Chronic Planter Ulcer:  
A new technique of Management

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Abstract
Chronic planter ulcer is found in sensory deficient feet as in diabetes, leprosy etc. The treatment principle involves dressing and avoiding pressure on the ulcerated site called “off loading”. Off loading is traditionally being done by either with the crutches or with complete plaster casing of the foot. In advanced techniques bioengineered tissue and growth factors are used for enhancing healing. But these are expensive and not available here in India. In the present technique plaster casing with a window and walking iron for weight bearing is applied to the patient with chronic plantar ulcer. Dressing can be accomplished through the window and patient can be ambulatory with the walking iron. This simple technique helps in early mobilization and prevents secondary complications such as foul smelling discharge, decalcification of bone, and other complications.

Key Words : planter ulcer, debridement, dressing, PTB plaster, walking iron

Introduction
Chronic planter ulcer is also known as trophic ulcer (1). It is usually seen in sensory deficient foot. Diabetes and leprosy along with other neuropathic conditions give rise to chronic planter ulcer. Management of planter ulcer gives rise to twofold problems; first, to help healing of the ulcer avoidance of weight bearing is required on the affected foot, which demands discontinuation of ambulation, and also ambulation is to be allowed to keep complications of immobilization to minimum. In case of chronic nonhealing ulcer of the foot, decalcification and stiffness of the joints are already present and treatment strategy should rather not enhance it rather than reversing it.  

The new management method under discussion had been tried to overcome the shortcomings of the management techniques commonly practiced.

Management principles for chronic planter ulcer are
a. To promote tissue repair with debridement
b. To remove or reduce mechanical pressure on the ulcer or off-loading
c. To use specific antibiotics when required
d. To apply dressing

Removal of mechanical pressure on the ulcer or the off loading is usually done by
1. Avoidance of weight bearing on the affected foot by crutch walking and at the same time to continue with the dressing.
2. Below knee plaster casing with or without walking heel.

The technique practiced in G B Hospital, Agartala:
Seven cases having chronic planter ulcer were treated in last one year in a new technique. In
six cases ulcers were due to leprosy and in one
due to diabetic neuropathy.
Cases: Total No. of cases :
7(seven) with 6 males  and 1 female.
Causes of ulcer - Leprotic neuropathy 6 cases
Diabetic neuropathy  1 case
Site of ulcer - At the ball of toes:    4 Nos.
At the heel: 3 Nos.
Duration of ulcer -Average 1 year, minimum 3
months, maximum 2 years.

All the ulcers were in gr II A, gr II B and gr III
as per modified Wagner classification of
diabetic foot infection. In this technique walking
iron is used along with plaster cast.

Walking- iron. -is a simple device with two
metallic vertical bars and one sole to bear
weight, being made with rubber. This is fitted
to the affected limb incorporating with the
plaster of paris(POP) cast.
The Procedure followed is given below:

1. In all the cases thorough debridement was done surgically
2. Off loading was done by-
   i) Applying patellar tendon bearing (PTB) cast incorporating walking iron with vertical bars within the plaster
   ii) A window was left open over the ulcer area. Patients were advised to do daily dressing with boiled cooled water mixed with Povidon Iodine.
   iii) By this time patients were ambulatory with 1” shoe raise of other lower limb, with walking stick.

Out come – On an average ulcers healed by
two weeks time

Follow-up — After the healing is achieved one
more week is allowed for the scar to consolidate.
Next the shoe modification is done to distribute
the weight born on the affected foot evenly all over
the available weight bearing surface and not to
allow any concentration of pressure on a limited
area which is being a very important point to
prevent pressure sore.

Discussion

Ulceration is initiated with a minor trauma
or using a ill-fitting shoe, in a foot affected with
neuropathy or peripheral vascular disease. To avoid
unperceived trauma in advanced neuropathy the
load on the ulcerated area is to be removed and
the area is protected. Infection is a secondary
phenomenon which enhances the process of
ulceration and tissue loss. There are different
debridement techniques which are followed in
different centers almost uniformly as
1. Surgical or sharp
2. Mechanical – by
   a) wet to dry dressing change
   b) wet to wet dressing change
   c) pulsed –lavage hydrotherapy using high pressure water jet on the wound
3. Enzymatic

In the new technique described here debridement
is done as usual but off loading is achieved with
the walking iron attached to a PTB plaster where
weight is born by it from upper tibia bypassing
foot and lower tibia. These patients usually have
limited mobility of tarsal and metatarsal joints
which contributes to enhancement of the
ulceration. Walking with walking-iron helps to
avoid foot joint movement required in normal gait.
Infection can be controlled well with daily dressing through a window in the plaster cast. This also helps to avoid the foul smell invariably produced in closed walking plaster which is now used as a method for offloading. There are some modern materials used for promoting healing early. These are

1. Bioengineered tissue; i.e. an artificial skin made from fibroblasts cultured from new born’s foreskin and woven on a poligalactic acid mesh. (4,5)
2. Growth factors; these are proteins secreted by a variety of cell types during the different phases of wound healing, e.g. basic fibroblast growth factor (6), epidermal growth factor (7) or platelet derived growth factor (PDGF) (8). Becaplermin is the first recombinant prescription formulation available containing PDGF.

The newer materials mentioned above are costly and not easily available in our country. This new technique offers the clear advantages over others because the healing time in this technique was very short, foul smell did not develop within the plaster as a window was kept open for regular dressing and aeration, this method did not involve high cost and all the materials involved were locally available.

Conclusion
In Indian context while newer techniques developed in advanced countries have little practical meaning because these are costly and not easily available. The traditional techniques have got limitation in the form of –

1. Restriction of mobility
2. Foul smell of closed plaster
3. Long period of ulcer healing.

It can be concluded that ulcer healing is early with this technique, no foul smell is produced in the plaster, the technique does not involve high cost and required materials are easily available. The only disadvantage with this technique is that making of the PTB socket requires some skill, which can be developed through little training.

References