First aid for snake bites

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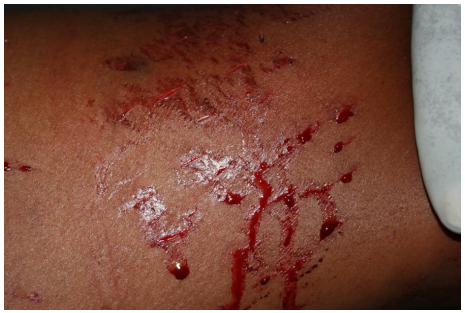
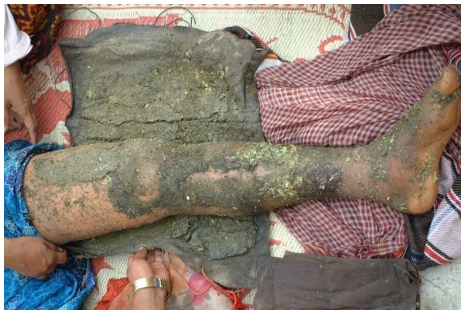
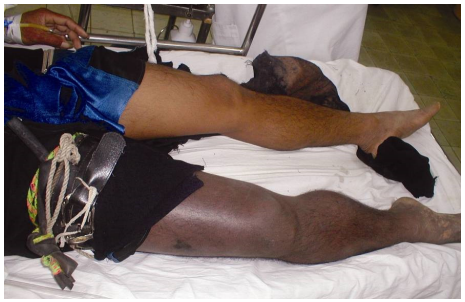
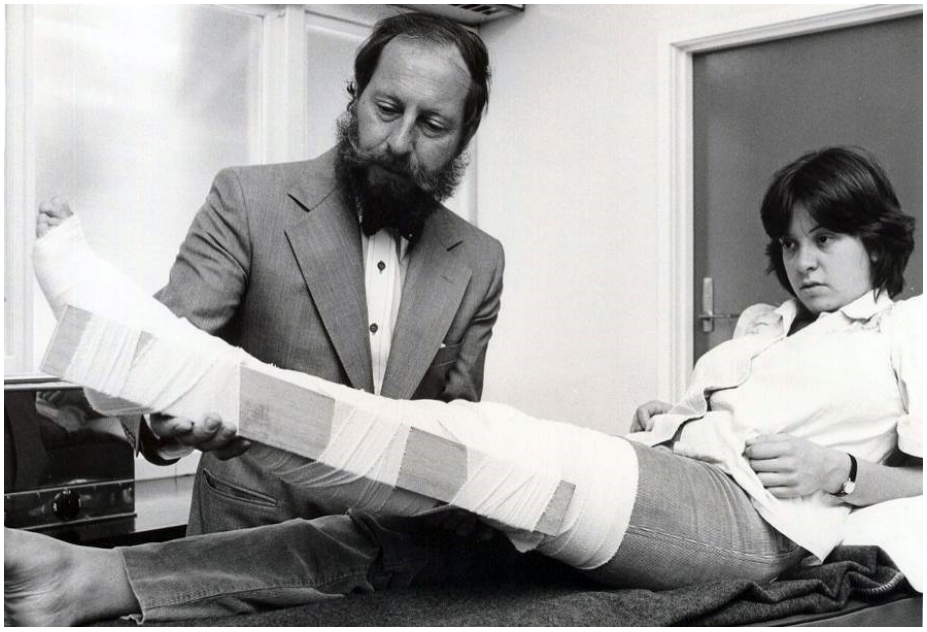
Important Caveats

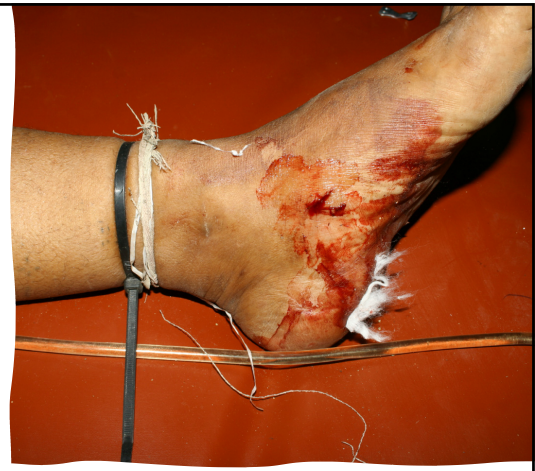
- First … **Do no harm!**
- Get away from the snake and leave it alone!
- Doing something is not always better than doing nothing…
- First aid should not delay transfer to medical care or put the person at risk of further illness or injury.
- Just because everyone is doing it, doesn't mean it actually works or is safe…

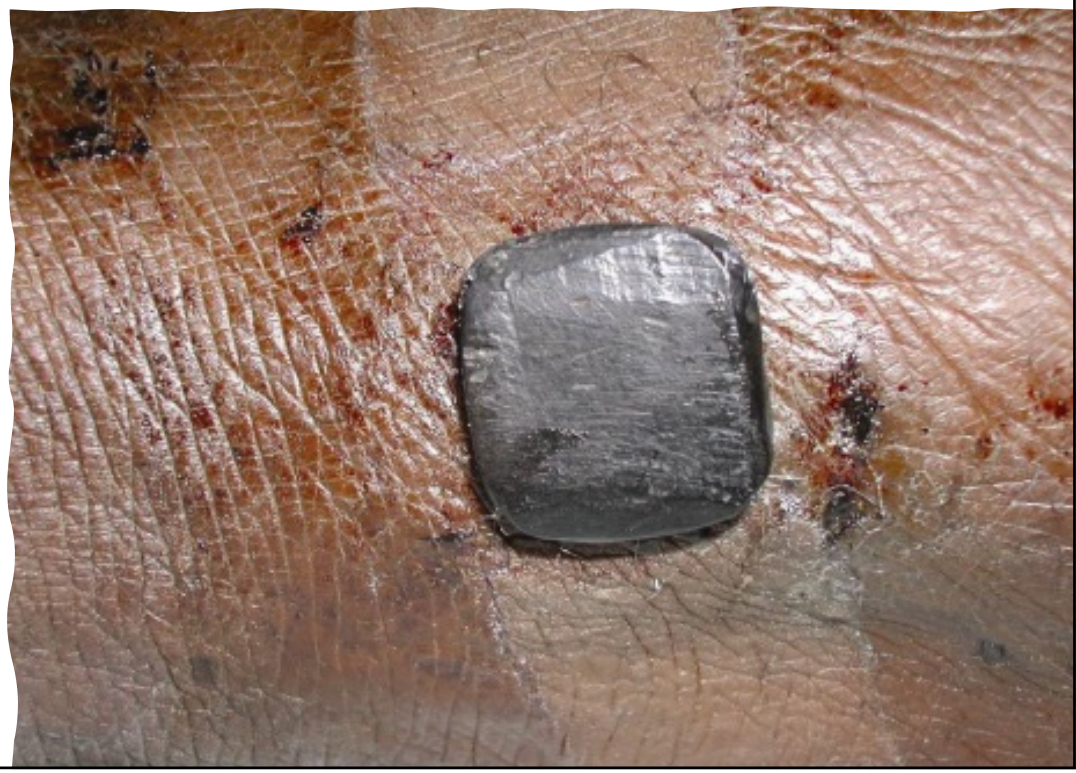






Traditional first aid methods

- Methods are generally ineffective, and many may be harmful to the patient:
  - Use of tourniquets and ligatures
  - Wound scarification or excision
  - Herbal remedies, poultices and compacts
  - Traditional medicines
  - Sucking the wound
  - Urinating on the wound
  - Applying a black stone to the bite site
  - Use of alcohol and other stimulants
- Many techniques are unhygienic and increase infection risk.
- Others waste precious time.



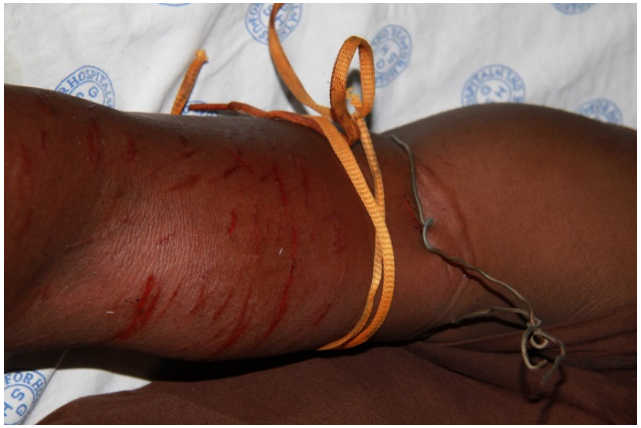


Traditional healers

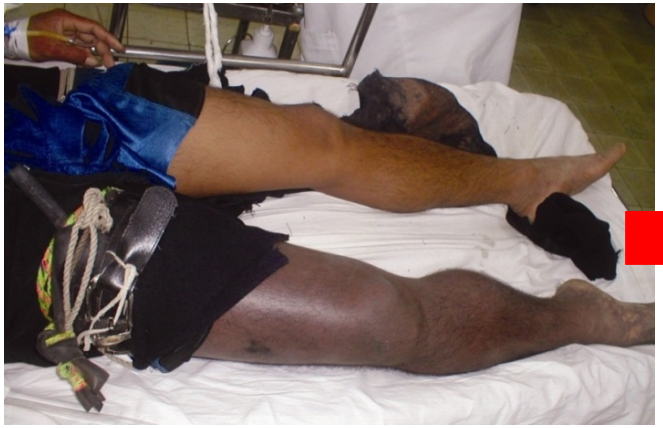
- In many parts of the rural tropics snake cultural ties are strong and western medicine is not trusted, so bitten people seek help first from traditional healers.
- This may result in long delays before modern medical care is sought.
- Positive engagement with traditional healers may be more valuable that simply rejecting strongly held beliefs.
- Encouraging healers to use their influence to teach people about prevention or to recognise early signs of severe envenoming can be beneficial.

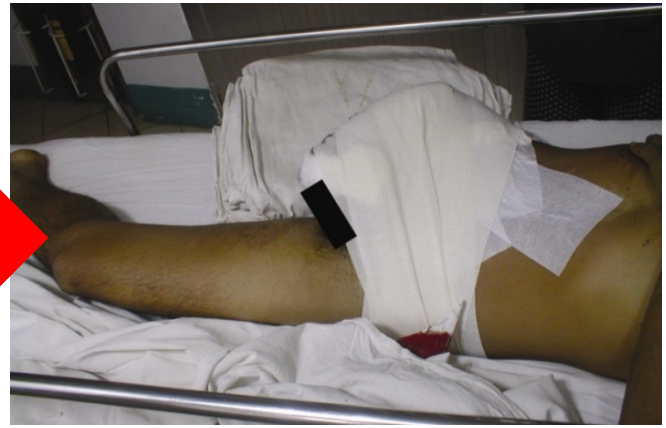
Tourniquets are dangerous

- In extreme cases, tourniquets can lead to exsanguination of the limb which results in irreversible tissue damage, necessitating amputation.
- Tourniquet use should be actively discouraged, and tourniquets that are in place when a patient arrives at hospital, should be carefully and slowly released and removed.



Shoelace and wire tourniquets applied to the arm of a snakebite victim

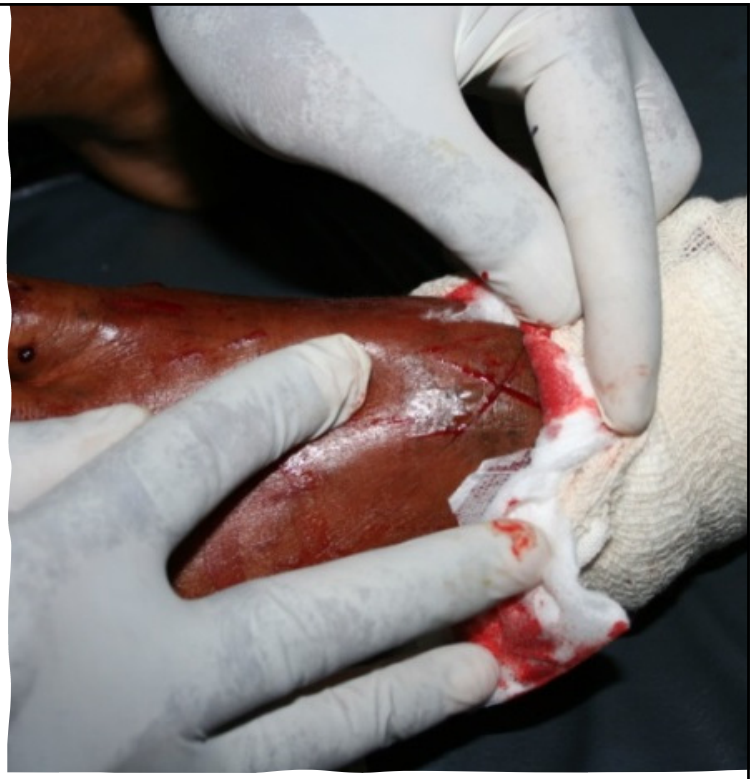


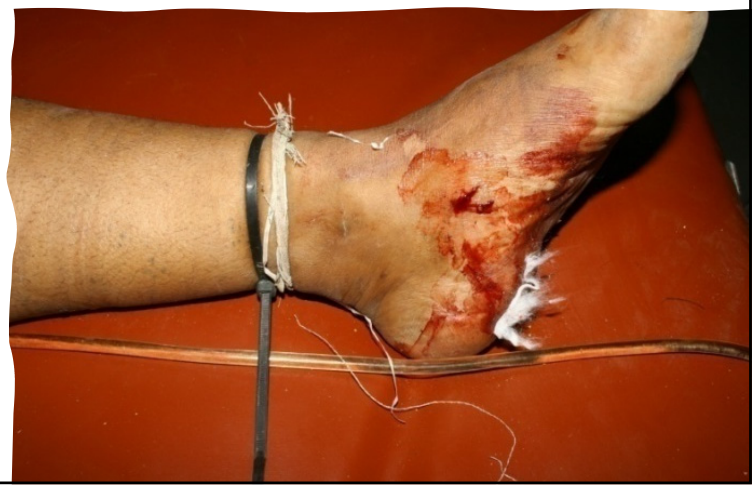


Consequences of the application of multiple tight tourniquets used as first aid after the bite of a non-venomous snake – tourniquets are dangerous, ineffective and excruciatingly painful…

Discourage wound scarification or excision

- Fundamental principle of all forms of first aid is to do no harm!
- Incision, excision or other forms of scarification should never be used.
- Some species, such as saw-scaled vipers (*Echis carinatus*), cause severe bleeding so it is essential that cutting of the bitten limb be avoided.
- Implements used are rarely sterile and this increases the risk of serious infection.
- Damage to tendons, nerves and blood vessels can have permanent consequences.





Immediate care of snakebite patients

- **RETREAT** to a safe distance from the snake.
- **CALM** the patient, sit or lay them down and keep them still –anxiety is to be expected, but panic must be avoided.
- **REMOVE** rings, bracelets or other constrictive objects from the bitten limb – if swelling of the limb should occur these can cause serious injury by constriction.
- **GET HELP** from friends, family or colleagues as quickly as possible.
- **TREAT** all snakebites as potential medical emergencies, even if you think the snake might not be venomous – it is far better to be safe than sorry.
- **BE AWARE** of the potential for sudden collapse, shock or loss of consciousness, be prepared to resuscitate, and manage the airway, breathing and circulation.
- **GIVE** only small sips of water if the person is thirsty.
- **TRANSPORT** the patient to medical care without delay.

Basic principles of snake bite first aid

- Snake bite first aid must be applied with **SPEED:**
  - ✓ **S**afe: The technique used must not cause further injury to the patient
  - ✓ **P**ractical: It must be practical and appropriate to the situations in which it will be used
  - ✓ **E**ffective: It should be effective in reducing the risk of further injury or pre-hospital death
  - ✓ **E**asy: It should be (a) easy to teach, (b) easy to apply by unskilled people, and (c) use easy to find materials
  - ✓ **D**istinctive: It should be easy to remember as the right technique for a particular type of snake bite

Basic principles of snake bite first aid

- There are four simple recommendations:
  - **FIRST DO NO HARM:** Do not use scarification, tourniquets, traditional herbal remedies, Chinese snake bite pills, electric shocks, black stones or poultices;
  - For bites by unknown species, or those known to potentially cause local tissue injury, apply a pressure pad over the bite site and immobilise the patient completely, especially the bitten limb (with splint);
  - For bites by species known to potentially cause neurotoxicity, use the pressure immobilisation bandage (PIB) or the pressure pad techniques;
  - Seek medical assistance without delay, but avoid transporting patients prone on their backs, sit them up, or in the recovery position;

First aid for non-neurotoxic snake bites

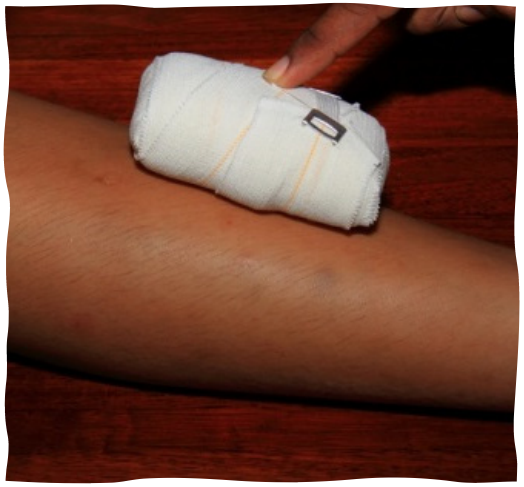
- **IMMOBILISE THE PATIENT**
- Bites by vipers, and some cobras may cause severe local tissue destruction
- Immobilize the patient completely, monitor airway, breathing and circulation, and keep them still and calm.
- Pressure Immobilization Bandages (PIB) should **not be applied** after bites by these snakes, because attempts to limit venom movement by applying direct pressure over the whole limb may result in more serious local tissue injury.
- Avoid applying non-compression dressings as they may stick to blisters and blebs and cause them to rupture.

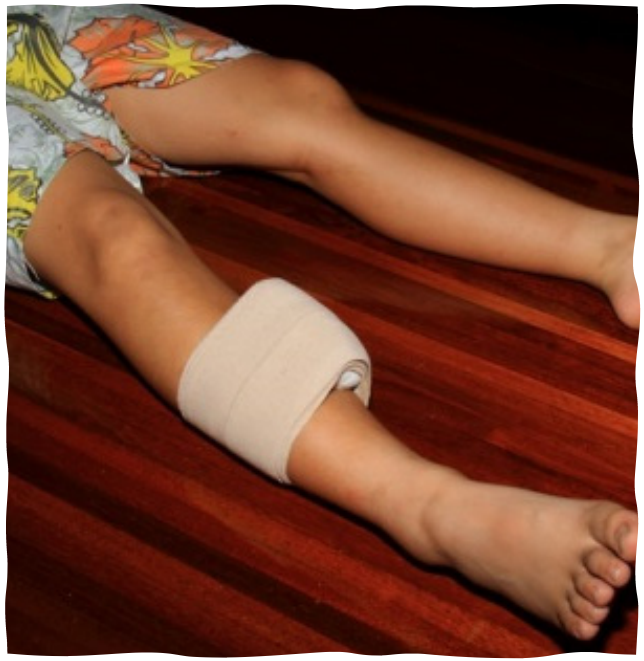
First aid for neurotoxic snake bites

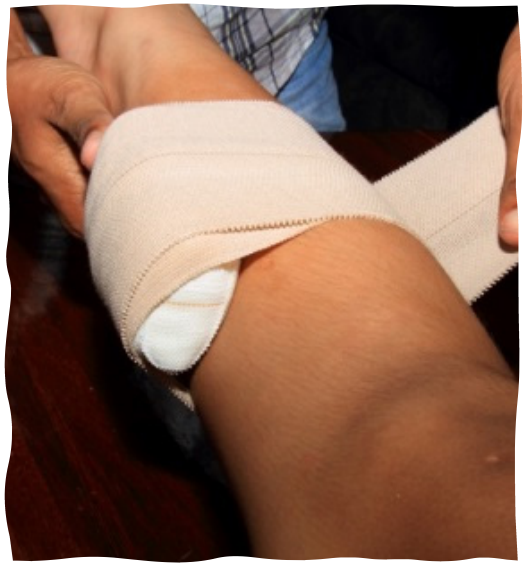
- **APPLY PRESSURE AND IMMOBILISE PATIENT**
- Preferably use the Monash Pressure Pad method or alternatively the Pressure Immobilization Bandage (PIB) method.
- Immobilize the patient completely, monitor airway, breathing and circulation, and keep them still and calm.
- Keep the patient in the recovery position on their left side and be prepared to clear the airway and perform CPR if necessary.
- Seek immediate and urgent medical treatment.
- Call ahead to the nearest health facility and inform them of the emergency.

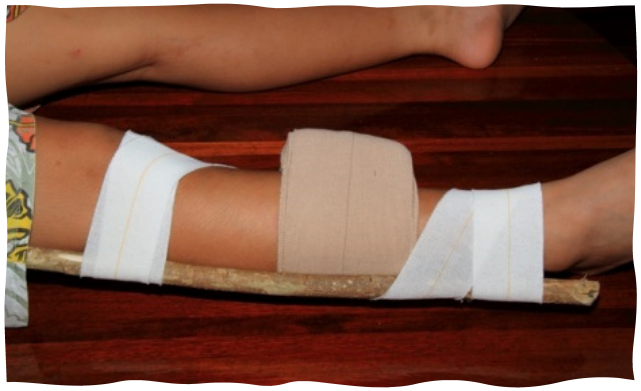
Application of Pressure Pad

- Use a small ball of cloth to form a pad and bandage this directly over the bite site very firmly with an elastic bandage or long, wide piece of cloth.
- Immobilize the limb by applying a splint to the whole length of the bitten limb.
- If transporting by motorcycle or working animal, splinting bitten limb is adequate. Stretcher patients should have both limbs splinted together.





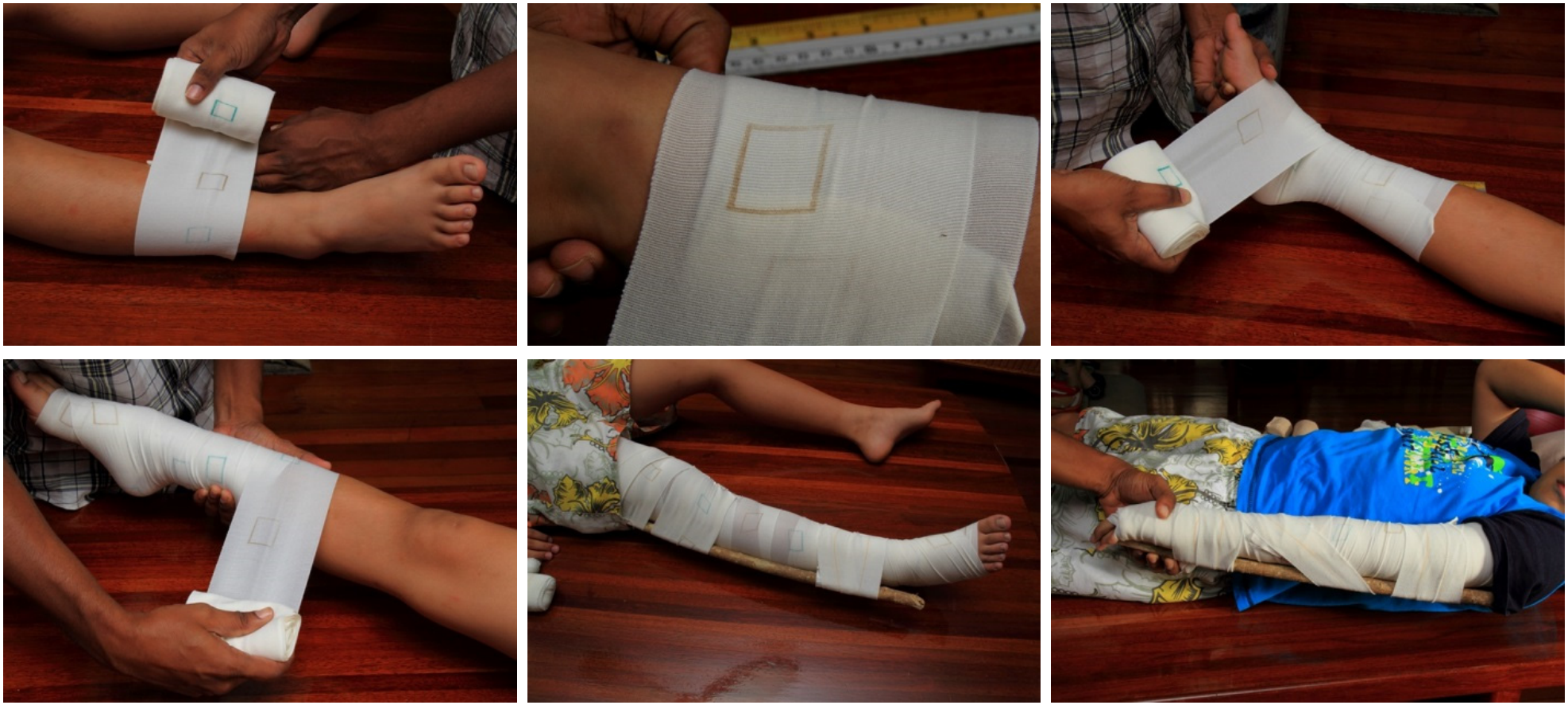




Pressure Immobilization Bandage (PIB) method

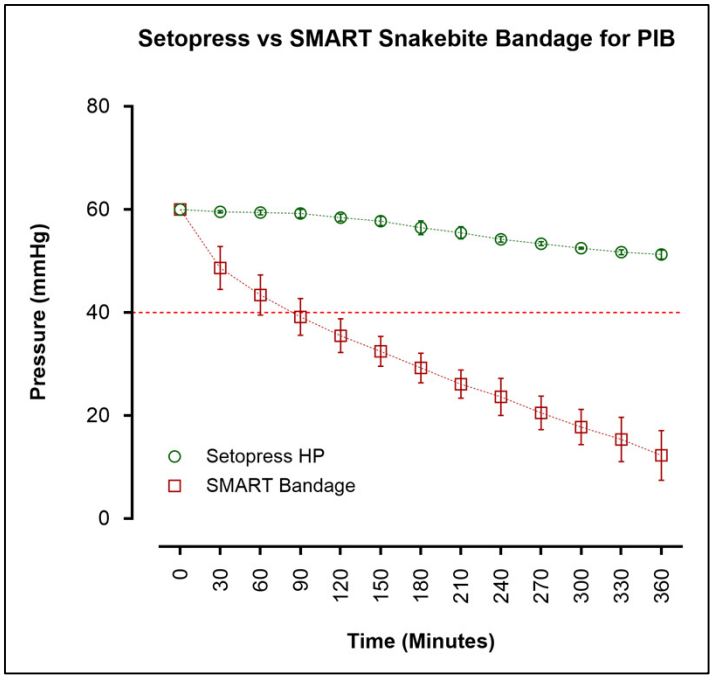
- Pressure Immobilization Bandaging (PIB) may be beneficial after bites by kraits and cobras where neurotoxicity is a major clinical effect by only when it is applied correctly with the right materials.
- There are 4 critical elements to the successful application of PIB :
  - ✓ Bandage from above the toes, or fingertips
  - ✓ Extend the bandage the entire length of the bitten limb
  - ✓ Splint the limb to immobilize it
  - ✓ Must achieve a sustainable bandage pressure of 55-70 mmHg (leg) or 40-70 mmHg (arm)
- Failure to meet all four criteria is likely to result in ineffective, or at best partially effective first aid.
- Achieving and maintaining effective pressure for >2 hours is not possible with most commercial elastic bandages.

Application of PIB method



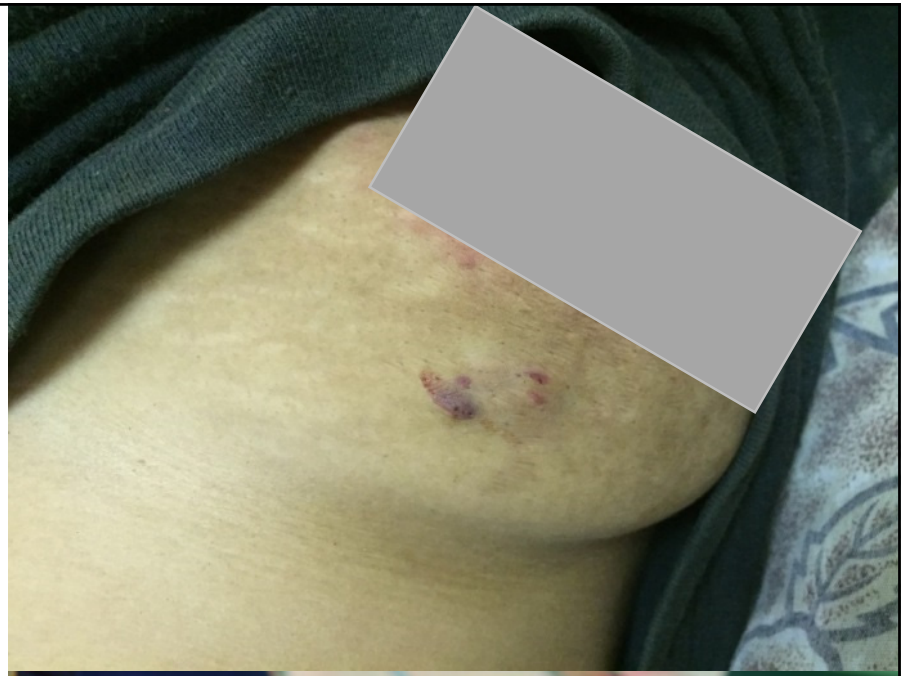
A word of caution

- Strong scientific evidence demonstrates rapid capillary bed uptake of peptides <25-30 kDa, rather than lymphatic transport.
- Pressure bandage application at tensions that prevent toxin transport by lymphatic pump effect are difficult to achieve and may generate pressures that obstruct venous return.
- Effective tension for an adult may form a venous tourniquet on a child.
- Commercial crepe bandages rapidly lose their tension when applied to immobilised limbs – falling from 60 mmHg to <40 mmHg in <2 hours.
- Bending a bandaged arm at the elbow and placing it in a sling can turn PIB into an effective tourniquet. Arms should be splinted straight and gently attached to the torso to further restrict movement.
- Pressure pads and immobilization have been subjected to small scale human studies in Myanmar with promising results over periods of up to 7 hours, but larger and more comprehensive studies are needed.



Bites to the head, neck or body

- Patients bitten on the head, neck or torso may develop life-threatening problems very soon after the bite.
- Keep calm and as immobile as possible.
- If neurotoxicity is suspected, apply direct, continuous pressure over the site of the bite with a pad of cloth (t-shirt, towel etc.) but do not restrict breathing or swallowing.
- Reassure the person.
- Transport to medical care immediately.
- Call ahead to notify the health facility of the emergency.



First aid for cobra spit ophthalmia

- If venom is spat into the face, and especially the eyes, rapid irrigation with water is recommended in order to flush the venom from the skin and eyes.
- Do not rub the eyes.
- Seek medical attention early.
- 0.5% adrenaline eye drops can help to relieve pain and inflammation if these are available at the health facility.
- If damage to the eyes is suspected, the patient should be referred for specialist follow-up care.