HUMANITARIAN MISSION OF PLASTIC SURGERY SERVICE ONE YEAR EXPERIENCE FROM MILITARY HOSPITAL TO CAMP ZAATARI: ABOUT 1643 CASES

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Introduction: Plastic surgery in humanitarian missions, aims to help patients who are victims of war or disaster. Following the outbreak of the conflict in Syria, the health service of the Royal Moroccan Armed Forces deployed a field hospital in 2012 in Camp Zaatari. The objective of this study is to share our experience with any plastic surgeon wishing to participate in a humanitarian mission, by shedding light on the difficulties encountered.

Materials and Methods: This is a retrospective study of the refugees who were taken care of by the Moroccan humanitarian mission between 2012 and 2013.

Results: The series includes 1643 patients, of which 81.6% were burns, 4.9% had burn sequelae, 9.37% had wounds and loss of substances and 4% consulted for other reasons. Patients received appropriate care, the surgical treatment of which was a skin graft in 7 patients. Patients with limb wounds or cephalic extremity were sutured (115 patients). Severe cases (polytrauma) were evacuated to the Jordanian regional hospital.

Discussion: The demand for plastic surgery is enormous given the large number of burns and wounds. Our mission is characterized by the fact that we practice the basics of our specialty in a new and painful environment, by a precarious place of practice, by particular pathologies encountered and by the need to know many horizons of plastic surgery. We have therefore been obliged to orient our mission according to the needs of the environment.

Introduction: Humanitarian aid has always been very important, especially in the field of health. The demand for plastic surgery has been confirmed [1]. Working conditions in humanitarian aid are very different from our usual practice. It is a specific and complex exercise that requires a thorough knowledge of the realities of the exercise and the field of intervention. It is, in essence, a free solidarity action for the beneficiaries.

Our plastic surgery team, with several experiences and participations in humanitarian missions, has been working in Camp Zaatari, in the governorate of AL-Mafraq (north-eastern Jordan) since 2012. This operation was part of the vast mechanism for the care of Syrian refugees in Jordan, bringing together non-governmental organizations (NGOs) and United Nations (UN) organizations [2].
The aim of this work is to share our experience, to review the services provided by plastic surgeons during this mission, the difficulties of practising surgery in this context in patients who are victims of war and disaster, and to show the usefulness of this type of mission to encourage plastic surgeons to participate.

Materials and Methods:-
This work is a retrospective study, in which we used consultation and patient records that were managed between September 2012 and September 2013. For each record, the following data were used:
1. Age
2. Sex
3. Socio-economic level
4. Reason for consultation
5. Type of intervention
6. Type of anaesthesia

Records not found, or incomplete, were excluded.

We’ve collected 1643 patients. The age ranged from 6 months to 65 years (mean age was 31 years), with predominantly male sex (sex ratio M/F = 1.5). The consultations mainly concerned burns and sequelae, wounds, craniofacial trauma and bedsores. We also performed almost 500 procedures. But apart from some procedures under pure local anaesthesia or bandages under general sedation.

Results:
The pathologies presented in this chapter are only a preview of the work we carried out on the mission.

The use of data from the consultation and hospitalization registers for plastic surgery made it possible to identify 1643 cases, so we classified the pathologies into four main groups: burns came at the top of the list (1341 cases seen in the acute stage and 82 cases of sequelae), wound surgery and loss of substances were the second reason for consultation (154 cases), surgery of skin tumors and soft parts (47 cases), and finally bedsores (6 cases) (Table 1).

Table 1:- Plastic surgery activity.

| Reason for consultation          | number | Percentage |
|----------------------------------|--------|------------|
| Burn                             | 1341   | 81.6%      |
| Burns sequelae                   | 82     | 4.99%      |
| Wound and loss of substance      | 154    | 9.37%      |
| Skin Tumor                       | 47     | 2.86%      |
| Pressure ulcers                  | 6      | 0.36%      |
| Cleft lip and palate             | 5      | 0.3%       |
| Gynecomastia                     | 3      | 0.18%      |
| Tattoo removal                   | 5      | 0.3%       |

The Burn:
They account for 86.59% of patients.

From time to time, we have had to face family dramas with severe burns involving several members of the same family. The burning of plastic tents (82% thermal burns) was the main cause. The burned area did not exceed 15% in most cases (922 patients) and the lower limbs were the most affected (359 patients) (Figure 1.2) with predominance of 2nd degree superficial burns (63%), while only 0.5% had 3rd degree burns.

Given the context, the treatment of these pathologies consisted of local care, surgical treatment by skin grafts, carried out on 7 patients, then the patients were referred to specialized structures in the Jordanian capital.

The sequelae of burns were divided between flanges (61 cases) and keloid scars (21 cases). Debridement and total skin graft (32 cases), or Z-plasty alone (18 cases) or in combination with grafts (11 cases) were performed.
Surgery for wounds and loss of substance:
It represented nearly 9.37% of our activity, the circumstances of occurrence are brawls and aggression (13%). Tribal conflicts, poverty, and poor housing conditions are the main factors at the origin of this violence. 27.2% of the wounds were due to explosions and 21.4% to ballistic trauma (Table 2).
The cephalic extremity 56.4% (Figure 3) and the upper limbs were the most affected 20.1% (Figure 4). Treatment consisted of suturing (115 cases), directed wound healing (34 cases) and local and loco-regional flap reconstruction (5 cases).

**Table 2:** Mechanism of wound injury and loss of substance.

| Mechanism            | Number of cases |
|----------------------|-----------------|
| Brawls               | 20              |
| Chute                | 22              |
| Explosion            | 42              |
| Ballistic trauma     | 33              |
| Gunshot wound        | 6               |
| Unspecified          | 31              |

![Figure 3](image1.png)

**Figure 3:** Deep wound on the left cheek.

![Figure 4](image2.png)

**Figure 4:** Loss of substance from the finger pulp.
Skin tumors:
They accounted for 2.86% of cases. In the majority of cases, these are benign tumours and a few malignant tumours (basal cell carcinoma) electively involving the scalp. The treatment was an excision in all patients.

Bedsores:
Our series included 6 patients. Most of the patients were paraplegics. The mean age was 29 years, with extremes ranging from 21 to 45 years old, predominantly male (sex ratio M/F = 2). Three patients had ischial bedsores, two sacral bedsores and one heel sore. They benefitted from local trimming and care. The management of this type of patients reveals rather adapted, even specialized structures.

Discussion:
This type of experience tends to overturn everything we take for granted or obvious in our daily lives. The reflection is about the usefulness of such a commitment for the population being treated; it is about the political and economic universe of the host country which is often the cause of the mission; it is about an ethical surgical attitude and the quality of the work done.

Plastic surgery in a precarious situation?
It's the practice of reconstructive surgery in difficult situations. It is more commonly called "humanitarian plastic surgery".

It is characterized by: a new and difficult environment, a precarious place of practice, particular pathologies encountered, and the application of all fields of plastic surgery (hand surgery, treatment of burns and their sequelae, traumatological sequelae, maxillofacial surgery, etc...)[3].

Target population?
Missions are offered to all patients in countries or institutions that request them. The teams try to treat patients in all fields of plastic surgery or they focus their mission on a specific pathology. The aim remains to treat patients who, in any case, would never have had the opportunity to access such care in their country [3].

For our mission it was a fragile population, which moved from the southern provinces of Syria (Deraa and Homs) to the north of Jordan. Unfortunately, and as is the case in all disasters and armed conflicts, the living conditions of these refugees were deplorable (promiscuity, lack of hygiene...).

The drill site?
It is often precarious both by the actual conditions of exercise (poorly performing operating room, frequent power cuts, etc...) and by the progress of the mission (massive influx of patients, delayed care, unprepared patients, etc...).

Our humanitarian mission took place at the Moroccan field hospital in the Zaatari camp, the only structure to ensure a medical permanence in the camp.

It is a huge expanse of tents and mobile homes, in the centre of a vast arid and stony plain in northern Jordan, a few kilometres from the Syrian border.

The composition of the teams?
It varies according to the missions. A mission can include a single surgeon if the structure hosting the already has the surgical environment for the operations. Conversely, a mission can be composed of a complete team to be completely autonomous[3].

For our mission, the Army Health Service (SSA) was in charge of the planning and implementation of this humanitarian operation, determining the list of personnel supervised by the Chief Medical Officer. There was one plastic surgeon and one nurse experienced in plastic surgery care.

Principle of care?
In precarious situations, the practice of plastic surgery must respect certain principles. Knipper has grouped them together under the name "4F concept": [3]
F for Feasibility: an operation must be feasible under precarious conditions and by a single surgeon.
F for Fiability: a technique must be reliable. Failure is badly experienced, especially by the professional and family entourage.

F for Familiarity: the procedure must be familiar to the operator. It is best applied when the situation is difficult.

F for Facility: a technique must remain easy to teach: Cooperative work = Transmission of information.

The surgical techniques used in our mission (grafts, local plastic...), seemed to us to respond to this concept. We advised different therapeutic proposals, from the "simple" to the "complicated": therapeutic abstention, directed healing, skin graft, flap.

**Conclusion:**
The necessity of the missions seems to have been taken for granted by most of us today. The demand for plastic surgery is enormous given the large number of burns and wounds. This surgical adventure has changed the way we work. In order to share our experience, we have tried to focus on the different pathologies observed in our study and the therapeutic attitudes used to treat these war victims. If a surgeon wants to participate in a plastic surgery mission, he must be completely autonomous and know the basic techniques, namely: skin plastic and skin grafts.

**Conflicts of Interest:**
The authors declare that they have no conflict of interest.

**References:**
1. P. Knipper, P. Antoine, C. Carré, J. Baudet. Chirurgie plastique nomade: 1 ONG, 10 années, 30 missions. Annal Chirurgie Plastique Esthétique (2015) .03.003
2. N. Mocellin, E. Hornez, X. Bajard, S. Legoudeveze, C. Charpail, D. Ollat. Action humanitaire et Service de Santé des Armées : Expérience d’une antenne chirurgicale en Jordanie sur la frontière syrienne. e-mémoires de l’Académie Nationale de Chirurgie, 2014, 13 (2) : 028-033
3. P. Knipper. Chirurgie plastique en situation précaire. 25, rue de Bourgogne - 75007 Paris Hôpital Saint Antoine - 75012 Paris.