Wire-Track Infections in Ilizarov Technique how to Manage That?

Abstract

Wire-track infection is very common in Ilizarov fixation. We can follow a commonly accepted some steps to reduce the occurrence of infection. Improvement of technique can make wire-track infection less. Preoperative planning, meticulous intelligent surgical technique, patients understanding regarding the apparatus, and regular patient monitoring all these can minimize the wire-track infections.

Keywords: Ilizarov fixation; Wire-track; Infection

Introduction

Wire-track infection is common in Ilizarov fixation. Any wire that violates the skin barrier is at risk for developing a wire-track infection. Jobst and Liu reviewed the external fixation literature from 1980 to 2014 and found 27.4% risk of wire-track infection [1].

Literature Review

There is no uniform definition of what constitutes a wire-track infection. The following variables have been used to diagnose a wire-track infection: erythema, purulent drainage, response to antibiotics or requiring the removal of offending wire. There is no universally accepted system that satisfies all surgeons. None of the classification systems has been empirically developed or tested for their reliability.

There is not a standard method of diagnosing wire-track infection in the literature. If a wire-track infection develops at any point during the course of treatment, then the patient is thought to be infected. The drawback of this method is that it does not differentiate between infection at a single wire site or multiple wire sites within one patient. The other common method of observing wire-track infection is via wire site [2-4].

Finally there is not even agreement among Ilizarovians regarding what to call wire-track infections. According to dictionary.com, the definition of a track is a course or route followed. The definition of a track is an expanse or area of land, water etc. There are studies attempting to determine the optimal cleansing solution, the most effective dressing type, or the ideal frequency of cleaning [5-8]. Even a single patient’s Ilizarov frame, not all the wires are equally at risk for developing an infection (Figure 1).

Each wire in a particular Ilizarov fixator should be considered an individual entity whose wire-bone and wire-skin interface health is determined by a host of factors that begin the moment the wire-skin barrier is breached in the operation theatre.

Some Tips and Tricks to Reduce Wire-Track Infections

Preoperative assessment of patients soft tissue envelope is absolutely mandatory. A plan for wire placement may be performed to avoid areas of open wounds muscle flaps or the zone of injury. Evaluation should be done for quality of bone [8].

Stress on the wire bone interface can be reduced using the accurate size of Ilizarov rings and building a very stable Ilizarov frame construct. We must devise a plan for number and position of wires to be inserted. An unstable Ilizarov frame construct will increase the stress at each individual wire bone interface which can lead to loosening and inflammation [4,8]. Our goal is to introduce a traumatic meticulous insertion of the wire through the skin, soft tissue and bone. It is absolutely mandatory to...
Some wire locations such as periarticular region, have increased soft tissue movement around the wire which can lead to irritation at the site. Stabilizing the wire and skin interface by rubber stopper with sterile gauge will limit the micro motion at these sites. As a result we can minimize the wire-track infection [4].

Patient education is another critical element to decreasing the risk of wire-track infection. We have written a small guideline for the patient. The patient should also be reminded to keep the limb elevated at all times except for range of motion exercise or walking (Figure 3).

**Conclusion**

Meticulous preoperative planning and insertion technique are mandatory. Wire design will help to decrease the risk of wire-track infection. Preoperative planning, meticulously surgical technique, patient understands regarding the Ilizarov frame and close monitoring all these are very critical to minimizing the wire site infections.
References


