attention to ensure that clean tunics and arms do not contaminate your sterile field.

'Sterile conditions provide the best possible environment for osseointegration.'

If we look at the paper *Success rates of osseointegration for implants placed under sterile versus clean conditions* (Scharf D R, Tarnow D P, *J Periodontol* 1993; **64**: 954-956), implant surgery can be performed under both 'sterile' and 'clean' conditions to achieve the same high rate of clinical osseointegration. However, it is my own opinion that implant surgery should be performed under sterile conditions to provide the best possible environment for osseointegration, especially in today's litigious society!

Open the outer wrapper on the drape packet and the contents are usually laid out in order of use (Fig. 5).



Fig. 5 The contents of the drape packet in order of use



Figs 6-8 Applying the light handle covers

Light handle covers are placed on both the nurse's and the dentist's side. This enables both the nurse and the surgeon to adjust the operating light during the procedure. The adhesive strip is pulled from the drape. Jo demonstrates application using the drape width ways (Fig. 6), ensuring at all times her sterile gloves only touch sterile surfaces. You can apply the light handle cover length or width ways depending on the style of light (Figs 7-8).

Surface drapes are positioned in a similar method on to a work surface that can be reached by both nurses and surgeon. If you work four-handed then the drapes are placed nearer the nurse. I recommend that you keep the drape folded because you retain greater control over a smaller item. All drapes and gowns are folded with the sterile working surface on the 'inside' so the surface you come into contact with first is the one that will touch the non-sterile surface.

Peel the adhesive strip from the drape, unfolding as you get to each fold (Fig. 9). Position the drape on the work surface ensuring that your sterile gloves do not come into contact with the work surface, unfold and ensure the end hangs over the edge of the worktop. Place the second drape using the same method and overlap by at least 15 cm. The third surface drape is placed on the surgeon's side for the implant motor. Placing the drapes in this



Fig. 9 Peeling the adhesive strip from the drape



Figs 10-11 Correctly applying the drapes



Figs 12-15 Placing the hose covers

‘Implant days can be stressful, so be prepared, make check lists and make sure you are organised in advance.’

Simple when you know how

Creating a sterile field for dental implantology is a simple task once you have learned the basics. I recommend that you attend a hands-on nurses’ course, even if you are an experienced implantology nurse. You will be surprised what hints and tips you will pick up from like-minded people. You will get to practise your technique BEFORE you do a real one and then practise in your own surgery!

Implant days can be stressful, so be prepared, make check lists and make sure you are organised in advance. Working with another nurse takes the pressure off and creating a sterile field is easier. But remember, think before you touch and replace items that have been made unsterile!

method prevents accidentally moving items onto a non-sterile surface (Figs 10-11).

If the design of your surgery includes an up stand, position the drape so that it is attached onto this area, then if anything accidentally gets pushed to the back of the drape during surgery it will remain sterile.

Hose covers are placed on the large and small volume suction and onto the motor cable (Figs 12-15).

An easy method of placing the hose cover is to adopt the same method as placing a stocking or pair of tights. Keep the cover on the sterile field and gather between your fingers. You now have a small item that can be transferred and placed over the end of the item you are covering. You will need the assistance of the dirty nurse to hold non-sterile items like the suction hose. Secure the end with tape or elastic band, so that it does not slip down when in use, but

remember if you are using sterile tape not to stick it to the handpiece or motor as it leaves a sticky residue which is difficult to clean.

You **cannot** replace the suction into the holder unless you create a sterile area. I use a motor cover unit that covers the nurse’s station on the dental chair. The three in one and curing light are kept under the ‘bag’ and my suction tips placed on top. I now have sterile access to the control panel on the chair.

Both motor unit covers are placed using the same method. Fold a large cuff at the base of the bag. The outer surface of the cuff (the area that was inside the bag) can now be handled by the dirty nurse, whilst the outer surface of the bag is held by the scrub nurse. It is then lifted over the motor unit and the nurse’s station creating another sterile field for your procedure. Now you can introduce your other surgical items into your sterile field (Fig. 16).



Fig. 16 A sterile field