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THE ROLE OF LATISSIMUS DORSI FREE FLAP IN THE MANAGEMENT OF EXTREMITY TRAUMA

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ABSTRACT

Management of extensive soft tissue defects of upper and lower limbs is challenging to reconstructive surgeons, since the search for an ideal flap to cover such defects is still progressing. In the last two decades the latissimus dorsi free flap established its role as an ideal solution for lower limb defects, however, its versatility to play the same role in upper limb defects was not explored. Between January 1992 and May 1994, 15 free latissimus dorsi muscle and myocutaneous flaps were used to resurface extensive soft tissue defects of upper and lower limbs with a very successful outcome.

Cases are viewed as regards site, size of defects, indication and timing of flap use, with details of some technical points. Complications and their management are also reported. The importance of team work of reconstructive, vascular and orthopaedic surgeons are also stressed.

Key words: Latissimus dorsi, Free flap, Extremity, Trauma.

INTRODUCTION

With this age of increasing trauma, resurfacing of defects in the extremities is becoming one of the major challenges facing the Casualty surgeon. It is apparent that the solution of this problem needs the combined approach of the reconstructive, vascular and orthopaedic surgeons. Many modalities of treatment were described for complex trauma, such as skin grafting, local fasciocutaneous flaps, cross-leg flaps, pedicled musculocutaneous flaps. However, since the introduction of microvascular free flaps and its wide application during the last decade, it became one of the preferred lines of treatment, to the extent that the latissimus dorsi free flap is considered as the standard flap of choice for covering of traumatic defects of lower extremity (1).

The aim of this study is to evaluate the role of latissimus dorsi free flap in management of post traumatic defects of both upper and lower limbs.

PATIENTS & METHODS

This study includes fifteen patients with post traumatic defects in the upper and/or lower extremities, presented and treated during the period from January 1992 to May 1994.

Patients and the extent of their extremity trauma, were as follows:

Acute presentation means patients presenting for coverage from the time of injury and up to two weeks after.

Delayed cases, two cases presented with Volkmann's ischaemic contracture and a patient with severe post burn contracture of the elbow.

Once a decision was taken to perform the latissimus dorsi microvascular free flap to resurface those defects, control of the wound was obtained with surgical debridement and aggressive wound management. Preoperative angiography was done in all cases to select the
most suitable vessel for the anastomosis and to assess the vascularity of the limb distal to the trauma site.

The operation was done under general anaesthesia, with the patient in the lateral decubitus position, with the arm abducted.

The donor site was closed by primary sutures in cases of muscle flaps (8 cases), and if the skin island elevated is less than 7 cm (2 cases), while split-thickness graft was used in the remaining cases (5 cases).

Microvascular anastomosis was done between the thoracodorsal artery and the selected artery of the recipient area, it was also done between the two venae comitantes accompanying either of them. The anastomoses were done using 9/0 Ethilon under the microscope. Venous anastomoses were of end-to-end type, while arterial anastomoses were as follows.

In the two cases of Volkmann's ischemic contracture, the latissimus dorsi free flap was used as a functional unit, so nerve anastomoses were done between the thoracodorsal nerve and one of the cutaneous nerves under the microscope, using 9/0 Ethilon also. The proximal part of the muscle was sutured to the common flexor origin, while the distal part to the flexor tendons in the hyper-extended wrist and fingers position.

In two cases of open tibial fractures, free bone grafts from the iliac crest were used to replace bony deficits.

The warm ischemia time was much diminished by using special manoeuvres. The latissimus dorsi was prepared for transfer in its donor bed without cutting the thoracodorsal artery and its venae comitantes, then the recipient area's artery and veins were prepared for anastomosis. Once this was performed, the thoracodorsal artery and veins were separated from the donor area and re-anastomosed immediately to the recipient area vessels. So, the warm ischemia time never exceeds 30 minutes.

Follow up of the patients ranged between 6-18 months.

RESULTS

Table (1): Age Incidence.

<table>
<thead>
<tr>
<th>Age</th>
<th>15 - 25</th>
<th>25 - 35</th>
<th>35 - 45</th>
<th>45 - 55</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>%</td>
<td>47</td>
<td>33</td>
<td>13.3</td>
<td>6.7</td>
<td>100</td>
</tr>
</tbody>
</table>

Table (2): Sex Incidence.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>14</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>%</td>
<td>93.3</td>
<td>6.7</td>
<td>100</td>
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