Understanding the principles of suturing minor skin lesions

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Suturing has been used as a method of primary wound closure for centuries. Despite the introduction of other methods of wound closure such as staples, tissue glue, and adhesive skin-closure strips, it has remained a popular and effective choice. This article looks at the principles of suturing minor skin lesions in adults, wound assessment and choosing a method of closure, basic suturing technique, and when to remove sutures.

Wound assessment

The initial presentation of a minor traumatic wound can be deceiving. The visual aspect of torn and damaged skin, the amount of bleeding, and an often ‘shocked’ looking patient who is clearly in pain can lead the nurse to assume that the injury is worse than it actually is. Conversely, more serious injuries with tendon and nerve damage are often overlooked, as the patient will not complain so readily of pain (Purcell, 2003). Bleeding in a wound affects every stage of treatment and must be controlled if an accurate assessment of the injury is to be made.

Once bleeding has been controlled the wound can be assessed. To do this and to select the most appropriate closure method the nurse needs to find out the following (Wyatt et al, 2003):

- What was the mechanism of injury – who or what caused the wound and how?
- Was there a crush component to the injury – as this may result in swelling?
- Is there likely to be a foreign body in the wound?

- When did the injury occur? Wounds more than 12 hours old (other than clean facial wounds) are rarely suitable for closure in A&E;
- Where did the injury occur?
- What is the likelihood of contamination?
- Is immunisation against tetanus required?
- What is the patient’s occupation? Hygiene issues or heavy work may affect the approach required.

The wound should be examined and described accurately in the patient’s notes. Examining any wound is painful and although this subsides quickly once treatment is complete most experts recommend using adequate analgesia before examining and cleansing a wound (Purcell, 2003). Using local anaesthetic with adrenaline (epinephrine) has the added advantage of causing the reduction of bleeding by vasoconstriction, allowing a more accurate assessment to be made. However, adrenaline is contraindicated for body extremities as it may delay healing and reduce resistance to local infection.

On examination the type of wound should be described using one accepted term (Box 1). It is good practice to measure the length of the wound, and to note its site and orientation (vertical, horizontal, or oblique), as well as signs of contamination or infection. The wound should also be explored to detect any underlying injury to tendons, nerves, or blood vessels. Any motor or sensory loss, arterial bleeding, or vascular injury resulting in the loss or weakening of distal pulses should be recorded (Wyatt et al, 2003) – such wounds should be referred for specialist treatment.

REFERENCES


Suturing a wound is the traditional method of primary closure. The broad range of suture materials available also makes it extremely versatile (Richardson, 2004). The choice of suture and needle will be determined by the location of the wound, the thickness of the surrounding skin, and the amount of tension that is likely to be exerted on it (Mackay-Wiggan et al, 2002). Suture materials are classified as natural or synthetic and may be absorbable or non-absorbable (Box 2).

Absorbable sutures degrade rapidly and are mainly used in the deep tissue layers of a wound to minimise the risk of haematoma formation or infection occurring in dead space (Wyatt et al, 2003). They are also used for closing wounds to lips, tongue, or mouth. Non-absorbable sutures are used to close the wound edges at other sites.

It is usual to select a reverse cutting needle for suturing, which is designed for use on tough tissue such as skin (Smithing, 2002). Needles have three sections: the point, the body or mid-section, and the swage, where the suture material is attached. On reverse cutting needles the cutting edge is located on the outer curve of the body and is directed away from the wound edges preventing further trauma and the risk of the suture pulling through the edge of the wound (Mackay-Wiggan et al, 2002).

Table 1 shows suture choice for wounds to various parts of the body. Suture thickness is measured by gauge, with 6/0 being the smallest and 3/0 the largest or thickest shown.

**Basic suturing technique**

Suturing should not be attempted without prior instruction and should be carried out initially under the strict supervision of a skilled practitioner.

**Cleansing and anaesthetising**

Before inserting sutures the wound should be thoroughly cleansed and infiltrated with a local anaesthetic - unless this was done at the assessment and examination stage (Richardson, 2004). Effective cleansing can be achieved using 0.9 per cent sodium chloride solution (Blunt, 2001), while high pressure irrigation using a syringe and 19-gauge needle is helpful for removing stubborn dirt. If the process is too painful further cleansing can be undertaken when anaesthetic has taken effect (Purcell, 2003).

If not already undertaken, the area should now be anaesthetised with a local anaesthetic such as lidocaine. Adequate anaesthesia in adults should be achieved using one per cent plain lidocaine, with a safe dosage being 3mg/kg body weight. The maximum dose for an adult therefore is 20ml of one per cent lidocaine which has 10mg/ml. The local anaesthetic is injected into the tissue close to the wound edge just under the dermis and can be given through the open wound edges providing that the wound is clean (Purcell, 2003). Anaesthesia can be achieved by the use of multiple small injections around the circumference of the wound or by infiltrating the edges of the wound externally through the skin. Other techniques, such as ring blocks, can be used for

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**REFERENCES**


digit injuries where the entire digit is anaesthetised. The anaesthetic properties of lidocaine endure on average for 30–120 minutes (Smithing, 2002) and can be prolonged by mixing with adrenaline, which slows the absorption of the drug into the circulation (Purcell, 2003).

**Suture technique**

The most commonly used suture for closing minor skin lesions is the simple interrupted suture or instrument tie (Fig 1). Key points to remember when suturing are:

- Tie the sutures tight enough to ensure that the edges just meet. Slightly everted tissue will flatten out as healing occurs, leaving a good cosmetic finish – inverted edges will result in a depressed scar;
- If the edges meet only under considerable tension, consider suturing the deeper layers of tissue first;
- Use only toothed forceps to handle wound edges (Wyatt et al, 2003);
- Use strategically placed sutures to line up irregular wound edges first, then suture between for full closure;
- If a suture does not look acceptable, remove it and start again – seek help if necessary;
- Position all the knots on the same side of the wound;
- Use an appropriate number of sutures for the wound. A rule of thumb is – the distance between the sutures equals the size of the ‘bite’ – (depth of penetration) (Trott, 1997).

**Removal**

Table 2 shows the recommended time to remove commonly used sutures. This varies depending on the site of the wound. For example, facial wound sutures can be removed after three days and replaced with adhesive skin-closure strips (Wyatt et al, 2003).

The suture should be removed by cutting carefully and precisely with sharp scissors or a stitch cutter, as close to the tissue as possible, so that the minimum of material is pulled through. Areas where healing is delayed can be supported with the use of adhesive skin-closure strips.

**Complications of suturing**

Complications from suturing can occur, particularly if strict asepsis is not maintained throughout the procedure (Castille, 1998). The suture track provides bacteria with an entry pathway and must be kept clean and dry until initial healing has taken place to prevent the occurrence of infection (Richardson, 2004).

Care must also be taken over wound edge alignment to ensure that a good cosmetic finish is obtained. Sutures must not be too tight, as this can lead to devitalisation of the tissue at the wound edge. They must also not be too loose, as this can lead to inadequate apposition of the wound edges, resulting in delayed healing and a poor cosmetic result.

**Conclusion**

Suturing has been used successfully as a method of primary wound closure for centuries. Despite the introduction of other methods of closure such as staples, tissue glue, and adhesive skin-closure strips, it remains a popular and effective choice.

Providing the correct suture is chosen and the correct technique is used, suturing can produce a functional and cosmetically desirable result.

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**TABLE 2. RECOMMENDED TIME UNTIL SUTURES ARE REMOVED (Wyatt et al, 2003)**

<table>
<thead>
<tr>
<th>Location of wound</th>
<th>Time to removal of sutures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalp</td>
<td>7 days</td>
</tr>
<tr>
<td>Trunk</td>
<td>10 days</td>
</tr>
<tr>
<td>Limbs</td>
<td>10 days</td>
</tr>
<tr>
<td>Hands</td>
<td>10 days</td>
</tr>
<tr>
<td>Face</td>
<td>3–5 days</td>
</tr>
<tr>
<td>Lips, mouth, or tongue</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

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**FIG 1. SIMPLE SUTURE TECHNIQUE**

- a. Insert the needle at 90° angle to skin to evert wound edge
- b. The suture should exit at 90° with each side a mirror image of the other. This is the ‘bite’
- c. Pass a double loop around the needle holder
- d. Clamp the free end of the suture
- e. Pull it through to create the first knot or throw
- f. Create a single loop in the opposite direction to the first knot and tighten. Single ‘throws’ can secure if