MUSCLE TRANSPOSITION IN EXPOSED TIBIA

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Introduction

Exposed tibia devoid of periosteum is difficult and frequently encountered problem in Orthopaedic practice. The frequency of this entity is gradually increasing because of increase in the incidence of automobile accidents which lead to compound fractures of the leg bones with extensive loss of skin and soft tissue. Repair of loss of skin in the pretibial region is difficult because of various factors viz., poor arterial supply immobile skin and poor venous drainage. Exposed tibia has usually been treated by decortication, waiting for granulation tissue to creep in and secondary skin grafting. A cross leg flap is another alternative but both the methods require prolonged hospitalisation. A simple and effective way to cover such a bone is the transposition of an adjacent muscle with its intact neurovascular bundle followed by split skin graft on it (Ger 1972, 1977). In the present study we have analysed our results with this procedure.

Material and Methods

This study included fifteen males with age varing from 12 to 50 years with an average of thirty years. All these cases were type III open fractures (Ellis 1958) with loss of skin. Right leg was involved in twelve cases while left was involved in three cases. All the fractures were stabilized either by transfixation pins or by intra-medullary nailing prior to myoplasty. Muscle transposition in all cases have been done according to surgical technique described by Ger (1977). (Figs. 1, 2 and 3).

Observation

There were 9 patients with loss of skin in the upper third of the leg, 5 in the middle third and one in the distal third. In upper third, medial head of the gastrocnemus, muscle, in the middle third, soleus while in distal third flexer digitorum longus muscle was transposed on the exposed tibia. (Table 1).

Site of skin loss and the respective muscle used.

Table 1.

S. No.	Site of skin loss	No. of cases	Muslce used
1.	Upper one third	9	Medial head of gastroonemius
2.	Middle one third	5	Soleus
3.	Distal one third	1	Flex digitorum longus

Among 8 cases, the bone were stabilized following which immediate muscle transposition and split skin grafting was done. In other seven cases, delayed muscle transposition was done because these patients attended the hospital late. Out of these 8 cases in 5 muscle transposition was immediately followed by skin grafting while in 2 cases split skin grafting was delayed

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for about fifteen days because of infection (Table II).

Table II

No. of cases	Immediate Muscle Transposition and skin grafting	Delayed Muscle Immediate Skin Grafting	Transposition Delayed Skin Grafting
	8	5	2

Discussion

Exposed tibia can be covered by muscle transposition with its intact neurovascular bundle. Transposed muscle increases the vascularity of the local part, which helps in healing. It prevents the adherance of the skin to the underlying bone. Transposed muscle being ideal recipient for skin graft which is freely and locally available for immediate use in the closure of the defect. It may itself or acting as a vehicle for chemotherapeutic agents aids in controlling the infection and it stops the leakage of protein rich exudate leading to the improvement in patients general condition.

Skin grafting can be done immediately or stored and applied after five to seven days. A delayed skin grafting may also be done. In this study, only in two cases delayed skin grafting, was done because of persistent infection present after muscle transposition. In none of the cases we have used stored graft. It is preferable to perform the muscle flap concurrently with the reduction of fracture (Kojima and Kohne 1979). In the present study out of 15 cases, the results are relatively better in only those 8 cases where the procedure that is muscle transposition and split skin grafting were done as a primary procedure after stabilization of the bones as compared to rest of the seven cases where the procedure was delayed either because the patient attended the hospital late or because of persistent infection. In all of our cases there was some atrophy of the muscle but still there was sufficient bulk of the muscle which is similar to the observations made by (Ger 1968) we have observed functional disability following myoplasty probably because of prolonged immobilization which was required for union of the fracture.

Summary

Muscle Transposition along with immediate or delayed fresh split skin grafting has been contemplated in fifteen cases of open fractures of the leg bones where the tibia was exposed. The results of this procedure are satisfactory and are usually better in those cases where muscle transposition and skin grafting were done at the first stage. Minor complications like partial necrosis of the skin graft and muscle atrophy has been observed in few cases.

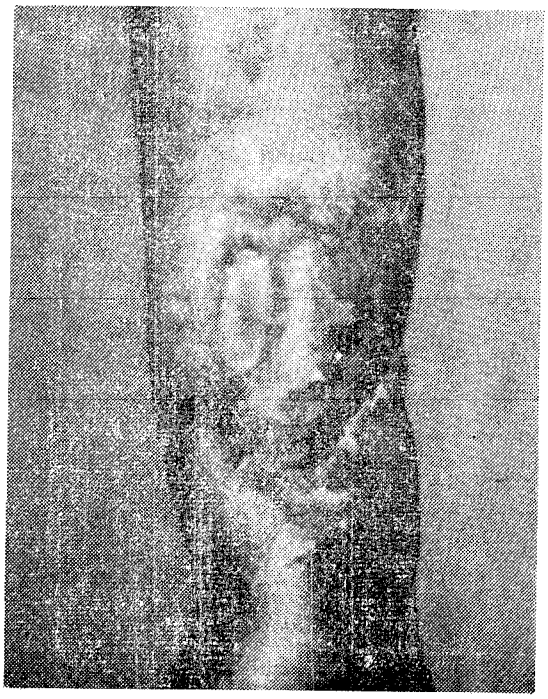

Fig. 1.

Fig. 2.

Fig. 3.

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