AUSTRALIAN RESUSCITATION COUNCIL

GUIDELINE 8.9.1

ENVENOMATION - PRESSURE IMMOBILISATION TECHNIQUE

INTRODUCTION

The pressure immobilisation technique (PIT) was introduced for the treatment of Australian snake bites [1] and is suitable for other elapid snake bites [2]. It is also recommended for envenomation by a number of other animals and for severe allergic reactions to injected venoms. The PIT retards the flow of lymph [3] by which venoms gain access to the circulation.

> *"Venom is deposited in the tissue in the form of a liquid blob or blobs. …..…venom may produce pain, tissue damage, or both, depending upon the type of venom. Movement from the bite area requires the venom to enter the blood vessels or lymphatics or to spread through tissue planes.*
>
> *A simple pressure bandage over the bitten area leads to at least partial occlusion of capillaries and lymphatics. If the joints on either side of the bite are immobilised … …lymph flow is restricted and venom absorption will also be minimised."* [4]

It has also been shown that there may be inactivation of certain venoms and venom components when the injected venom remains trapped in the tissues by the pressure bandage [4].

USE OF THE PRESSURE IMMOBILISATION TECHNIQUE

The Pressure Immobilisation Technique (PIT) **is** recommended for application to bites and stings by the following creatures:

- All Australian venomous snakes, including sea snakes;
- Funnel Web spider;
  LEVEL OF EVIDENCE
  Level IV
  CLASS OF RECOMMENDATION
  Class A

- Blue-ringed octopus;
- Cone shell;
- Bee, wasp and ant stings in allergic individuals.
  LEVEL OF EVIDENCE
  Expert Consensus Opinion
  CLASS OF RECOMMENDATION
  Class B

The Pressure Immobilisation Technique is **NOT** recommended for the first aid management of:

- Other spider bites including redback;
- Jellyfish stings;
- Fish stings including stonefish
- Bites or stings by scorpions, centipedes or beetles.

MANAGEMENT

1. If resuscitation is needed it takes precedence over the PIT (refer to ARC Guideline 7).
2. If on a limb, apply a broad pressure bandage over the bite site as soon as possible. Crêpe bandages are preferred but, if not available, improvise by using any flexible material that can be torn into strips 7cm to 10cm wide.
3. The bandage should be as firm as you would apply to a sprained ankle.
4. In order to further restrict lymphatic flow and to assist in immobilisation of the limb, apply a further pressure bandage, commencing at the fingers or toes of the bitten limb and extending upward covering as much of the limb as possible. The purpose of this bandage is to further restrict lymphatic flow and assist mobilisation. (Alternatively, a single bandage may be used to achieve both pressure on the bite site and immobilisation of the limb. In this method, the bandage is initially applied to the fingers or toes and extended up the limb as far as possible including the bite site [4,5]).
5. Splint the limb including joints on either side of the bite, to restrict limb movement.
6. Keep the victim and the limb completely at rest.
7. Bring transport to the victim if possible. Transport the victim to medical care, preferably by ambulance.
8. If alone, the victim should apply the pressure immobilisation technique if possible, and seek help.
9. Do not remove the bandages or splints.
10. If the bite is not on the limb, firm direct pressure on the bite site may be useful (Class A; LOE: Expert Consensus Opinion).

Note:

- DO NOT cut or excise the bitten area, or attempt to suck venom from the bite site.
- DO NOT wash the bitten area.
- DO NOT apply an arterial tourniquet. (Arterial tourniquets that cut off circulation to the limb, are potentially dangerous and are not recommended for any type of bite or sting in Australia)

CLASS OF RECOMMENDATION

Class A - Recommended

LEVEL OF EVIDENCE

Level IV

REFERENCES

1. Sutherland SK, Coulter AR, Harris RD. Rationalisation of first-aid measures for elapid snakebite. *Lancet* 1979; 1: 183-186.
2. International Liaison Committee on Resuscitation 2005 Consensus on ECC & CPR Science and Treatment Recommendations. Worksheet First Aid - What is the safety, efficacy and feasibility of compressive wrapping for coral snake (elapid) envenomation? http://www.c2005.org (accessed 16th Feb 2005).

3. Howarth DM, Southee AE, Whyte IM. Lymphatic flow rates and first-aid in simulated peripheral snake or spider envenomation. *Med J Aust* 1994; 161: 695-700.
4. Sutherland SK, Tibballs J. Australian Animal Toxins, Oxford University Press, Melbourne, 2001
5. Sutherland SK, Hawdon GM, Winkel KD. (1999). First aid for snake bite in Australia. Australian Venom Research Unit. The University of Melbourne.

FURTHER READING

ARC Guideline 7 Cardiopulmonary Resuscitation
ARC Guideline 8.9.2 Envenomation - Snake Bite
ARC Guideline 8.9.3 Envenomation - Spider Bite
ARC Guideline 8.9.4 Envenomation - Bee, Wasp and Ant Stings
ARC Guideline 8.9.5 Envenomation - Tick Bite
ARC Guideline 8.9.6 Envenomation - Jellyfish Stings
ARC Guideline 8.9.7 Envenomation - Mollusc Stings