

# HAND TRAUMA SURGERY: WHERE ARE WE AND WHERE DO WE GO ?

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## REZUMAT

Datorită frecvenței crescute și a impactului funcțional, traumatismele mâinii au o serie de consecințe sociale și economice importante, atât pentru pacienți, cât și pentru societate. În ciuda faptului că în multe țări europene (Franța, Belgia, Elveția, Luxemburg) există preocupări mai vechi, iar în altele (Turcia) mai noi privind dezvoltarea unui sistem organizatoric eficient de prevenție și asistență a traumatismelor mâinii, România se confruntă încă cu multe probleme din acest punct de vedere. Vom încerca să evaluăm locul actual al traumatologiei mâinii în țara noastră, sugerând principalele direcții pe care trebuie acționat în viitor.

**Cuvinte cheie:** traumatisme ale mâinii, prevenție, tratament, costuri

## ABSTRACT

Due to their great frequency and functional impact, the hand traumas have a lot of important social and economical consequences for both the patients and society. Despite the fact that in many European countries (France, Belgium, Switzerland, Luxemburg) there is an older preoccupation or a new one (Turkey) regarding the development of a high standard organizational system for the prevention and assistance in hand traumatology, Romania is still confronting with many problems from this point of view. We will try to establish the actual place of hand traumas in our country and to suggest its main directions in the future.

**Key Words:** hand trauma, prevention, treatment, costs

## INTRODUCTION

### International situation

Hand trauma should not be considered as minor trauma. First of all, this is due to their yearly great number: in France, for example, there are about 1.4 million new cases, representing 25% of all work related accidents producing absenteeism or disability; in UK, injuries of the hand represent about 20% of all emergencies presenting in emergency departments.<sup>1,2</sup>

Secondly, hand injuries are expensive for society, because of both direct (related to operation and rehabilitation) and indirect (related to lost output due to sick leave and disability) cost.<sup>3</sup> These costs are much higher in case of non specialized initial treatments, which can produce devastating socio-economic consequences for both the patients and the community.<sup>1,3-6</sup> Moreover, some of these non specialized initial treatments are followed by infections, which negatively influence the costs; for example, in a study performed in a German hospital between 1999 - 2000, is considered that treatments costs of 210,000 D-Marks could have been saved if adequate treatment had been initiated on time.<sup>5</sup> One more study performed in another German hospital made a comparison between a group of patients with so-called "minor hand injuries" treated in non-specialized units and a group of patients who received adequate primary care; the length of treatment and the number of days lost at work was prolonged with 1.3 to the patients incorrectly treated, and the costs per patients were of about 27,000 DM.<sup>4</sup>

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If we talk about replantation/revascularization, we have to think about the Engel's statement: "to trim or replant: a matter of cost".<sup>7</sup> But, this concept can be applied also to some very complex crush injuries of the fingers. Only few studies regarding the economic analysis of this kind of surgery were performed, because:<sup>3,7-12</sup>

- The indications are complicated and vague and can be influenced by the subjective judgement of the surgeon;

- The decision is also influenced by the patient's wish, general conditions, the skill of the surgeon.

In fact, to save a completely amputated or a very severely damaged finger is not always mandatory; but we have to do everything possible to save the thumb or one or more fingers in case of multiple fingers amputation or damage proximal to the proximal interphalangeal joint.

In the attempt to improve the level of prevention and treatment of hand traumas and to reduce their dedicated costs, some international models were created. In Europe, there are two well known models regarding hand trauma care: one in France and one in United Kingdom.

In France, in 1979, the European Federation of Hand Emergency Services (FESUM) was founded, whose aim is to assure the best possible treatment for hand injuries performed by orthopaedic or plastic surgeons which have also microsurgical abilities.<sup>13</sup> Starting with 1989, other three countries (Belgium, Switzerland, Luxemburg) joined the FESUM. A FESUM center should have three senior specialized surgeons (with a hand surgery and microsurgery university degree); at least one of them should be full member of the National Hand Surgery Society; the center should be available 24 hours per day and 7 days per week.<sup>1</sup>

In UK, the situation is as following:

- 86% from the hand surgeons are members or associates of the British Society for Surgery of the Hand (BSSH);

- Their parent specialties are orthopaedic surgery (67%) and plastic surgery (31%), and only 15% of them practice exclusively in hand surgery;

- There are three types of units in which hand surgery is performed: regional centers (with three or more surgeons practicing hand surgery), acute hospitals (with one or two surgeons practicing hand surgery), and smaller units (with no surgeons with specialization in hand surgery);

- Hand injuries should be treated by surgeons with expertise in hand surgery;

- The BSSH considers that the specialty status for hand surgery is a desirable goal that will have benefits for training and for the skill and knowledge of those who undertake hand surgery and for the care of patients;

- All hand surgery units should have the support of hand therapists.

Starting with these experiences, in 2005 was created the Hand Trauma Committee (HTC) of the Federation of European Societies for Surgery of the Hand (FESSH), in which for the beginning were registered the hand societies from 24 countries, including the Romanian Society for Surgery of the Hand (RSSH); three more societies (Slovenia, Russia, Czech Republic) became members in 2008. The HTC initiated an audit in the attempt to have a real evidence of hand trauma care in Europe. The results of this audit can be summarized as follows:<sup>1</sup>

- There are 309 hand trauma centers in Europe (the greater number in France - 44, the smaller one in Bulgaria - 1);

- There is one center per million people, in concordance with the recommendations for level I trauma centers;

- The average number of surgeons per center is six (between 1.6 in UK and 13 in Germany);

- Not all these surgeons have a hand surgery certification, and only 38% have validated a national or European hand surgery degree and 25% a microsurgical degree;

- 85% from the centers perform a public activity and 17% a private activity;

- 97% out of these centers are available 24 hours;

- Half of the surgeons performing hand surgery are orthopaedic surgeons, about 20% plastic surgeons, and about 30% general surgeons and trauma surgeons;

- Hand surgery as specialty is recognized only in Sweden and Finland.

Based on these results, the HTC elaborated, through its Accreditation Commission, some guidelines regarding what a hand trauma means, what a hand trauma center should be and who should be a hand trauma surgeon.

#### **What is a hand trauma?**

A hand trauma should be considered any closed or open injury to the wrist and/or hand, and which involves the skin, muscles, tendons, bones and joints, nerves and/or vessels.

#### **What is a Hand Trauma Center?**

This kind of center should:

- Have at least three hand trauma surgeons;

- Have magnification devices and microsurgical

instruments;

- Be available 24 hours;
- Operate at least two trauma cases per day.

#### **What is a hand trauma surgeon?**

For being a hand surgeon, a surgeon should:

- Be a full member of his National Hand Surgery Society;
- Have microsurgical recognition (certificate or diploma);
- Have a clinical activity represented by more than 24 trauma cases (from which at least five microsurgical) operated in a 3 months period.

Another conclusion of the audit was that the most important activity for the future has to be dedicated to the prevention. In this attempt, in 2009 the Turkish Society for Hand Surgery and the HTC will organize in Turkey the 1<sup>st</sup> European Hand Injury Prevention Congress.

It is also considered that all efforts should to be made for the attempt to develop hand surgery as a separate specialty.

## **ROMANIAN SITUATION**

### **Where are we?**

In Romania, if we talk about trauma of the forearm and hand, excepting isolated fractures of the forearm bones, the traumas are treated by the plastic surgeons. In their training program, the plastic surgeons have some time dedicated to hand surgery and one year dedicated to microsurgery, but they do not obtain any certificate or diploma. Despite the fact that the RSSH was founded in 1999 and is part of the FESSH, of the International Federation of Societies for Surgery of the Hand (IFSSH) and of the HTC, only about 32.5% of the plastic surgeons are members of the society.

Regarding the hand trauma centers, in Romania there are two types of units:

- University Clinics (four in Bucharest and one in Cluj, Timisoara, Iasi, Craiova, Constanta), in which there are more than three plastic surgeons practicing hand surgery and which have all the organizing facilities to perform hand trauma surgery;
- Departments in the majority of the County Hospitals, in which there are generally 1 - 2 plastic surgeons (excepting Brasov, with more than three) practicing hand surgery, but which have not all the facilities (especially microsurgical) to perform hand trauma surgery; of course, these centers are not able to assure (with some exceptions) an availability of 24 hours per day and 7 days per week.

Unfortunately, a lot of hand trauma cases are

initially treated by non-specialized surgeons in hand surgery, and that's why some of them are referred to specialized centers too late.

### **Where do we go?**

First of all, we have to support the idea that hand surgery should be a separate specialty. In this attempt, it would be desirable to allocate in the training program for plastic surgery, as for the microsurgery, a special period of time for hand surgery. Also, as recognition for being trained in hand surgery and microsurgery, the plastic surgeons should receive a certificate or diploma.

The RSSH has to promote relationships with the authorities in the attempt to develop more true hand trauma centers, by having in each County Hospital a Plastic Surgery Department with at least three plastic surgeons and all the technical facilities for performing hand trauma surgery.

Also, the RSSH has to promote the necessity for all plastic surgeons and some of the orthopaedic surgeons interested in hand trauma surgery to become members of the society.

The RSSH will have also as a priority the organization of a national prevention campaign regarding the hand traumas, the elaboration of methodological letters and treatment protocols in the attempt to improve the hand trauma care and to diminish the related costs and social impact. The first step in this attempt is to create a record for the initial exam of a patient with hand trauma and to establish very clear criteria about who, where and when these traumas have to be treated.

## **CONCLUSIONS**

So, in conclusion, we can consider some general principles:

- Hand injuries should be treated by surgeons with expertise in hand surgery;
- In the departments which provide possibilities for regional anaesthesia, some emergency cases can be treated as day-cases;
- Severe or complex injuries, with or without vascular lesions, should be referred immediately to a hand surgery unit with facilities for soft tissue and microvascular reconstruction;
- Open fractures, contaminated and bite wounds should be operated within a few hours; so, they have to be referred immediately to a hand surgery unit
- Clear tendon and/or nerve lesions should be immediately repaired; in the absence of a close hand surgery unit, the wound can be irrigated and closed in an Emergency Department and referred in the

next five hours to a hand trauma surgery unit for reconstruction

- Closed fractures have to be referred to a hand trauma center within 24 hours.

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