A simple technique to improve residual skin plasticity for scrotal reconstruction in Fournier’s Gangrene

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Abstract

A 50 years-old man developed 24 hours after hemorrhoidectomy a severe Fournier’s gangrene of the scrotum necessitating surgical exeresis of more than 2/3 of scrotal skin followed by hyperbaric oxygen therapy. After the resolution of the septic phase, scrotum reconstruction was obtained by tissue expansion to avoid more invasive advanced reconstructive techniques. The procedure consisted of an enzymatic and mechanical debridement and progressive skin expansion by package of gauzes of increasing volume covered with a collagenase-cloramphenicol ointment (Iruxol®- Smith and Nephew, Italy), then closing the wound edges by temporary stitches to put under tension the skin. The reestablishment of the natural elasticity of the scrotal skin was obtained in ten days and at the final closure of the wound edges an acceptable optimal aesthetic result was achieved. Clin Ter 2012; 163(5):e315-318

Key-words: enzymatic debridement, Fournier’s gangrene, tissue expansion

Introduction

Fournier’s gangrene is a fulminant necrotizing fasciitis of genitalia and perineum, which occurs in patients with diabetes, alcoholism, obesity, and other predisposing diseases (1, 2). Despite modern antibiotic therapy, extensive early surgery and improved intensive care, morbidity and mortality still reach 67% (3-7). Death risk is classified by the Fournier’s Gangrene Severity Index (FGSI) (8).

A simple technique to increase the elasticity for tissue expansion of residual scrotal skin is hereafter described in a case report.
An acceptable cosmetic result was confirmed at two (Fig. 1e) and six months (Fig. 1f).

**Discussion**

Metabolic status at presentation is an important prognostic factor in Fournier’s gangrene, requiring an immediate multidisciplinary treatment. In Laor’s study (7) the mean FGSI value for survivors was 6.9 and 13.5 for non-survivors and the difference was statistically significant. They found that patients with a FGSI score > 9 had a 75% probability of death, and patients with a score of ≤ 9 presented the 78% of probability of survival.

The key of survival, however, is a prompt and aggressive surgical intervention removing the devitalized tissue in order to reduce the anaerobiosis state eliminating the progress of infection and the systemic effects of necrosis. The spread of infection still causes a high mortality (5). The surgical debridement of necrotic tissue must be repeated until the wound bed is clean and healthy (15). Unfortunately the chronic inflammation with abnormal deposit of fibrin and

<table>
<thead>
<tr>
<th>Physiological Variable</th>
<th>Values</th>
<th>Point assigned</th>
</tr>
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<tbody>
<tr>
<td>Temperature (°C)</td>
<td>38.5</td>
<td>+1</td>
</tr>
<tr>
<td>Heart rate (beats per minute)</td>
<td>120</td>
<td>+2</td>
</tr>
<tr>
<td>Respiration rate (breaths per minute)</td>
<td>34</td>
<td>+1</td>
</tr>
<tr>
<td>Serum sodium (mmol/l)</td>
<td>133</td>
<td>0</td>
</tr>
<tr>
<td>Serum potassium (mmol/l)</td>
<td>3.16</td>
<td>+1</td>
</tr>
<tr>
<td>Serum creatinine (mg/100 ml, x 2 for acute renal failure)</td>
<td>2.03, 2.1</td>
<td>3</td>
</tr>
<tr>
<td>Hematocrit (%)</td>
<td>31.4</td>
<td>0</td>
</tr>
<tr>
<td>White blood count (cells/mm³ x 1,000)</td>
<td>14.68</td>
<td>0</td>
</tr>
<tr>
<td>Serum bicarbonate (venous, mmol/l)</td>
<td>18</td>
<td>+2</td>
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<tr>
<td>Total</td>
<td></td>
<td>10</td>
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</table>
the hyaline degeneration of residual dartos, inevitably reduce the possibility of approaching the wound edges, above all after an extensive skin resection. The biomechanical benefits provided by mechanical creep-of acute tissue expansion depend on the structural and morphological characteristics of collagen and elastin fibres of the skin that may vary due to the reparative sclerosis subsequent to the resolution of the severe septic inflammation. The residual skin flaps are usually inelastic and retracted, adhering to the residual dartos. In our experience, we achieved a great improvement of skin elasticity by enzymatic debridement with Iruxol® ointment in synergy with the gradual excision synechiae between the dermis and the residual sclerotic dartos gaining space for further gauze packing. With this method we reached the total reconstruction of the scrotum in ten days.

References


