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Opinion

The Good and Bad of Hexapod External Fixator in Deformity Correction of Long Bones

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Deformity of the long bones in human is commonly due to a malunited fracture, infection, trauma to physis or growth plate and even due to congenital causes. Deformity correction in the long bones is a challenging process and may require a well-executed strategy in order to solve it. The complexities of the process are due to the fact that the deformity is often a multi-planar deformity and hence correction of the deformity has to be addressed in a multi-planar manner. There has been an evolution of correction strategies and one of the most successful is the introduction of a hexapod external fixator [1]. A hexapod external fixator has six struts which are attached to 2 circular rings which are then stabilized to the bone via shantz pins or Kirshner wires.

There are notable advantages in using a hexapod for deformity correction. The hexapod employs six planes of correction by manipulation of the six struts [2]. This allows for correction of both the angular as well as rotational deformity which would otherwise be a tedious process if we are using a conventional illizarov technique. The ability to correct six planes will ensure that there are no residual translation or rotation after the completion of the process.

The hexapod also uses a computer software to analyze the deformity and to calculate the turnings required to ensure proper correction [2,3]. Usage of a computer system minimizes the element of human error albeit one must be careful during the input of the data as a wrong data entry will result in wrong output in the correction formulae.

The hexapod external fixator is also versatile to be used in patients with compromised soft tissues. As the circular rings are attached to the bone by smooth wires and shantz pins, there is less damage to the soft tissues [4]. The hexapod external fixator also is versatile enough to allow both acute or gradual correction of the deformity. This will come in handy after a corticomy e and gradual distraction is employed to allow for distraction osteogenesis. This gradual process will help in creating a strong well consolidated bone as well as to allow for the formation of blood vessels and gradual distraction of the nerves safely [5]. A gradual correction of the deformity also reduced the amount of pain experienced by the patient.

As per all things in this world, the hexapod external fixator has its disadvantages as well. As it is a relatively new technique which employs the usage of computer software, there is a steep learning curve and may not be feasible to some orthopedic surgeons [6]. There is also the burden of a high cost associated with the usage of the hexapod to which some patients may not be able to bear. There are also risks of pin site infections if proper hygiene and care is not taken during the process of correction of the deformity. Besides that, a patient may find the rings cumbersome and interferes with their activities of daily living and this may cause them to be unemployed or missing from work during the entire time they are on the frame.

In conclusion, the hexapod external fixator is revolutionary device in the correction of long bone deformities, however the surgeon who intends to employ it must keep in mind the related complications and difficulties a patient may experience throughout the process of being on the fixator.

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