Other methods of wound closure

Overview

Steri-strips, staples and topical skin adhesives are alternatives to suturing for wound closure. All have advantages and disadvantages and you will need to choose the most appropriate closure method for each particular wound and patient.

1 Steri-strips

Steri-strips are available in the following forms: standard (reinforced) strips, elasticated strips and strips combined with a transparent dressing. A variety of lengths and widths are available to suit a range of wounds.

Also known as "butterfly" strips, these narrow strips can be used alone for cuts that are small, not gaping open, not very deep and not over a joint or area of skin tension. They are placed over the wound, with a bit of tension to keep it closed. These generally stay on for 2 to 5 days if they are kept dry and are not accidentally pulled off.

Steri-strips can also be used in conjunction with sutures to provide additional reinforcement.

1.1 Advantages

Steri-strips can save time during wound repair and eliminate the need for suture removal after the wound has closed.

They can be used with a topical anaesthetic or no anaesthetic, rather than injected anaesthetic. They avoid the risk of any residual stitch marks.

They reduce the risk of a needle stick injury for health care professionals.

Adhesive strips are less expensive than suturing or tissue adhesives.

1.2 Disadvantages

Steri-strips are not as strong as sutures and will not stay in place as long. They are not appropriate for many types of wounds, including those that are gaping open, very deep, over a joint or area of skin tension.

You will achieve less precision in bringing the wound edges together than with suturing.

Some areas of the body are unsuitable for steri-strips, for example areas with secretions such as the armpits, palms, or soles, and areas with hair.

Sometimes you may need to use topical skin adhesive to help tapes adhere.

Steri-strips need to be kept dry for at least 5 days to avoid them coming off before the wound has healed. They can also easily be pulled off before the wound has had time to heal.

1.3 Applying steri-strips

With the steri-strip at right angles to the long axis of the wound, apply pressure on one side with your index finger. Use your middle finger on the other side of the wound to approximate the edges and then push the remainder of the steri-strip down onto the skin.

Alternatively, appose wound edges with forceps, and place the steri-strip across the wound with your other hand. Apply pressure along the length of the steri-strip with your middle finger. Place tape strips one at a time, 2-4 millimetres apart.

1.4 Patient aftercare

Advise your patient that the tapes should stay in place until they fall off on their own.

Soaking the steri strips with water may compromise the adhesives and hamper recovery of the wound, so advise a gentle wash only of the affected area.

2 Surgical staples

Surgical staples are small, sterile staples, generally made of stainless steel or titanium. They may be used not only to close wounds in the skin, but also to close some internal wounds. They are often used in the scalp (within the hair) and after orthopaedic surgery.

Surgical staplers are either disposable and made of plastic, or reusable and made of stainless steel. Both types are generally loaded using disposable, sterilized cartridges.

Skin staples are usually removed with a specialized staple remover.

A surgical stapler doesn't resemble a standard stapler, as it has no anvil. Surgical staples are commonly pre-shaped into a "M". Pressing the stapler into the skin and applying pressure onto the handle bends the staple through the skin and into the fascia, until the two ends almost meet in the middle to form a rectangle.

Staples are usually removed after 7 to 10 days.

2.1 Advantages

Staples provide a faster and less painful method for wound closure than suturing.

The act of stapling requires minimal skin penetration, and so fewer microorganisms are carried into the lower skin layers. Staples have been associated with decreased wound infection rates.

Staples have been shown to be less reactive than traditional suturing material.

The use of staples carries no risk of accidental needle-stick injury.

With proper placement, resultant scar formation can be cosmetically equivalent to that of other techniques.

2.2 Disadvantages

Staples are more expensive than traditional sutures.

They require great care in placement, especially to ensure the eversion of wound edges.

Staples leave larger marks than sutures, so are not used on the face or anywhere where cosmesis is important.

They are not appropriate for use where pressure may be applied, for example on the hands, feet or amputation stumps.

2.3 Inserting staples

Before applying staples to a wound, you should inspect and clean the wound, apply local anaesthetic if necessary for adequate cleansing and removal of damaged tissue, control bleeding and close the dermis as needed.

Evert and approximate the wound edges with the aid of forceps. Position the stapler over the centre of the skin edges and close by squeezing the trigger fully until motion is halted. Release the trigger fully to achieve staple release.

You should note the number of staples used, so that this can be checked against the number removed at a later date.

2.4 Removing staples

Clean the wound with a skin disinfectant before beginning.

Starting at the end of the incision, slip a staple remover under the first staple.

With the lower jaw of the remover under the staple and the upper jaw above, centre the staple remover on the staple.

Slowly squeeze the staple remover together and release the staple from the skin. The outer legs of the staple will bend slightly while applying pressure to them. Release pressure on the staple remover to put the staple in a container.

Work your way along the wound, until all remaining staples are out of the skin.

Ensure any bleeding has stopped. Apply steri-strips or a dressing, if needed. Dispose of the staples

safely.

3 Topical skin adhesives

Topical skin adhesives are supplied in sterile, single patient use ampoules.

A topical skin adhesive is a skin glue that is applied by rubbing it over the cut while the cut is being held closed. It is a good choice for clean, straight cuts that are not gaping too much nor under tension.

After gluing a wound, steri-strips can be applied to reinforce it.

3.1 Advantages

Topical skin adhesives can simplify wound repair, save time and eliminate the need for suture removal after the wound has closed.

They can be used with a topical anaesthetic or no anaesthetic, rather than injected anaesthetic.

They reduce the risk of a needle stick injury for healthcare professionals.

They are water resistant with an anti microbial coating, so that patients can shower soon after surgery.

They can also avoid problems such as reactivity, and premature reabsorption which can occur with sutures and lead to an undesirable result.

They are made from flexible material, so allow patients to return to normal activity quickly.

3.2 Disadvantages

Topical skin adhesives are not suitable for gaping or long wounds unless used in conjunction with suturing. They are not a safe substitute for sutures that are larger than 5-0 in diameter.

Compared to suturing, there is less opportunity to ensure wound edge eversion and careful realignment of tissue.

Topical skin adhesives cannot be applied subcutaneously and are only appropriate for superficial closure.

3.3 Application

Before applying topical skin adhesive to a wound, you should inspect and clean the wound, control bleeding and ensure that surface edges are easily apposable.

Pull the foil pouch apart and deposit the ampoule onto a sterile field.

The method of opening and preparing the ampoule will vary according to the particular adhesive you

are using and you should follow the instructions that are supplied.

Appose tissue edges with sterile forceps or gloved hands and hold in apposition while you apply the adhesive. Apply a thin film along the top edges of the wound. You should avoid heavy application. Continue to appose the edges, applying light pressure with forceps or your gloved hands, for between 10 and 30 seconds according to the manufacturer's instructions. This will enable the adhesive to cure and prevent seepage between wound edges.

An alternative method is to apply the adhesive as minute drops and then spread the adhesive with the elbow of the applicator.

Put the ampoule with any remaining adhesive in the foil pouch and dispose of safely.

Steri-strips may be applied to reinforce the closed wound.

3.4 Patient aftercare

You should give your patient the following advice on caring for their wound:

- If possible, avoid contact with water for the first 24 hours after treatment and keep contact with water to a minimum for a further 7-10 days.
- Do not apply any medications or cream to the wound.
- Do not scrub, pull or pick at the wound.
- Avoid any extreme physical activity that might impact the wound surface.
- Any discomfort, redness, drainage or swelling should be reported to a doctor.