Burn contractures Surgery
Revue of 246 cases

Crescenzo D’Onofrio-Paideia Hospital, Rome-Italy
Gianfranco Morino-Mbagathi Hospital, Nairobi-Kenya
Antonio Melotto-Giussano Hospital, Milan-Italy
Burn reconstruction performed in:

Mozambique-1999
Bangladesh-2000-2001
Sierra Leone-2001-20002
Kenya-2003

**Developed projects**

Comboni Missionaries Project in Mozambique
MAE-COOPI Project in Bangladesh (Funded by Italian Foreign Office - International Cooperation)
UNICEF-IMC Project in Sierra Leone (Funded by United Nations Children Agency - International Medical Corps)
MAE-CCM Project in Kenya (Funded by Italian Foreign Office - Medical Collaboration Committee)
I volti negati
reportage
dal Bangladesh

di Ugo Panella
testo
di Renata Pisù
A young woman holding a picture showing her before the acid attack
The physiotherapist visiting a young patient
A patient seriously injured on the face
Dhaka. Plastic Surgery ward at Nagar Hospital
Acid Burn progressing to neck contracture
Dhaka. Old city
Plastic Surgery Project in Sierra Leone-Lungi Hospital-Freetown
Plastic surgery ward in Sierra Leone
Burn Contractures in Sierra Leone
## PLASTIC SURGERY PERFORMED

<table>
<thead>
<tr>
<th>Country</th>
<th>Total cases</th>
<th>Contracture Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mozambique-1999</td>
<td>100</td>
<td>35</td>
</tr>
<tr>
<td>Bangladesh-2000-2001</td>
<td>240</td>
<td>115</td>
</tr>
<tr>
<td>Sierra Leone-2001-20002</td>
<td>135</td>
<td>80</td>
</tr>
<tr>
<td>Kenya-2003</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td><strong>AMOUNT</strong></td>
<td><strong>491</strong></td>
<td><strong>246</strong></td>
</tr>
</tbody>
</table>
Total Cases 246
Contractures in body areas

Series 1

Cases Number

Arm- 63
Hand- 42
Face 35
Leg 35
Neck 24
Axilla 21
Foot 14
Chest 7
Inguinal 5

Body Areas
<table>
<thead>
<tr>
<th>Body Part</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm-elbow</td>
<td>63</td>
</tr>
<tr>
<td>Hand-wrist</td>
<td>42</td>
</tr>
<tr>
<td>Face</td>
<td>35</td>
</tr>
<tr>
<td>Leg</td>
<td>35</td>
</tr>
<tr>
<td>Neck</td>
<td>24</td>
</tr>
<tr>
<td>Axilla</td>
<td>21</td>
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<tr>
<td>Foot</td>
<td>14</td>
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<tr>
<td>Chest</td>
<td>7</td>
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<tr>
<td>Inguinal area</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Cases: 246
BY CAUSE

- Series 1: fire = 144
- Series 2: acid = 72
- Series 3: boil.liquid = 30

TOTAL = 246
We gave particular attention to burn contracture surgery, which represents the most frequent required intervention on women and children.

We have taken into consideration 246 cases of contractures.

Considering those two above mentioned categories we developed with positive results some techniques, according to our experience and some important considerations.

Skin grafts tend to contract, thus hampering the normal child’s growth during the following years.
Burn reconstruction in children

Scars do not grow as children do –

Graft is also a scar

Arm adhesion to the chest
That’s why especially in joints areas we prefer the transposition of local flaps. These sometimes can be complex but they are reliable for what concerning blood supplies and their integration in child’s growth.

In arm and leg severe burn contractures we were using a five limbs or more complex transposition flaps.
Five limb transposition flap
Techniques available for burn reconstruction

1) Without deficiency of tissue
   a) Excision and primary closure
   b) Z-plasty

2) With deficiency of tissue
   a) Skin graft
   b) Transposition flaps
   c) Axial and random flaps
   d) Myocutaneous flaps
   e) Tissue expansion
   f) Free flaps
When more extensive contractures were present we made adjunctive flaps or thin grafts in distal areas, as in the following cases of severe contractures. We minimize the blood loss by tissues infiltration (2mgr adrenaline in 1000 cc saline)

The flaps have to be tailored on patient’s needs. In this case of severe leg contracture we made a seven limbs flap, very useful when there is not much good skin laterally in joints and in distal areas. As you can see the flap is composed by three Y advancing to V and by two Z
Seven limbs transposition flap

Distal Area

Joint area

Distal Area
Kenya, Nazareth Hospital
Leg contracture - Surgery: Transposition flap
In the following case of severe arm contracture we made a five limbs transposition flap in flexor area and thin grafts in distal areas.

Scars do not grow as children do.

Graft is also a scar.
Tissues infiltration

Injectable adrenaline 1:500,000
2 mg adrenaline in 1000 cc saline

Topical adrenaline
1:33,000
30mg in 1000 cc saline
In less severe contracture we were using a simple flap, composed by an advancement flap modified by two lateral discharging incision, as you can see in the following pictures. The patient is a young woman (26 old) burned by boiling liquid in Sierra Leone.
Y to V Advancement flap with lateral discharging branches
Boiling liquid burn arm contracture in Sierra Leone
Surgery: advancement-flaps
If this kind of intervention (transposition flaps) is not performable due to an extensive damage of the local tissues we transplant extremely thin skin, rather than thick, even in joints areas.
Furthermore, really thin grafts adhere quickly to the area and, by early mobilization, they stimulate an increase of the connective tissue even in joint areas. Besides this kind of intervention guarantees better cosmetic results. Sometime occurs disepithelization in a small area, as in the picture, which is going to heal quickly, without problems.
The pre-operative and post-operative care was the most important part of all our projects in burn reconstruction. The physiotherapist involvement starts the admission day and continues in the operative theatre as dressing and splints have to be tailored to the patient’s needs. Thus we included in our projects a training program about basics in plastic surgery, nursery and physiotherapy.
Rehabilitation

• Mobilize as soon as grafts are stuck

• Elastic bandage to reduce swelling

• Aggressive out-patient therapy

• Pressure garments
We have applied the above-mentioned technique with thin grafts even in young women with disfiguring and retracting scar on the face, as during the project for acid victims in Bangladesh.

Neck and mouth contracture
Acid Burn neck contracture
Severe fire burn contracture in Bangladesh
Excisional release and skin autografting
Neck contracture, lip ectropion and mouth commissure deformity

Neck excisional release and thin skin autografting, commissural local flap
The technique we used for most of the disfiguring scars was the tangential excision, by knife or by dermatome, until a viable bed is reached. Especially on the face is requested a special care to make a uniform bed surrounded by regular borders.

To minimize the blood loss we were using a topical adrenaline solution:

\[1:33,000 = 30 \text{ mg in 100 cc saline.}\]

Neck contracture, lip ectropion and mouth commissure deformity
Neck excisional release and thin skin autografting, commissural local flap
These thin grafts have to be removed with high precision preferably by electric dermatome, and then have to be applied with the same precision, without any suture. Steri-strips can be really useful in fixing them. A proper compressive wrapping and an early mobilization of the interested area are extremely important.
Thin grafts on the face
Hand major burn contracture

42 cases, 17% of all burn surgery performed were hand contractures. Our conduct in hand surgery:
- Thin grafts whenever possible
- After surgery the hand has to be splinted with metacarpophalangeal joints flexed at 70-90°, the interphalangeal joints at 180°, the wrist slightly extended and the thumb flexed and adducted at the metacarpofalangeal joint

Early mobilization, 4-5 days after surgery
The End