

Jellyfish Stings and Fish Spine Injuries

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The tentacles of jellyfish have microscopic stinging capsules for incapacitating prey. When in contact, they can release millions of pointed, corkscrew nematocysts; these darts penetrate the skin and inject toxins. The injuries they cause depend on a variety of factors including the type and potency of the venom, the amount of contact area with the victim (i.e. dose of venom), the size of the victim and pre-existing medical conditions. The Sea Wasp or Box Jellyfish (*Chironex fleckeri*) and the Portuguese Man-of-War or Blue Bottle Jellyfish (*Physalia utriculus*) are the most deadly of these creatures and have been responsible for numerous deaths throughout tropical regions around the world.

There are many fish throughout the world that have spines to protect them from their predators. These spines are often hollow and may be connected to venom sacs; they are capable of injecting venoms into the wound. Such injuries can result in trauma, severe pain and infection. Stonefish (*Synanceja horrida*) envenomation and trauma from the barb of a Stingray (family *Dasyatidae*) has occasionally proven fatal.

Besides the circulatory system, some venoms spread through the body via the lymphatic system. Since this system of ducts, vessels and nodes throughout the body is driven by muscular action and the vessels are easily compressed, the Pressure-Immobilisation Technique* can be effective in slowing the spread of the venom when it is applied promptly and correctly.

This is a broad subject; the management for the various jellyfish stings and fish spine injuries is varied and vast. There are however a few do's and don'ts to remember:

General:

- Do conduct a primary survey and act accordingly – i.e. ensure the safety of the lifesaver and then remove the victim from danger; check for conscious level and ABC (airway, breathing and circulation); do CPR (cardiopulmonary resuscitation) if breathing or pulse is absent; keep victim at rest, reassured if conscious, and under constant observation.
- Do seek medical aid for all stings and fish spine injuries, urgently if severe.
- Do monitor for shock and anaphylaxis (severe allergic reaction), and act accordingly.
- Do apply local antiseptic (sterilising medications), analgesics (pain-relieving medications) and antihistamines (allergy-reducing medications) as directed (e.g. Coastal Solutions Inc's Jellyfish Squish for jellyfish stings, endorsed by the American Lifeguard Association). Must ensure that the victim is not allergic to the medication.

- Do keep tetanus immunization up to date.
- Do prevent these injuries with use of protective body suits when swimming, or by wearing protective footwear when walking the shallows.
- Do not apply a tourniquet on the wound as this may cut blood flow to the affected area.

Jellyfish Stings:

- Do douse tropical** jellyfish (e.g. Box Jellyfish) stings liberally with acetic acid 5 percent (white vinegar) to stop further envenomation (but vinegar does not alter the venom in any way).
- Do remove adherent tentacles after they have been deactivated with vinegar using tweezers, hand protected with glove or towel (dead jellyfish's tentacles and detached tentacles can still fire nematocysts).
- Do rinse eye stings with a saline solution (e.g. artificial tears). Prevent run-off solution from entering the unaffected eye.
- Do use cold packs / wrapped ice (remove any surface moisture (condensation) prior to the application) to reduce the pain after removing tentacles (but cold treatment has no known effect on the venoms).
- Do apply Pressure-Immobilisation technique* to reduce envenomation from a Box Jellyfish sting but, if applied, should only be done after tentacles have been doused with vinegar and removed.
- Do not let the victim rub a sting with his hands, towel, clothing or sand.
- Do not wash injury with fresh water as it may increase pain.
- Do not pour urine, gasoline, turpentine or kerosene on the sting or injury.

** Do not apply vinegar for pacific Blue Bottle Jellyfish (*Physalia physalis*) (Vinegar or fresh water can trigger more nematocysts to be released). Do wash the tentacles away with sea water, unless tentacles are dry.

Fish Spine Injuries:

- Do control any severe bleeding, if present.
- Do remove the embedded spine, if present, but only if easily removed.
- Do immerse the wound in hot water for at least 30-90 minutes and until the pain is relieved. This may be repeated if pain recurs. Recommended temperature is 45°C. Test it on your skin first to avoid scalding the victim and top it up every 10 minutes (The protein based venom can be partially denatured by heat, therefore relieving the pain).
- Do apply ice / cold packs to the wound should hot water not provide relief.

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- Do not apply Pressure-Immobilisation technique* or constrictive bandages as they may increase pain and local tissue damage.
- Do not ignore fish spine injuries as they need to be cleaned (scrubbing the wound with soap and fresh water) and sometimes surgically explored for spine fragments to prevent infection.
- Do not cut and suck out the venom as it can lead to bacterial infection.

Note:

- *Pressure-Immobilisation Technique was developed by Dr. Struan Sutherland, Commonwealth Serum Laboratories, Australia, and first published in 1978. Locally it is taught under DAN AP's First Aid for Hazardous Marine Life Injuries Course.
- Antivenoms are currently available for some Stonefish and Box Jellyfish envenomations.

Important Numbers:

- Singapore Emergencies / Ambulance: 995.
- Singapore Drug & Poison Information Centre 24-hour Hotline: (+65) 6423 9119.
- Australian Venoms Research Unit: (+61) 3 9483 8204.
- DAN (Divers Alert Network) 24-hour Emergency Hotline: 1-919-684 8111 (collect).
- DAN Asia Pacific: (+61) 3 9886 9166 (office hours) / (+61) 3 8508 9958 (after hours).