

SPLIT SKIN GRAFTING OF DEFECTS FROM FASCIOTOMY AFTER COMPARTMENT SYNDROME

P. N. BASSE, M. LOHMANN, B. F. ALSBJØRN, K. HOVGAARD

Proper treatment of compartment syndrome is fasciotomy. Secondary skin defects often complicate the course and require skin-grafting procedures. The present investigation is a retrospective study based on 17 fasciotomies. Their courses are reported, and the possibility of primary skin excision with the purpose of delayed grafting is demonstrated. This procedure would probably reduce the number of hospital days and the number of surgical procedures.

Keywords : skin grafting ; fasciotomy ; compartment syndrome.

Mots-clés : greffe de peau ; fasciotomie ; syndrome des loges.

INTRODUCTION

Severe trauma of the extremities often requires fasciotomy to relieve a closed compartment syndrome (3, 6, 7, 8). In the healing phase postsurgery skin defects are often seen at the site of the initial skin incision. Such defects need closure without delay to avoid complicating infections or further shrinkage of the skin. However, the size of these defects renders wound closure by suturing impossible, thus often requiring a split skin-grafting procedure.

The present paper demonstrates the course and outcome of fasciotomies performed over a period of five years. The possibility of a primary split skin harvest and delayed split skin grafting is introduced. The harvesting and storage techniques of thin split skin are described.

MATERIALS AND METHODS

Patients requiring fasciotomy/-ies during the years 1985 to 1990 at Hvidovre Hospital were studied. Seventeen fasciotomies were performed in 13 patients. The median age was 25 years (range 13 to 64 years). There were 9 males and 4 females.

RESULTS

The etiology of the compartment syndromes are listed in table I.

Table I. — Etiology of closed compartment syndrome

Fracture	6
Drug addiction. Incorrect injection	3
Blunt trauma	3
Severe cut	1
Arterial thrombosis	1
Bullet wound	1
Unknown etiology	2
Total	17

Fractures were the main reason for fasciotomy. Of the 17 fasciotomies, 11 were sural, 3 femoral and 3 antebrachial in localization. What was most noteworthy is that delayed skin grafting was performed in 14 out of the 17 cases. These skin

Department of Plastic Surgery and Burn unit, Hvidovre Hospital, University of Copenhagen, Denmark.

Correspondence and reprints : N. Basse, Ahlmanns Alle 9, 2900 Hellerup, Denmark.

graftings were performed on average 14 days after the fasciotomy (range 5 to 30 days). In all 14 cases of skin grafting uncomplicated graft healing was observed. All skin-grafting procedures were performed under general anesthesia. The 3 nongrafted cases healed by conservative treatment and/or delayed suturing. The mean hospital stay was 42 days (range 18 to 90 days).

DISCUSSION

A recommended treatment of skin defects due to fasciotomies is delayed suturing on day 3 or 4 postsurgery (7). The present study demonstrates that this was not possible in 14 out of 17 cases. Therefore split skin grafting was performed to achieve wound closure. In the field of plastic and reconstructive surgery and especially surgical repair of burns, it is a sound principle to harvest more split skin than initially required for wound cover. With this skin minor defects can be closed without an extra operation. Such skin is stored in a proper tissue medium. With this method, the viability of the skin and therefore its potential as a graft remains safe (1, 2, 4, 5). The skin can be stored in this way for at least one month. As a medium, the authors recommend buffered Minimal Essential Medium with pH indicator (phenol red), e.g. Dulbecco's MEM with 4.5 g/l glucose (GIBO Laboratories). In this medium, the correct pH value is ensured. If the pH drops to unphysiological values, the medium will change color to yellow, indicating the need to replace the medium. We recommend 2 ml medium/1 cm skin stored in a refrigerator at 4°C.

It is recommended that the skin be harvested as thin as possible and as long as the skin incision. The reason for the very thin cutting is to obtain very thin split skin (approximately 0.1 mm-0.2 mm), which invariably leads to graft acceptance. Furthermore a very thin split skin graft shows little shrinkage, thereby minimizing the scar. Even though skin defects requiring a graft often are shorter than the initial skin defects it is still recommended to harvest skin of a length equal to the skin incision. Extra split skin for late patching of minor skin defects is always useful.

Delayed grafting with split skin can be performed at bedside, under sterile conditions.

With the above-described principles at least one surgical intervention under anesthesia is avoided, thereby improving the wound-healing capacity.

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SAMENVATTING

P. N. BASSE, M. LOHMANN, B. F. ALSBJØRN en K. HOVGAARD. Huidente voor fasciotomie defekten na logesyndroom.

De fasciotomie is de adequate behandeling van een loge syndroom. Secundaire huidproblemen compliceren echter frekwent het beloop, zodanig dat een huidente vaak aangewezen is. De auteurs hebben een retrospectieve studie gedaan van 17 fasciotomieën. Zij beschrijven de evolutie en de mogelijkheid van een primaire huidexcisie te verrichten in het vooruitzicht van een secundaire huidente. Deze techniek kan de duur van de hospitalisatie inkorten en het aantal chirurgische ingrepen beperken.

RÉSUMÉ

P. N. BASSE, M. LOHMANN, B. F. ALSBJØRN et K. HOVGAARD. Greffe de peau pour perte de substance cutanée après syndrome des loges.

La fasciotomie est le traitement adéquat du syndrome des loges. Un problème de couverture cutanée com-

plique fréquemment les suites de cette intervention, nécessitant une greffe de peau. Les auteurs présentent une étude rétrospective de 17 fasciotomies. Ils en décrivent l'évolution et l'indication d'une excision primaire de peau dans la perspective d'une greffe secondaire. Cette technique pourrait réduire la durée de l'hospitalisation et le nombre des interventions chirurgicales.