

# Pre Hospital Trauma Amputation Alternative Methods

I am a Crew Manager for Fire & Rescue service and a Registered Paramedic in the South West, I was recently asked to support a Pre-Hospital education programme being delivered at Southampton Hospital. The event was attended by senior clinicians and critical care staff who work in the pre-hospital environment.

The PRe-Hospital and Emergency Skills in Surgery and REsuscitation for Teams (PRESSURE) course is a multi-disciplinary team educational program that supports the development of skills in decision making and the resuscitation of severely injured patients including those with life threatening trauma.

A key aspect of the educational workshops provides practical skills through demonstration on human cadavers, animal models, and hybrid simulation models. The simulation process offers individuals an opportunity to practice team and practical skills in a safe and realistic environment, with the assistance of embedded facilitators and meaningful debrief of the skills practiced.

My role was to support the faculty in a specific workshop of emergency pre-hospital life threatening limb amputation. The workshop focused on various options that could be available in the pre-hospital environment, to a clinician who has taken the decision of emergency amputation of a limb to ensure the survivability of the trapped casualty.

There have been previous studies carried out looking at the most appropriate method for pre-hospital amputation. These in-depth studies have looked at various methods and equipment to achieve safe and timely management of this life-threatening situation.

As part of the decision-making process a multitude of differing aspects must be considered, these are based around equipment available and its effectiveness, the speed, skill level, access to the patient and the effected limb and environmental factors. Historical incidents have been identified, and shown the difficulties when limb entrapment has occurred, these differ dramatically to the procedure carried out in the operating theatre with good 360 degree access, lighting and large teams within a sterile environment.

Some of the historical pre-hospital incidents have identified various problems to overcome:

- Building collapse
- Road traffic incidents
- Machinery entrapment
- Confined space
- Sewer rescues
- Cliff rescue
- Submerged limb entrapment within water or other liquid

The clinical study “Man or machine? An experimental study of prehospital emergency amputation” carried out, looked at various aspects and equipment used to complete limb amputation giving a good guide to options available.

My focused discussion and training session was based around the option to use holmatro hydraulic equipment, which is carried by Fire and rescue services (FRS) to be used primarily for extrication of persons within trapped vehicles.



Due to the location of training within a laboratory located on the third floor, the option to use petrol driven generator was not available due to the production of fumes. We were kindly supported by holmatro and supplied with the 'Holmatro Battery Pump SPU 16 BC' to evaluate and use as part of this specific session.

This is the first time I have used the Holmatro Battery Pump SPU 16 BC electric pump and found its performance to be of an excellent standard. It was used extensively throughout the day and I found the benefits of the quieter electric generator a huge positive when trying to discuss with clinicians the pros and cons of the hydraulic option. As a Firefighter of 22 years I have been involved in the extrication of persons within trapped vehicles and successfully used the petrol hydraulic generator, but there is a noticeable benefit of reduced noise when using the Holmatro Battery Pump SPU 16 BC electric pump.



During the session, it was agreed by all clinicians that the most beneficial option was the manual use of a scalpel and saw, but could see this could be an unachievable option in difficult circumstances. The group felt that the options of using the holmatro hydraulic cutters would be beneficial when the limb is:

- Submerged in water or liquid
- Difficult 360deg access
- Confined space

Following the group discussions about using Holmatro Hydraulic equipment it was identified the ease and timely approach, with the benefits of having skilled firefighters who can operate within difficult pre-hospital environments. The students found the operation of the cutters easy but were surprised by the weight, but did say this was the first time they had picked up this equipment.

One area of concern at incidents would be the mental health of firefighters who might be asked to complete this process under medical supervision, although proficient in the use of this equipment there is a big ask for firefighters who might not be prepared or willing to get involved. It was discussed within the groups, the option of medical staff operating the equipment. As part of a multi-disciplinary approach each student felt, based on a risk assessment and equipment familiarisation they would be confident to operate the cutters due to its ease of use.

Holmatro have certainly produced a versatile product with the Holmatro Battery Pump SPU 16 BC electric generator showing its benefits for indoor use and with the noticeable difference of noise and good battery consumption. I would imagine this generator would be a good back up or replacement for the standard petrol drive one that I am very familiar with.

**Simon Todd**