# Canadian Special Interest Group 2006

## Abstracts presented at the American Burn Association 38th Annual Meeting, April 3, 2006, Las Vegas, Nevada

### Podium Presentations

**1**

**Débridement of burn wounds — comparing Versajet Hydrosurgery system and standard débridement.** ***N. Hallgren, J. Boyle, E. Brown, S. Macadam, W. Cannon.*** **BC Professional Firefighters' Burn and Plastic Surgery Unit, Vancouver, BC.**

The most common method of burn débridement utilizes a sharp blade for tangential excision of burned tissue. It is often difficult to carry this out on areas of varying topography. The Versajet Hydrosurgery system (Smith and Nephew, St-Laurent, Que.) is a hand-held high-velocity water jet that allows surgeons to simultaneously hold, cut and remove damaged tissue. It is controlled by a dial that allows the operator to increase or decrease the depth at which the system débrides, allowing for more precise control. As well, the Versajet is thought to decrease operative time as it combines the steps mentioned above. The Versajet Hydrosurgery system is approved for use in Canada and is being used in centres across the country, but no qualitative studies have been done to validate its current use over traditional methods. The purpose of this study is to compare outcomes between patients who have received débridement of burn wounds with the current standard modalities (tangential excision) and those who have had their burns débrided with the Versajet Hydrosurgery system. The hypothesis is that the Versajet system with all of its benefits will prove a similar if not superior method for débridement of burns, allowing for decreased operative time and improved débridement, especially in areas with difficult topography or sensitive tissues (for example dorsum of hand where tendons are very superficial). This paper will present the Vancouver General Hospital experience with the Versajet Hydrosurgery system as well as outline areas for future research.

**2**

**Abdominal compartment syndrome (ACS) in burn patients.** ***K.M. Cross, R. Cartotto.*** **Ross Tilley Burn Centre, Sunnybrook and Women's College Health Sciences Centre, Toronto, Ont.**

**Introduction:** Abdominal compartment syndrome (ACS) can develop in burn patients who require massive fluid resuscitation. The purpose of this study was to perform a detailed analysis of patients with ACS in our burn population. **Methods:** Burn patients admitted to our facility between Jan. 1999 and Dec. 2005 who were diagnosed with ACS were identified from our computerized database. Charts were reviewed retrospectively for confirmation of the ACS diagnosis based on the presence of documented intra-abdominal hypertension (IAH), decreased pulmonary compliance and oliguria. Patients were resuscitated using the Parkland formula, but in some instances colloid (5% albumin) was administered within the first 24 hours post burn at the discretion of the attending physician. Results are presented as mean values (and standard deviation [SD]). **Results:** There were 24 patients identified as having ACS. Following exclusions for incomplete diagnosis of ACS (3), incomplete records (2) and ACS secondary to extensive vascular surgery and not burn resuscitation (1), a study population of 18 remained. This group was predominantly male (83%), age 45 (SD 14) years, with total body surface area (TBSA) burns of 56.1% (SD 12.5%) and TBSA full-thickness burns of 43% (SD 19%). The admission Acute Physiology and Chronic Health Evaluation (APACHE II) score was 25.1 (SD 5.8), and 61% were diagnosed with inhalation injury. Etiology of the burn was flame in 94%. The mean total resuscitation volume at 24 hours was 37 591 (SD 11 432) mL (9 [SD 3] mL/kg/%TBSA). The mean difference between estimated and actual fluid volume was 18 564 (SD 10 949) mL (4 [SD 4] mL/kg/%TBSA). The mean hourly urinary output over the first 24 hours was 101.5 (SD 82.2) mL/h (1.3 [SD 1.0] mL/kg/h). Albumin had been given to 5 patients in the first 24-hour post-burn period, and in these cases the total 24-hour resuscitation volume was 49 410 (SD 3894) mL compared with 33 054 (SD 9975) mL in the 13 patients who received crystalloid fluid only ($p < 0.003$). ACS was identified at 12 (SD 17) hours post burn injury. At the diagnosis of ACS, bladder pressure was 42 (SD 20) mm Hg, and mean 24-hour values for peak airway pressure and serum lactate were 32 (SD 6) cm $H_20$ and 6 (SD 3) mmol/L, respectively. The mortality rate was 94%. **Conclusions:** Actual resuscitation volumes were substantially in excess of estimated volumes in patients who developed ACS. However, urine output was greater than that generally recommended and suggests that over-resuscitation may have contributed to the development of ACS.

**3**

**Vasopressin: a rational adjunctive pressor for the septic burn patient.** ***R. Cartotto, K. McGibney, T. Smith, A. Abadir.*** **Ross Tilley Burn Centre, Sunnybrook and Women's College Health Sciences Centre, Toronto, Ont.**

 

**Introduction:** Current consensus guidelines for hemodynamic management of septic shock include aggressive fluid challenge, use of either dopamine or norepinephrine (NE) as the primary vasopressor agent and judicious use of a relatively new strategy to support blood pressure: administration of exogenous vasopressin (VP). The purpose of this study was to examine the use of VP in septic burn patients. **Methods:** Retrospective review of all burn patients who met American College of Chest Physicians/Society of Critical Care Medicine (ACCP/SCCM) Consensus Criteria for the diagnosis of sepsis and who were treated with VP between Apr. 26, 1999, and Feb. 21, 2004, in our burn centre. **Results:** All results are presented as the mean (and standard deviation [SD]). The study population included 30 patients treated on 43 distinct occasions with VP. This group had an age of 49 (SD 19) years, a total body surface area (TBSA) burn of 41% (SD 15%), a TBSA full-thickness burn of 22% (SD 21%) and a 37% incidence of smoke inhalation. The in-hospital mortality rate was 50%. VP was initiated at 0.04 (SD 0.01) U/min and was infused at 0.04 (SD 0.01, range 0.01–0.07) U/min for 104 (SD 122, range 4–541) hours. Following VP initiation, there was a significant increase in mean arterial pressure within 4 hours ($p = 0.03$) which was sustained to 24 hours ($p < 0.01$), a significant decrease in heart rate by 24 hours ($p = 0.04$), a trend toward increased urine output and a significant reduction in norepinephrine (NE) requirements ($p < 0.005$). In 19 episodes, VP had been initiated as the primary pressor agent, and in these events there was only a transient increase in mean arterial blood pressure (MAP), and supplementary NE was required to support blood pressure in 60% of cases. There was a significant correlation between VP dose and MAP ($p = 0.001$). Complications potentially related to VP infusion occurred in 20% of cases and included cardiac arrest (1), upper gastrointestinal mucosal necrosis (1), peripheral ischemia (2), ventricular arrhythmias (1) and donor site conversion (1). In all complications, VP had been infused at 0.04 U/min but simultaneously with NE at a mean of 10 µg/min over a duration ranging between 48 and 288 hours. **Conclusions:** VP at a dose of 0.04 U/min effectively increased MAP in septic burn patients and had an NE sparing effect when used as an adjunct to NE. VP was ineffective as a primary pressor agent. Use of VP was not without potential complications, and a cautious approach is indicated, particularly when VP is combined with prolonged high-dose NE.

**4**

**Lack of fluid sparing effect of antioxidants in major thermal burns.** ***D. Bracco, M.J. Dubois, P. Deroy, N. Morissette, E. Sirdar, L. Duranceau, D. Garrel.*** **Montreal Burn Centre, Montréal, Que.**

**Introduction:** Fluid resuscitation of major burn is a key therapy to maintain adequate tissue perfusion and function but leads to tissular edema and complications. Massive oxidative stress is observed after burn, and antioxidants have been proposed to reduce the fluid accumulation and requirements (*Shock* 2005;24:139-44; *Burns* 1999;25:569-74; *Arch Surg* 2000;135:326-31; *Arch Surg* 1997;132:158-6; *J Surg Res* 1997;73:24-7; *J Burn Care Rehabil* 1999;20:7-14). **Methods:** We analyzed the fluid requirements of patients admitted during 1 year previous and 1 year following institution of antioxidant supplementation. Patients were administered an antioxidant cocktail continuously by central venous access up to 14 days after burn. Patients with a total body surface area burn <20% and those not committed to full treatment were excluded. End points were fluid requirements during the first 24 hours.

| Daily doses | | |
|---|---|---|
| **Bag #1** | **Bag #2** | Vitamin E 400 UI enteral |
| Vitamin C 8000 mg | Copper 5 mg | |
| Vitamin $B_1$ 200 mg | Zinc 25 mg | |
| Vitamin $B_2$ 100 mg | Manganese 3mg | |
| Vitamin A 10 000 UI | Chromate 50 µg | |
| Folate 10 mg | Selenium 300 µg | |

**Results:** Seventeen patients were identified in both groups. The fluid accumulation was comparable in both groups. There was a nonsignificant decrease in the amount of fluid administered and accumulated.

| Characteristics | Group; mean (and SD)* | |
|---|---|---|
| | Control | Antioxidants |
| Age, yr | 48 (20) | 41 (17) |
| TBSA, % | 38 (14) | 43 (20) |
| Mortality, total % | 6 | 9 |
| Transfused, total % | 71 | 88 |
| Length of stay, d | 44 (34) | 34 (20) |
| Fluid balance for the first 24 h | | |
| Total fluids received, mL | 20500 (8800) | 19800 (9500) |
| Colloids received, mL | 1170 (860) | 1240 (1130) |
| Fluids administration, mL/kg/% | 7.5 (4.3) | 6.5 (3.8) |
| Urine output, mL/d | 3200 (1600) | 4300 (3400) |
| Fluid accumulated, mL/d | 16500 (9600) | 16200 (1010) |
| Accumulated fluid, mL/kg/% | 6.5 (4.7) | 5.4 (4.7) |

SD = standard deviation; TBSA = total body surface area.
*Unless otherwise indicated.

**Discussion:** Using dosages similar to those in previously published studies, we failed to detect a fluid sparing effect during the first 24 hours with antioxidant supplementation. This may be due to lack of power and non-standardized resuscitation guidelines. The optimal composition timing and duration of the antioxidant supplementation remains to be determined. The benefits in terms of fluid sparing effect were not confirmed here, and further prospective randomized controlled trials are mandatory.

**5**

**Canadian OT and PT knowledge translation barriers and solutions.** ***B. Nedelec, G. Pharand-Rancourt, L. Kloda, N. Korner-Bitensky.*** **Montreal Burn Centre, Montréal, Que.**

**Introduction:** Burn injuries result in massive rehabilitation challenges that require a highly specialized, interdisciplinary approach. To best address these challenges, occupational therapists (OTs) and physical therapists (PTs) are increasingly

focusing on the application of evidence-based practice (EBP). Thus a pilot project was undertaken to document their perceived knowledge translation needs. **Methods:** Twelve therapists working with burn survivors were individually interviewed: 6 OTs and 6 PTs. The interview consisted of a variety of closed and open-ended questions to investigate what knowledge acquisition resources were being used, whether there was a perceived need for additional knowledge acquisition resources and whether a Web-based format would be viewed favourably. **Results:** The therapists' work experience with burn survivors ranged from 1 to 17 years. When asked what their most common source of information was when seeking to resolve a clinical challenge, 11 of 12 responded "a colleague"; 10 of 12 contacted therapists from other institutions within the province and stated that the reason that the contacts were focused within the province was due to their lack of awareness of colleagues elsewhere. When questioned whether the current resources offered within their institutions were sufficient for their burns-related learning needs, 10 of 12 responded that they were not. When specifically asked whether a Web site that provided them with an opportunity to contact OTs and PTs across Canada would be valuable, all 12 stated that it would be advantageous, and 11 of 12 thought they would interact anywhere from once a month to once a year. When asked to list what they thought would be the potential advantages to a knowledge exchange Web site, their responses included: validation of practice or ideas for improvement (8/12), increased ability to stay current with the latest research (6/12), exchange of case-based experiences (6/12), increased awareness of referral sources for clients that were relocating (4/12), enhanced patient care efficiency (3/12), quicker access to needed information (2/12), reduction of their sense of isolation (2/12) and exposure to the research being conducted by other therapists (1/12). **Discussion and conclusions:** The application of EBP demands that health providers continually upgrade their knowledge, yet based on these results 83% of OTs and PTs surveyed believe that they are lacking adequate learning resources. We are currently developing a Burn Survivor Rehabilitation Web site to provide asynchronous discussion opportunities for Canadian OTs and PTs working with burn survivors and to provide links to information resources. The content and usability issues surrounding the development of this knowledge exchange application resource will be presented.

**6**

**Fluorescein diacetate for measurement of cell viability in cultured skin substitutes.** ***A.D. Armour, S.T. Boyce.*** **Shriners' Hospital for Sick Children, Cincinnati, Ohio.**

**Purpose:** With the increasing clinical and research applications of in-vitro 3-dimensional tissue and organ culture, quality assurance techniques must also evolve. Currently, cell viability of cultured skin substitute (CSS) is usually determined as a point assessment of punch biopsies. However, to identify variability in cell distribution throughout the entire CSS graft, a more comprehensive measure of cell viability is required. The aim of this project is to develop a non-destructive assessment of cell viability in cultured skin in vitro using fluorescein diacetate (FDA) staining and computer-assisted planimetry. **Methods:** First, optimal FDA staining conditions were determined. CSS was prepared by inoculating collagen sponges with human fibroblasts and keratinocytes. CSS samples at different times post-inoculation were incubated with FDA to determine optimal time and concentration for staining intensity and detection. CSS fluorescence was quantified using MetaMorph image analysis software. Second, the toxicity of the FDA staining was evaluated on human fibroblasts, human keratinocytes and 4-mm punch biopsies of CSS samples. Cell viability was determined by MTT assay before and after exposure of each sample to both FDA and/or ultraviolet (UV) light. Third, FDA fluorescence in the CSS was correlated with cell inoculation density as well as MTT values of corresponding punch biopsies. Collagen sponges were inoculated with increasing densities of fibroblasts and stained with FDA. Average fluorescence values per CSS were correlated with MTT assay values as well as cross-sectional histology. **Results:** The optimal staining conditions, i.e., 6 days after keratinocyte inoculation, with an FDA concentration of 0.04 mg/mL for 20 minutes, followed by 366 nm UV light exposure for 10 seconds, provided clear contrast between fluorescence values for densely inoculated (mean 197 [standard deviation {SD} 12], $n = 60$) and cell-free areas (mean 49 [SD 2], $n = 20$) of the CSS. Cell viability, as determined by MTT values, was not affected by exposure of cells or CSS biopsies to the FDA staining solution or to the 366-nm UV lamp.

| Culture sample | Average MTT values | | |
|---|---|---|---|
| | Control | FDA only | FDA and UV |
| Fibroblasts ($n = 3$) | 1.88 | 1.78 ($p = 0.4$) | 1.81 ($p = 0.3$) |
| Keratinocytes ($n = 3$) | 3.53 | 3.61 ($p = 0.5$) | 3.45 ($p = 0.7$) |
| CSS biopsy ($n = 6$) | 0.156 | 0.112 ($p = 0.1$) | 0.133 ($p = 0.3$) |

CSS = cultured skin substitute; FDA = fluorescein diacetate; MTT = 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide; UV = ultraviolet light.

Correlation between FDA fluorescence and cell number ($r^2 = 0.696$, $n = 6$) and between fluorescence and MTT values ($r^2 = 0.738$, $n = 6$) was good. Correlation of fluorescence and MTT with histology is underway. **Conclusion:** This application of the intracellular FDA staining technique shows promise as a nontoxic research and clinical tool to evaluate cell distribution in cell-seeded matrices in vitro. Experimental conditions must be further optimized before its reliable use with cultured skin or other tissue equivalents.

**7**

**Apoptosis of normal and hypertrophic scar myofibroblasts after stimulation with cytokines or serum.** ***V. Moulin, M. Roy, C. Lopez-Vallé.*** **LOEX, Saint-Sacrement Hospital and Department of Surgery, Laval University, Quebec, Que.**

At the end of a normal wound healing process, myofibroblasts disappear from the tissue by apoptosis via unknown stimuli. In the case of hypertrophic scars, a trouble related to burn patient wound healing, there is persistence of a high density of cells and collagen in comparison with that observed in normal granulation tissue. Scientists associate this disorder with a problem in the regulation of apoptosis. We have compared the

apoptotic response of normal (Wmyo) or hypertrophic scar (Hmyo) myofibroblasts and of normal skin fibroblasts (Fb) to several cytokines and sera. Bovine and human sera induced apoptosis of Wmyo, while they decreased that of Hmyo and Fb in comparison with the results obtained in absence of serum. Wmyo showed a decrease of apoptosis when transforming growth factor ß (TGFß) was used, an increase of apoptosis with monocyte chemotactic protein-1 (MCP-1), but no effect of epidermal growth factor (EGF) or insulin. Hmyo apoptosis was decreased in the presence of TGFß or EGF, but these cells showed no response to insulin or MCP-1. Fb showed a decrease of apoptosis in response to TGFß, EGF or insulin treatment, but was not affected by MCP-1. These results demonstrate that myofibroblasts, depending on their origin, have differential response to cytokines in terms of apoptosis. Hmyo have a greater receptivity to cytokines in terms of anti-apoptotic protection, while these same cytokines induce apoptosis or have no effect on Wmyo. Furthermore, there is a molecule present in serum that strongly and selectively induces apoptosis in Wmyo while decreasing it in other cells.

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**8**

**Terror-inflicted thermal injury. A retrospective analysis of burns in the Israeli–Palestinian conflict (1997–2003).** ***J. Haik,*[*] *A. Tessone,*[*] *A. Givon,*[†] *A. Liran,*[*] *E. Winkler,*[*] *D. Mendes,*[*] *O. Goldan,*[*] *E. Bar-Meir,*[*] *E. Regev,*[*] *A. Orenstein,*[*‡] *K. Peleg.*[*] From the *The Burn Unit, Chaim Sheba Medical Center, the †National Center for Trauma and Emergency Medicine Research, Sheba Medical Center and the ‡Israeli Trauma Group (J. Jeroukhimov, B. Kessel, E. Klein, M. Michaelson, Y. Mintz, A. Rivkind, D. Soffer, D. Simon, G. Shaked, M. Stein, I. Waksman), Israel.**

Terror attacks have changed in the past decade, with a growing tendency toward explosives and suicide bombings, which have led to a rise in thermal injuries among victims. In the Israeli–Palestinian conflict, October 2000 marked a turning point when an organized terror campaign commenced. This paper presents data of terror-associated burns from the Israeli National Trauma Registry (ITR) from 1997 to Sep. 2000 and from Oct. 2000 to 2003. **Methods:** We analyzed demographic and clinical characteristics of 219 terror-related burn patients and 6546 other burn patients admitted to hospitals in Israel between 1997 and 2003. Data were obtained from the ITR. **Results:** Burns contributed about 9% of all terror-related trauma and about 5% of all other trauma ($p < 0.0001$). These percentages did not change significantly before and after Oct. 2000. Terror-related burns afflict Jewish males more than predicted by their percentage in the population, while other burns afflict non-Jewish males more than predicted. Adults and young adults (15–59 yr) are the predominant group in terror-related burns (80%), whereas children under 15 are the predominant group in other burns (50%). Large burns (20%–89% total body surface area) are more common in terror casualties, with greater mortality (6.4% in terror related v. 3.4% in others, $p = 0.0258$). **Conclusion:** While the incidence of burns has risen due to an organized campaign, this change was noticeable in other trauma forms as well, in similar proportions. Terror-related burns afflict a targeted population and generally take on a more severe course with greater mortality rates, thus requiring appropriate medical setups.

## Case Presentations

**9**

**Carotid rupture following electrical injury: a report of 2 cases and literature review.** ***J. Toy, E.E. Tredget.* Firefighters' Burn Treatment Unit, University of Alberta Hospital, Edmonton, Alta.**

Electrical injuries cause direct tissue damage by thermal mechanisms, electroporation and electroconformational denaturation of macromolecules. Although rupture of the brachial, radial and obturator arteries have been reported in the literature, there are no documented cases of carotid artery rupture associated with electrical injury. We report 2 cases of carotid artery rupture following high-voltage electrical injury. The first case is a 43-year-old man who received a 4000-V electrical injury and a 50% total body surface area (TBSA) full-thickness flame burn that resulted from ignition of his clothing. The resulting injury included deep burns to the patient's face, scalp and neck that required multiple débridements of devitalized tissue and the outer table of the skull. Following spontaneous rupture of the carotid artery during débridement, the patient required a saphenous vein graft, flap coverage and extensive reconstruction following flap failure. The second patient is a 21-year-old man who fell onto a power line from a 20-foot fence resulting in strangulation and electrocution. His injury included a 10% TBSA full-thickness electrical circumferential contact injury to his neck and a full thickness injury to the scrotum. The patient was taken from the emergency room to the operating room (OR) urgently for a left carotid shunt and vein patch which subsequently failed in the intensive care unit, and the patient was taken back to the OR where the vessel was tied off and followed later (day 5) with extensive débridement and grafting of the neck and chest. The patient required extensive soft tissue reconstruction with split thickness graft and flap coverage as well mucosal graft to the trachea. Both patients survived following ligation of the common carotid artery without neurologic sequelae.

## Poster Presentations

**10**

**Chaos to calm: managing disaster.** ***M. Zwicker, S. Young, P. Mitchell, P. Rose-Sharman.* Firefighters' Burn Treatment Unit, University of Alberta Hospital, Edmonton, Alta.**

**Introduction:** While integrated emergency preparedness plans are in place, and staff receive annual overview of these plans, they continue to be anxious and inadequately prepared for an actual disaster. Reviewing information as preparation is inadequate. Simulated practice using disaster drills that mimic reality as much as possible is an effective addition to the delivery

of educational information. The goal of this project was to enhance staff's level of preparation for emergency situations such as a bomb threat, evacuation of patients, mass casualty incidents and missing patients. **Initiative:** The key essentials of the project included:

- Preparation and delivery of a PowerPoint presentation that covered code black (bomb threat), green (evacuation), orange (mass casualty), yellow (missing person) and white (attempted suicide).
- Development of realistic scenarios for codes black, green, orange and yellow.
- Implementation of recurring simulated disaster drills on the Firefighters' Burn Treatment Unit with support of Security staff to act in defined roles (e.g., bomber).
- Debriefing staff following each drill and review lessons learned.
- Communicating results and lessons to all staff via debriefing notes and unit meetings.

**Key lessons/conclusions:**

- Realistic drills produce anxiety for the staff but also make the need to understand expectations and actions in an emergency/disaster situation more urgent and important.
- Revisions to the process for responding appropriately to emergencies were made as a result of the drills.
- Changes were made to emergency materials to make information more accessible for the staff.
- Relationships were built between the Security Department and interprofessional teams on patient care units.

**11**

**To be skilled or not to be skilled: that is the question.** ***M. Zwicker, S. Young, K. Worton.* Firefighters' Burn Treatment Unit, University of Alberta Hospital, Edmonton, Alta.**

Small burn intensive care units have a unique challenge in maintaining staff competence with specialized knowledge and skills due to a lack of opportunity for practise. The Firefighters' Burn Treatment Unit is a specialty unit where staff must be prepared to work with their patients no matter the complexity of care. Although some skills are rarely used for patients with burns, staff are required to remain competent in the event that the skills are needed. The issues relating to maintaining infrequently used competencies and recommendations for addressing the issues will be discussed. Several issues face staff when required to perform infrequently used skills. Some of the issues are as follows: staff lose confidence in their abilities; they forget the information quickly; and there are fewer advancement opportunities for new staff. Most importantly, patients may be jeopardized as staff are required to perform skills that they rarely practise. There are a number of possible solutions to this challenge, each with unique advantages and disadvantages. The options include eliminating the skill as a competency for the nursing staff, training a core group, providing educational updates with simulated practise on a regular basis and increasing the frequency of educational updates. The advantages and disadvantages of each approach will be presented.

**12**

**The use of video capture virtual reality in burn rehabilitation: the possibilities.** ***J. Haik,*[*] *A. Tessone,*[*] *A. Nota,*[†] *D. Mendes,*[*] *L. Raz,*[†] *O. Goldan,*[*] *E. Regev,*[*] *E. Winkler,*[*] *E. Mor,*[*] *A. Orenstein,*[*] *I. Hollombe.*[†] From the *Burn Unit, Chaim Sheba Medical Center, and the †Occupational Therapy Department, Tel Ha Shomer Rehabilitation Hospital, Sheba Medical Center, Israel.**

We independently explored the use of the Sony PlayStation II EyeToy™ (www.EyeToy.com) as a tool for use in the rehabilitation of severe burn patients. Intensive occupational and physical therapy is crucial in minimizing and preventing long-term disability for the burn patient; however, the therapist faces a difficult challenge combating the agonizing pain experienced by the patient during therapy. The Sony PlayStation II EyeToy™ is a projected, video-capture system that, although initially developed as a gaming environment for children, may find useful application in a rehabilitative context. As compared with other virtual reality systems, the EyeToy™ is an efficient rehabilitation tool, sold commercially at a relatively low cost. This paper presents the potential advantages for use of the EyeToy™ as an innovative rehabilitative tool with mitigating effects on pain in burn rehabilitation. This new technology represents a challenging and motivating way for the patient to immerse him or herself in an alternate reality while undergoing treatment, thereby reducing the pain and discomfort he or she experiences. This simple, affordable technique may prove to heighten the level of patient cooperation and therefore speed the process of rehabilitation and return of functional ability.

**13**

**The neverending story: an extraordinary case of poor wound healing and prolonged hospital admission.** ***J.M. Prince, J.C. Boyle.* BC Professional Firefighters' Burn and Plastic Surgery Unit, Vancouver, BC.**

Poor wound healing is a common problem affecting morbidity and length of hospital stay in multi-trauma burn patients. The potential causes of poor wound healing are vast and need to be thoroughly addressed when faced with a patient with a troublesome wound. For patients with deeper burns requiring skin grafting, poor healing and breakdown of donor sites can also significantly prolong patient recovery, especially in patients with larger burns who may need reharvesting from a limited body surface area. We describe an unusual case of a multi-trauma burn patient whose complications of poor wound healing resulted in the longest ever inpatient stay on our unit. We will discuss the challenges we faced and the methods employed to treat this patient.