



Article Type: Research Article

Received: 15/09/2020

Published: 23/09/2020

DOI: 10.46718/JBGSR.2020.04.000105

## Severe Soft Tissue Infection in Pressure Ulcers: A Multidisciplinary Approach

Giovanni Cestaro<sup>1,\*</sup>, Fabio Cavallo<sup>1</sup>, Monica Zese<sup>1</sup>, Daniela Prando<sup>1</sup>, Ferdinando Agresta<sup>1</sup><sup>1</sup>Uoc Chirurgia, Ospedale Civile Di Adria, Ulss 5 Polesana, Piazzale Degli Etruschi -Adria (Ro), Italy<sup>2</sup>Uoc Chirurgia Generale E D'urgenza, Ospedale Di Circolo E Fondazione Macchi, Asst Sette Laghi Viale L. Borri - Varese, Italy

\*Corresponding author: Giovanni Cestaro, UOC CHIRURGIA, Ospedale Civile di Adria, ULSS 5 POLESANA, Piazzale degli Etruschi -Adria (RO), Italy

### Background

Pressure ulcers represent a serious and challenging condition that requires dedicated staff. The deepest ulcers (stages III and IV according to NPUAP classification) are usually considered fit for local flap reconstruction, specifically myocutaneous or fasciocutaneous flaps, but the best treatment for sores derives from an "holistic" approach, considering all aspects of a patient affected by ulcers: age, comorbidities, dedicated care-givers (not only nursing staff), social and familiar condition, nutritional support, clinical history, expected patient's survival. Hereby we report a single centre experience about the multidisciplinary approach to the treatment of patients affected by severely infected pressure ulcers.

### Materials and Methods

We did a retrospective study about 32 consecutive patients affected by pressure ulcers enrolled in Surgical and Medicine Department of ASST SETTE LAGHI in the period between 1 December 2017 to 30 September 2018 by the same surgical staff, adopting a multidisciplinary and a "multi-step" approach. We analysed continuous data as the means (with SD and range). Categorical data were analysed as frequencies and percentages. Outcomes: healing rate and wound management assessment by nursing staff.

### Results

17 male patients and 15 female patients; male/female ratio was 1.13. Age ranged from 44 to 94 years old, with medium value of 74.3 years old  $\pm$  SD 11.7. According to TIME protocol (Tissue Necrosis / Infection / Moisture / Epithelization), all patients were submitted to surgical debridement in outpatient setting, while it was done in Operation Theatre (OT) in seven (7) cases with Negative

Pressure Wound Therapy (NPWT) support in eight (8) cases and Pulse Lavage<sup>®</sup> system in five (5) cases. Advanced dressings were applied in all cases, according to the specific features of lesions (alginate, hydrofibers, hydrocolloids, hydrogels, antibiotic ointments, collagenic bioactive dressings). Satisfying healed ulcers were obtained in 27 / 32 cases: healing rate was 84%. Healing time ranged from three (3) to eight (8) weeks, with medium value of 5.5 weeks  $\pm$  SD 2.1. We did colostomy in two (2) cases, a rectal tube positioning for faecal evacuation (Flexiseal<sup>®</sup>) in one (1) case. Most frequent pressure ulcer localization was sacral (24/32 cases, 75 %). Most frequent comorbidities were neurological, cardiovascular and diabetic conditions.

### Discussion

Technological support by pulse lavage system and NPWT will increasingly spread in current surgical management of sores. Pulse-lavage system ameliorates surgical debridement, while NPWT generates granulation stimulation and improves exudation control.

### Background

Pressure ulcers represent a serious and challenging condition that requires dedicated staff, made of both adequately trained nurses and physicians [1]. Pressure ulcers are usually classified according to NPUAP (National Pressure Ulcers Advisory Panel): stages I and II are likely to be treated by conservative management, while stages III and IV are often submitted to plastic and reconstructive surgical evaluation [2]. Therefore, these deeper ulcers are usually considered fit for local flap reconstruction, specifically myocutaneous or fasciocutaneous flaps, but the best treatment for sores derives from an "holistic" approach. In other words, we need to consider all aspects of a patient

affected by ulcers: age, comorbidities, dedicated caregivers (not only nursing staff), social and familiar condition, nutritional support, clinical history, expected patient's survival. Indeed, if an accurate post-operative support to performed reconstructive flap is lacking, plastic surgeon's work will fail and patient's quality of life will not improve. Consequently, we consider effective a multidimensional treatment of pressure ulcers, characterized by a "multi-step approach", first of all finalized to make easier the management of these frail and difficult patients and to obtain a satisfying improvement of quality of life. Considering the most frequent type of pressure ulcers, i.e. sacral pressure ulcers, we report a single centre experience about the multidisciplinary approach to the treatment of patient affected by severely complicated pressure ulcers.

### Materials and Methods

We did a retrospective study about 32 consecutive patients affected by pressure ulcers enrolled in Surgical and Medicine Department of ASST SETTE LAGHI in the period between 1 December 2017 to 30 September 2018. All patients were treated by the same surgical staff adopting the "multi-step approach". All patients received a personalized nutritional support according to the indications by a nutrition specialist. Moreover, any patient was discussed with physiotherapist to plan possible mobilization. We adopted descriptive type of statistics to carry out the study. We analysed continuous data as the means (with SD and range). Categorical data were analysed as frequencies and percentages. We collected data from clinical files and surgical reports regarding patients in study. Study outcomes were healing rate and wound management assessment by nurse staff.

### Results

We collected following data: 17 male patients and 15 female patients; male/female ratio was 1.13. Age ranged from 44 to 94 years old, with medium value of 74.3 years old  $\pm$  standard deviation 11.7 years old. According TIME protocol (Tissue Necrosis / Infection / Moisture / Epithelization), all patients were submitted to surgical debridement in outpatient setting, while it was done in Operation Theatre (OT) in seven (7) cases with Negative Pressure Wound Therapy (NPWT) support in eight (8) cases and Pulse Lavage<sup>®</sup> system in five (5) cases. Advanced dressings followed this initial treatment in all cases, according the specific features of lesions (alginate, hydrofibers, hydrocolloids, hydrogels, antibiotic ointments, collagenic bioactive dressings). Satisfying healed ulcers were obtained in 27 / 32 cases: healing rate was 84%. Healing time ranged from three (3) to eight (8) weeks, with

medium value of 5.5 weeks  $\pm$  standard deviation 2.1 weeks. Colostomy was necessary in two cases, while a rectal tube for fecal evacuation (Flexiseal<sup>®</sup>) was adopted in 1 case. Pressure ulcers localization were: sacral (24/32 cases, 75 %); ischiatic (5/32 cases, 15 %); trochanteric (4/32 cases, 12.5 %); malleolar and gluteus more rarely. Often, we observed concomitant pressure sores in same patients. Moreover, we considered in our evaluation all comorbidities of treated patients. The most frequent pathologic conditions were neurological diseases (14/32 cases, 43.7 %); cardiovascular disease (13/32 cases; 40.6 %) and diabetes (10/32 cases; 31.2 %). The most representative conditions were included in (Table 1). Pathological conditions classified in these groups were often concomitant in same patients. Nursing reports obtained by clinical documentation referred better management of wounds in all cases, considering both pain management and dressing management.

An example of treated sacral pressure ulcer is represented in (Figures 1-3).



Figure 1: Sacral pressure Ulcer (Stage IV).



Figure 2: NPWT (after surgical debridement in OT).



Figure 3: After 2 weeks of NPWT.

Table 1: Comorbidities in pressure ulcers.

Hypertension, Peripheral Arterial Disease, Chronic Cardiac Failure
Diabetes Mellitus
Progressive Multiple Sclerosis
Chronic Kidney Disease
Cerebral Ischemic / Haemorrhagic Stroke
Malnutrition

## Discussion

We often assisted patients characterized by “multi-layers” dressings, usually expensive, based on the newest products or on several different ointments, adequate to be applied only in a specific phase of healing process [3]. Nowadays we need to be able to apply the correct type of dressing or to use the most indicated device in the right moment of healing process. Our experience demonstrated the safety and the efficacy of a “multi-step approach”. Negative Pressure Wound Therapy (NPWT) represents a valid tool in this approach [4]. For this reason, it is worthwhile to notice that early surgical and extensive debridement followed by correct application of NPWT are fundamental to promote the healing process in pressure ulcers. Our data are regarding especially the sacral region. This specific localization makes harder care-givers work, because the proximity of anus and perineal area. Then in selected patient, particularly which ones at challenging sepsis high-risk, colostomy can be indicated. Indeed, we consider that a colostomy has two important consequences:

- a. making easier NPWT management of sacral region;
- b. promoting sacral healing process avoiding

maceration and contamination by urine and stool. NPWT should be no longer than three weeks. After this therapeutic period, we applied advanced dressings and bioactive dressing every two / three days with satisfying results, characterized by well-irrorated and clean wound. Sacral pressure ulcers management can be considered a good example to explain the importance of a correct use of new devices or systems such as pulse-lavage [5] and NPWT. Pulse-lavage system ameliorates surgical debridement, while NPWT generates granulation stimulation and improves exudation control [6]. Moreover, TIME (Tissue necrosis, Infection, Moist, Epithelization) approach and nursing staff activities report represent two objective parameters to do an adequate evaluation of our treatment [7]. In our opinion a multi-disciplinary team for a patient affected by pressure ulcer, based on surgeon, nutritionist, physiotherapist and nursing staff is necessary to offer the best therapeutic option. Technological support by pulse lavage system and NPWT will increasingly spread in current surgical management of sores [8,9]. Further investigations are necessary and we auspice more scientific publications about a systematization of management of pressure ulcers.

## References

1. Demarré L, Van Lancker A, Van Hecke A (2015) The cost of prevention and treatment of pressure ulcers: A systematic review. *Int J Nurs Stud* 52(11): 1754-1774.
2. Jaul E (2010) Assessment and management of pressure ulcers in the elderly: current strategies. *Drugs Aging* 27(4): 311-325.
3. Brown J (2016) The role of dressings in the prevention of pressure ulcers. *Br J Nurs* 25(15 Suppl): S6-S12.
4. Mervis JS, Phillips TJ (2019) Pressure ulcers: Prevention and management. *J Am Acad Dermatol* 81(4): 893-902.
5. Norman G, Atkinson RA, Smith TA (2017) Intracavity lavage and wound irrigation for prevention of surgical site infection. *Cochrane Database Syst Rev* 10(10): CD012234.
6. Pappalardo V, Frattini F, Ardita V, Rausei S (2019) Negative Pressure Therapy (NPWT) for Management of Surgical Wounds: Effects on Wound Healing and Analysis of Devices Evolution. *Surg Technol Int* 34: 56-67.
7. Raetz JG, Wick KH (2015) Common Questions About Pressure Ulcers. *Am Fam Physician* 92(10): 888-894.
8. Bhattacharya S, Mishra RK (2015) Pressure ulcers: Current understanding and newer modalities of treatment. *Indian J Plast Surg* 48(1): 4-16.
9. Dumville JC, Webster J, Evans D, Land L (2015) Negative pressure wound therapy for treating pressure ulcers. *Cochrane Database Syst Rev* (5): CD011334.

---

\*Corresponding author: : Giovanni Cestaro, Email: giovacestaro@gmail.com

Next Submission with BGSR follows:

- Rapid Peer Review
- Reprints for Original Copy
- E-Prints Availability
- Below URL for auxiliary Submission Link: <https://biogenericpublishers.com/submit-manuscript/>

---

**Citation:** Giovanni Cestaro\*, Fabio Cavallo, Monica Zese, Daniela Prando, Ferdinando Agresta. Severe Soft Tissue Infection in Pressure Ulcers: A Multidisciplinary Approach. Op Acc J Bio Sci & Res 4(4)-2020.

**DOI:** 10.46718/JBGR.2020.04.000105