

Original Research Article

## Epidemiological Profile of Acute Phase Hand Burns in Adults: Experience of the Plastic and Burn Surgery Department at the Military Hospital of Rabat (Study of 102 Cases)

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### Article History

Received: 14.05.2025

Accepted: 02.07.2025

Published: 14.07.2025

**Abstract:** The aim of our study is to collect epidemiological, clinical, therapeutic, and evolutionary data on hand burns in order to evaluate our care protocols, propose preventive measures, and develop recommendations tailored to our context. Materials and methods: This is a retrospective descriptive and analytical study spanning four years, from January 2017 to December 2020, within the plastic, reconstructive, and burn surgery department at the Mohamed V Military Teaching Hospital in Rabat. During this period, we collected data on 102 patients with burns to at least one hand who were admitted to our department for treatment of burns in the acute phase. Results: This study shows that the most common epidemiological profile is that of a male patient, aged between 35 and 45, admitted for superficial or intermediate second-degree burns affecting the dorsal surface of both hands and the face, caused by a domestic accident involving the explosion of a 3 kg gas cylinder or a pressure cooker. Discussion: Treating a burned hand is a difficult challenge for the surgeon. However, it is a situation that surgeons often face due to the high number of hand burns. The diagnosis of depth, quality, and early initial treatment are therefore essential to reduce functional and aesthetic complications. Conclusion: Early, adequate, multidisciplinary care remains the cornerstone for limiting the sequelae of hand burns and offering the patient an acceptable quality of life.

**Keywords:** Hand Burns, Epidemiology of Burns.

## INTRODUCTION

The hand is an extension of the brain and serves as the interface with the world around us. Although it represents only 2.5% of the body surface area, its social, aesthetic, interpersonal, and professional roles are essential. It is a highly exposed area due to its instinctive defensive reaction to any aggressive agent.

Hand burns are not life-threatening, but they are often serious because of their potential for significant functional and aesthetic sequelae. They require specialized management, starting from the acute phase, ideally in a burn center, to achieve healing with minimal long-term consequences.

The extent of sequelae depends on the severity of the burn, the quality of the initial management, and the care provided throughout the healing process.

Proper treatment of hand burns is often overlooked during the acute phase in favor of treating other body areas or focusing on intensive care. However, it is during this acute phase that the course toward successful restoration of hand function is determined.

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**CITATION:** O. Liban, S. Charboub, S. Indou, H. Sqalli Houssaini, Z. Badaoui, Y. Ribag, A. Khaled, A. Achboub, K. El Khatib (2025). Epidemiological Profile of Acute Phase Hand Burns in Adults: Experience of the Plastic and Burn Surgery Department at the Military Hospital of Rabat (Study of 102 Cases). *South Asian Res J Med Sci*, 7(4): 63-67.

Our work aims to:

- Collect epidemiological, clinical, therapeutic, and outcome-related data on hand burns.
- Conduct a literature review on hand burns in order to extract key recommendations.
- Summarize the principles of primary management of hand burns.

## MATERIEL ET METHODS

### 1. Study Design and Target Population

This is a retrospective study involving 102 patients with burns affecting at least one hand, conducted over a 4-year period from January 2017 to December 2020, within the Department of Plastic, Reconstructive, and Burn Surgery at the Mohamed V Military Hospital in Rabat. All patients were referred to our department for burn management during the acute phase.

### 2. Inclusion Criteria

We included in this study: All patients aged over 12 years presenting with burns affecting at least one hand.

### 3. Exclusion Criteria

The following were excluded from the study:

- Severely burned patients who died within the first few days after admission
- Patients with incomplete medical records.

### 4. Data Collection and Analysis

Statistical analyses were performed using SPSS software, version 28.0

## RÉSULTATS

In our study, the mean age was 42 years, with extremes ranging from 17 to 74 years. Our series included 39% female and 61% male patients (sex ratio of 1.61)

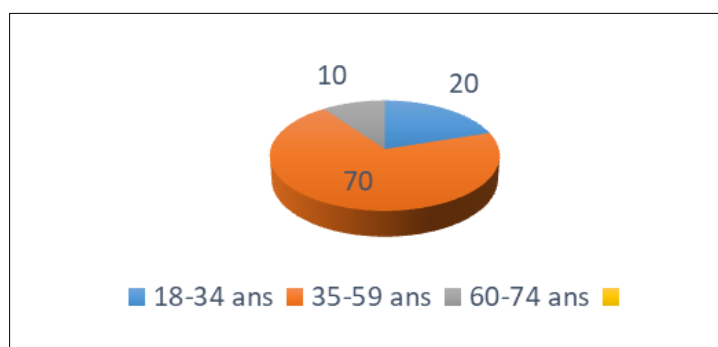


Diagramme 1: Moyenne d'âge

Regarding medical history, 14.7% of patients were known to have diabetes, 18.6% were being treated for hypertension, 2.9% had a diagnosis of epilepsy, and 1.9% had psychiatric disorders.

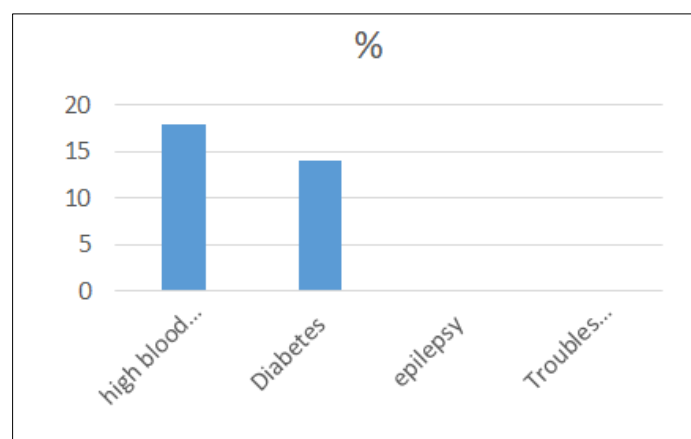
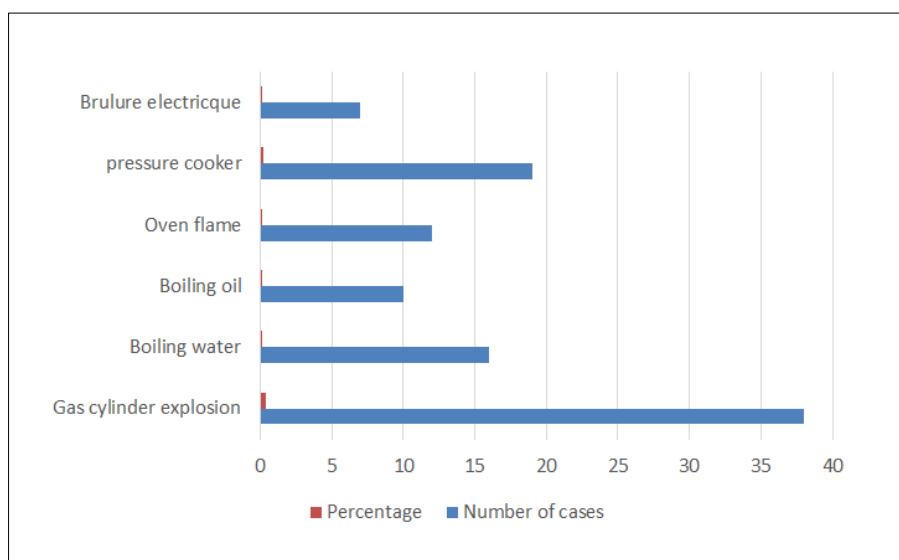


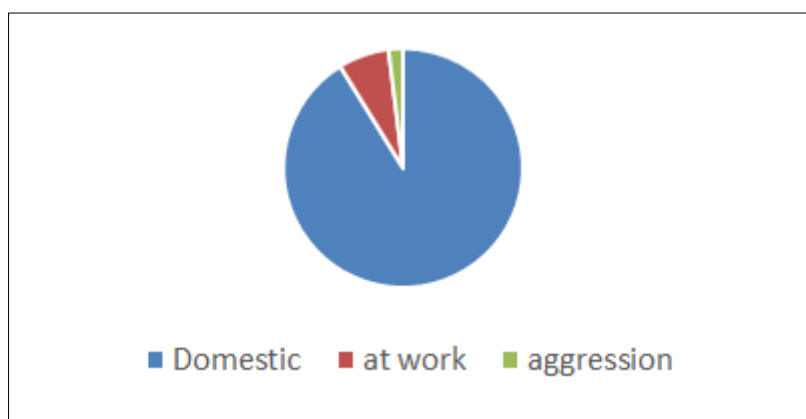
Diagramme 2: Antecedent

The causative agent varied in our series according to age group. However, thermal origin was responsible in 93% of cases.



**Figure 1: Type of burn**

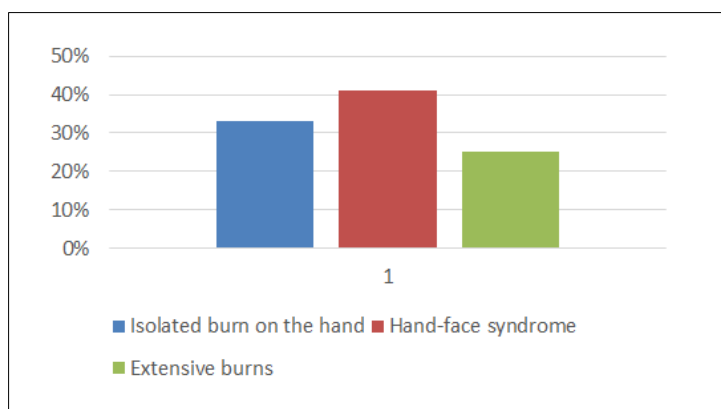
In 93% of cases, the burns occurred in the context of domestic accidents



**Figure 2: Circumstance**

Clinically, 74% of hand burns were located on the dorsal aspect of both hands. Unilateral involvement was observed in 7% of cases.

Regarding associated injuries, 41.2% involved the face as part of a face-hand syndrome, while 33.4% were isolated hand burns. The remaining cases were classified as extensive burns.



**Figure 3 : Association**

Sur le plan de la profondeur nous avons relevé dans l'ensemble des cas :

Depth	Number of cases	Pourcentage
Superficial second-degree burns	46	45%
Les brûlures du deuxième degré intermédiaire	37	36.3%
Intermediate second-degree burns	19	18,7%

From a paraclinical standpoint, all patients underwent an initial standard laboratory workup as well as additional complementary examinations. Emergency surgical procedures included decompressive incisions in 32.5% of cases and decompressive aponeurotomies in 10.7% of cases.

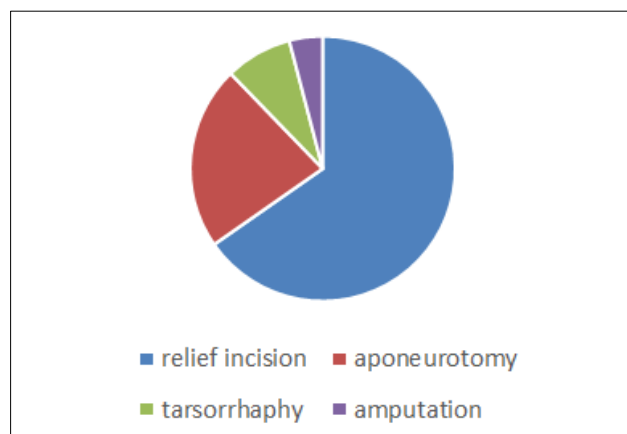


Fig. 4: Urgent surgery

Our therapeutic management is an Early excision and grafting (within 7 days) of the dorsal hand involved 38 patients. Among them, 34.2% (13 patients) received split-thickness skin grafts, 42% (16 patients) received full-thickness skin grafts, and 23.6% (9 patients) were managed with appropriate dressings. Only 4 patients underwent flap coverage (3 McGregor flaps, 1 interosseous flap). Patients also received adjuvant treatments, including antibiotics (ATB), tetanus antitoxin (ATCG), and immunoglobulins (IIP). The most frequently observed complications were infections (graft site, catheter-related, urinary, etc.).

## DISCUSSION

In our study, the mean age of patients was 42 years, with an age range from 17 to 74 years, which does not align with the study conducted by the burn unit of the Marrakech University Hospital in 2018, which reported a mean age of 21.3 years (116-1), as well as another study carried out by the burn unit of Casablanca between 2011 and 2015, which showed that 70% of cases were between 1 and 6 years old (118-2). This difference can be explained by the fact that we excluded patients under 12 years of age from our study, and in Morocco, the age group 0–4 years presents three times the risk compared to the rest of the population (113-3).

In our study, there was a male predominance with 63 patients (61.76%) and a sex ratio of 1.61, consistent with the study by the Marrakech burn unit (54.6%), Kibadi *et al.*, (53%) (123-4), and Bourdais *et al.*, (74%) (117-5).

Regarding the circumstances of the burns, 91.2% were domestic accidents in our study, similar to the studies by A. Rafiq (95%) (118-2) and L. Bourdais (65%). In the Moroccan context, burns caused by the explosion of a gas cylinder or a pressure cooker are very frequent, accounting for 37% and 18.6%, respectively.

In our study, 74% of hand burns were located on the dorsal aspect, often in the context of protecting the face, which aligns with studies by Bourdais *et al.*, (50%) and Kan-An Wang *et al.*, (53%) (128-6).

## CONCLUSION

The hand is the most frequently affected region in burns. Burns have varied etiologies and can be isolated or associated with other injuries. The consequences are predominantly functional rather than life-threatening and can significantly affect patient autonomy, highlighting the importance of early management.

Management of hand burns should be performed in a specialized burn unit, except for burns of small surface area. As shown in our study, we favor early excision and grafting for deep second-degree and third-degree burns, and guided

healing for first-degree and superficial second-degree burns. For burns exposing vital structures of the hand, healing can only be achieved through flap coverage or the application of artificial dermis.

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