Leech Therapy

History

Leech therapy has a long medical history. The first known account of “leeching” appears in ancient Sanskrit writings in India as well as in ancient Chinese medicine. Leeching was conceived as a technique for eliminating blood- “bloodletting”. The treatment has recently made a reappearance in the treatment of microsurgical procedures. Today, leeching is used on occasion to restore blood flow to areas of damaged veins after re-implantation or transplantation of tissue eg. flaps. The species of leech used is called “Hirudo Medicinalis”. This type of leech is bred specifically for use in medicine.

Anatomy and Physiology

The leech Hirudo Medicinalis is a freshwater amphibious worm with no vertebrae, usually black or brown in color, and about 10cm in length. The leech has a mouth containing three jaws; of which each have about one hundred tiny teeth. It also has a posterior suction device that it uses for stability. Leech therapy involves an initial bite, which is painless [it’s thought that the saliva contains a mild anesthetic]. Next, an attachment period that lasts 20-45 minutes, during which the leech sucks 5-15mls of blood. The final phase is the post-attachment period during which the site continues to bleed. The final stage provides the primary therapeutic benefit caused by the components of the leech’s saliva: hirudin- an anticoagulant, as well as a histamine-like substance that induces vasodilation.

Psychosocial

Patient and family preparation and education are very important. Understandably leech therapy can be very upsetting to patients and their families. They require teaching regarding medical reasons for the therapy and it’s effectiveness. Nursing staff will need to provide emotional support and reassurance that the therapy is painless, clean [medically bred leeches] and safe. Nursing staff should encourage patients to express their fears and concerns and involve other disciplines as necessary to assist patients to accept leech therapy in their treatment.

Indications For Use of Leeches

Leech therapy or leeching, is primarily used today in plastic and reconstructive surgery centres. Local, rotational and free flaps are a mainstay in reconstruction, and sometimes ischemia-induced complications can follow. Many modalities are aimed at flap survival and leeching in particular, targets the relief of venous congestion. Venous congestion can result within a flap, as well as other post operative, micro-vascular reconstructive tissue beds with inadequate venous channels.

With leeching, the aim is to maintain perfusion to an area with good arterial flow, and thus prevent any tissue necrosis caused by venous congestion. Therefore, it is required to complete a thorough circulatory assessment, ensuring true venous congestion or occlusion before leeching. Venous occlusion assessment includes observation of bluish colour tissue, brisker than normal capillary refill, tense tissue turgor, cool to touch, and digital tip incision will show dark blue to purple blood. Documentation of venous occlusion assessment is required before leech therapy.

Contraindications

Leech therapy is contraindicated where preexisting conditions such as arterial insufficiency and bleeding disorders exist. Anaemia could result with these conditions, as a very large leech can withdraw as much as 15 millilitres of blood and the wound can ooze for days following.

The immunocompromised patient must also avoid leech therapy, as an aeromonas hydrophilia infection has shown to result in 2.4-20% of leech therapy cases. The aeromonas is a normal resident in the gut of the medicinal leech. Therefore, careful handling of the leech is recommended to avoid regurgitation of gut contents. However, cephalosporin, sulfa and quinolone antibiotics are the currently recommended treatments for this infection. Often prophylactic antibiotics are ordered.

Ordering

An informed consent must be signed by the physician prior to initiating leech therapy. Doctors orders for leech therapy must include the area to be treated, the number of leeches and the frequency of treatments. Tissue assessment must continue, as leeching success will be evidenced in tissue changes.

Storage

A solution containing Hirudo salt in sterile water is used to store leeches, as recommended by Toronto Hospital For Sick Children. This solution can store medicinal leeches for months, kept under refrigeration in pharmacy. Leeches are heat sensitive, therefore should be stored at temperatures between 5 and 7 degrees celcius. Leeches are kept in a secure, labelled container, with very small ventilation holes, as leeches are able to crawl about and pass through quite small openings.

Chlorinated tap water is not to be used to store leeches.

Leeches are regulated by Health Canada as drugs under the Food and Drugs Acts and Regulations. They are considered to be drugs because they secrete a substance that is used for a therapeutic benefit. The Food and Drug Regulations require anyone intending to sell or distribute these products in Canada to obtain market authorization.

When the hospital obtains leeches for therapy they are stored in a solution containing Hirudo salt in sterile water and are kept under refrigeration in Pharmacy. Chlorinated tap water cannot be used. Pharmacy staff will place each leech in its own container labeled with the patient's name until needed. Leeches should never be placed in direct sunlight.

Leeches which have been used on a patient should be disposed of on the nursing unit. They are placed in a container of 70% isopropyl alcohol for at least 5 minutes. Then they are disposed of like any other infectious waste in the biohazard waste container. Never reuse a leech. Failure to comply with this warning could result in transmittal of serious infectious diseases. The unused leeches are returned to Pharmacy in their original container.

After leech therapy, the area around the leech bite wound should be observed for local infection and swabs taken as indicated. Patient's hemoglobin levels should be checked daily. The physician will determine individualized temperature monitoring. Leech bites bleed freely after therapy. The nurse should place pads around the treatment area and watch for signs in infection. Patients should be monitored for 24 hours post leech therapy completion prior to discharge from the hospital.

Medications During and Post Leech Therapy

Antimicrobial Prophylaxis:

Most commonly prescribed antibiotics are: Co-trioxazole and third generation cephalosporins, given during and several days after leech therapy

Heparin Soak

Heparin Infusion

Aspirin

Leech Therapy Observation and Documentation:

Each patient's surgical site is continually monitored closely by a skilled nurse during leech therapy. The nurse is on a 1:1 patient assignment during this treatment. Observation of the color, temperature of site, capillary fill, edema, pulse present at the surgical site, attachment success of leech, time of attachment and removal are documented.

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