Prevalence Of Pin Tract Infection And Role Of Combined Saline And Povidone Iodine With Combined Spirit (Isopropyl Alcohol 70% V/V) And Povidone Iodine For Pin Tract Dressings.

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Citation

Abstract
Pin-site infection is a common complication in the treatment of open fractures treated with external fixators or percutaneously inserted pins or k-wires and has been reported to occur in up to 63% of pins1–4. The insertion of pin violates the integrity of skin leaving a track for bacteria to invade. The tract gets sealed naturally by epithelialisation. External fixations of fractures is a technique to stabilize fractures and limbs using pins passed through the skin to the bone held together by using external frame. Pin tract infections cause pin-bone interface to become loose hence compromising stability of frame7. Aro, Hein and Chao recommended regular tightening of clamp screws to prevent loosening of clamp pin interface. Pin care is the process of cleaning a pin and the skin around pin where the pin enters the body. Good care of the pin and the pin tract is very important to prevent infection. Prevention of pin tract infection is therefore one of the important factors for success of external fixation technique5.

Pin tract infection can lead to ring sequestrum and persistent discharge. Prevention of pin tract infection therefore begins before pin is inserted. Planning begins from selection of pin for fixation and selection of frame geometry for fixator6.

Schanz screw selected must be appropriate for diameter of bone in which it is inserted. Pins larger than one third the diameter of bone leads to larger defect in the bone for colonization of bacteria and hence pin tract infections7.

There is very little evidence as to which pin site care regimen best reduces infection rates. There is a need for evidence-based practice guidelines for pin-site care as only few studies have compared the associated infection rates of different treatment methods.

Idea behind using above agents was due to majority of patients coming to government hospitals belong to lower socioeconomic group and free availability of spirit, saline and povidone iodine in government hospitals.

OBJECTIVE
Infection at the pin tract is a common complication of external fixation. This study was done to compare the rate of pin site infection following of combined saline and povidone iodine with combined spirit and povidone iodine.

A clinical study was conducted over a period of 18-month period in post graduate department of orthopaedic skims medical college to look for prevalence of pin tract infections and its management.

PATIENTS
A total of 400 patients over a period of 18 months (July 2012 – December 2013) were taken up for study out of which 250 patients were in study group and 150 patients in control group.

1850 pin sites were studied both in study and control group. The study group had 1200 pin sites while the control group had 650 pin sites.

METHOD
This was a prospective controlled study which compared the Prevalence of pin tract infection and role of combined saline and povidone iodine (control group) with combined spirit (isopropyl alcohol 70% v/v) and povidone iodine (study group).
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We excluded patients with obvious sources of infection, pathologic fractures, and immunosuppression or an existing infection near pin sites.

The clinical management of pin-site wounds will depend on the severity of infection

RESULTS

A total of 400 patients were taken up for study out of which 250 patients were in study group and 150 patients in control group.

1850 pin sites were studied both in study and control group. The study group had 1200 pin sites while the control group had 650 pin sites. 400 patients, in whom 190 patients treated with uniplanar lower limb external fixators and 35 with Ilizarov ring fixator, 70 with distal radius external fixators, 105 patients treated with percutaneous k-wire fixation for elbow, hand and foot fractures, made up both groups. 154 pin sites (11%) got infected in study group while 157 (21%) pin sites got infected in control group.

CONCLUSION

There was a significantly lower prevalence of pin-tract infection amongst patients whose percutaneous pins were dressed with combination of spirit (70%v/v) and povidone iodine than those dressed with combination of saline and povidone iodine (P = 0.02).

Therefore it is better to do pin tract dressings with combination of povidone iodine and spirit.

Pin tract infections cause pin-bone interface to become loose hence compromising stability of frame hence pin tracts should be thoroughly taken care off.

Regular tightening of clamp screws to prevent loosening of clamp pin interface and hence prevention of pin tract infections

Patients need to be followed regularly to pick up any pin tract infections and treat them early.

Prevention of pin tract infection should begin before pin is inserted. Planning begins from selection of pin for fixation and selection of frame geometry for fixator.

Per cutaneous pins/screws selected must be appropriate for diameter of bone in which it is inserted. Pins larger than one third the diameter of bone leads to larger defect in the bone for colonization of bacteria and hence pin tract infections.
Figure 1
Pin tract infection in patient treated for non union tibia with Ilizarov ring fixator was managed by regular dressing with povidone iodine and isopropyl alcohol.

Figure 2
Pin tract infection in patient treated for fracture of 5th metacarpal with regular pin tract care infection healed.

Figure 3
Pin tract infections in patient treated with ortho fix for fracture shaft of femur with bone loss and fracture tibia.

Figure 4
Pin tract infection around Steinman pin in a patient with intertrochanteric fracture treated conservatively with skeletal traction.
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Figure 4
Pin tract infection around Steinman pin in a patient with intertrochanteric fracture treated conservatively with skeletal traction.

Figure 5
Pin tract infection around K Wire in patient operated for cubitus varus.

References
5. Aro H T, Hein TJ, Chao EYS 1989 Mechanical performance of pin clamps in external fixators. 248:246
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