

Incision care and dressing selection in surgical incision wounds: Findings from an international meeting of surgeons from Eastern Europe

- **Rhidian Morgan-Jones (Chair)**, Consultant Orthopaedic Surgeon, Cardiff Knee Clinic, University Hospital Llandough, Cardiff, UK
- **Dr Antoni Szczepanik**, General and Oncology Surgeon, Department of General, Oncological, Gastroenterological and Transplant Surgery, Jagiellonian University Medical College, Krakow, Poland
- **Dr Tibor Gunther**, Chief Surgeon, Trauma and Orthopaedic Department, Petz Aladar University Hospital, Győr, Hungary
- **Dr Ján Debre**, Head Orthopaedic Surgeon, Šumperk Hospital, Šumperk, Czech Republic
- **Dr Radek Dolezel**, General and Oncology Surgeon, Charles University and Military University Hospital, Prague, Czech Republic
- **Prof Tomasz Banasiewicz**, Head of Department of General, Endocrine Surgery and Gastrointestinal Oncology, Poznan University of Medical Sciences, Poznań, Poland
- **Dr Örs Pécsi**, Trauma and Orthopaedic Surgeon, Erzsébet Kórház, Budapest, Hungary
- **Prof Maciej Wilczak**, Director, Department of Mother's and Child's Health, Gynecology and Obstetrics University Hospital, Poznan University of Medical Sciences, Poznań, Poland

Incision care and dressing selection in surgical incision wounds: Findings from an international meeting of surgeons from Eastern Europe

This report highlights the findings of a meeting of surgeons from Eastern Europe, chaired by Rhidian Morgan-Jones (UK), to discuss incision care and dressing selection for surgical incisions closed with primary intention. The meeting was held online in January 2022 and was supported by Mölnlycke Health Care.

Rhidian Morgan-Jones (Chair), Consultant Orthopaedic Surgeon, Cardiff Knee Clinic, University Hospital Llandough, Cardiff, UK

Dr Antoni Szczepanik, General and Oncology Surgeon, Department of General, Oncological, Gastroenterological and Transplant Surgery, Jagiellonian University Medical College, Krakow, Poland

Tibor Gunther, Chief Surgeon, Trauma and Orthopaedic Department, Petz Aladar University Hospital, Győr, Hungary

Dr Ján Debre, Head Orthopaedic Surgeon, Šumperk Hospital, Šumperk, Czech Republic

Dr Radek Dolezel, General and Oncology Surgeon, Charles University and Military University Hospital, Prague, Czech Republic

Tomasz Banasiewicz, Head of Department of General, Endocrine Surgery and Gastrointestinal Oncology, Poznan University of Medical Sciences, Poznań, Poland

Dr Örs Pécsi, Trauma and Orthopaedic Surgeon, Erzsébet Kórház, Budapest, Hungary

Prof Maciej Wilczak, Director, Department of Mother's and Child's Health, Gynecology and Obstetrics University Hospital, Poznan University of Medical Sciences, Poznań, Poland

Successful outcomes for patients following surgery are determined by post-surgical incision care including dressing selection and protocol. All clinicians involved in the care of surgical incision wounds should focus on reducing the risk of infection and associated complications (Sandy-Hodgetts et al, 2017; 2018; Morgan-Jones et al, 2019). This consensus meeting was held virtually in January 2022 to examine post-surgical care and dressing selection for surgical incisions closed with primary intention among surgeons working in Poland, Hungary, and the Czech Republic.

The panel follows on from an international consensus panel on the same topic held in July 2019 (Morgan-Jones et al, 2019). There has also been an Asia-Pacific consensus panel (Morgan-Jones et al, 2021a) and a Northern European consensus panel (Morgan-Jones et al, 2021b). The consensus panels have differed in region but have had the same following aims and objectives:

- To clarify global views on incision care and dressing selection in surgical wounds
- To discuss key areas and reach consensus on recommendations
- To discuss findings raised in the previous international reports and agree on the properties of the 'ideal' dressing in managing post-surgical incision wounds.

Importance of dressing selection in post-surgical incision wounds

It is well recognised that dressing selection plays a key role in post-surgical incision care (World Union of Wound Healing Societies [WUWHS], 2016). Post-operative wounds are susceptible to infection and associated complications, and advanced wound dressings play a vital role

Box 1. Surgical wound complication (Sandy-Hodgetts et al, 2020)

The term 'surgical wound complication' is an umbrella term that encompasses more specific diagnoses, such as surgical site infection (SSI), surgical wound dehiscence (SWD), hypergranulation, periwound maceration, scarring and medical adhesive-related skin injury (MARS).

in protecting the wound during the healing process and in preventing surgical wound complications (SWCs [Box 1]; WUWHS, 2016).

It is important to note that surgical site infection (SSI) is only one type of post-surgical complication: not all complications are related to infection (Sandy-Hodgetts et al, 2020). However, SSIs are among the most common SWC and healthcare-associated infections (HAIs) globally (ECDC, 2016). The burden of SSIs in the EU/EEA was estimated at over half a million cases annually, based on data from the European Centre for Disease Prevention and Control (ECDC, 2013). Across Europe, the overall percentage of SSIs varies from 0.5% to 9.0% depending on the type of surgical procedure – e.g. abdominoplasty in people with obesity has an infection rate of over 30%, and complicated limb traumas requiring surgery have an infection rate of up to 50% (ECDC, 2018).

Currently, SSI prevalence is believed to be underestimated, particularly as hospital infection control programmes do not always include a standardised methodology for post-discharge surveillance (PDS), so the true rate of SSI is likely underreported (WUWHS, 2018). SSI prevalence from the post-acute and home care setting is also lacking. However, good relationships between surgeons and rehabilitation facilities,

doctors and physiotherapists can help to support SSI surveillance.

SSIs are associated with longer post-operative hospital stays and may necessitate additional surgical procedures and intensive care, resulting in higher cost and higher attributable morbidity and mortality (Cassini et al, 2016). As a result, the patient should be closely monitored for any signs of local or systemic infection, and treatment plans amended accordingly.

To begin, the team of surgeons reflected on their practice and discussed dressing selection and local protocols in their care setting following surgery. It was agreed that SWCs can be prevented by choosing the right dressing for the right patient, and because there is a certain amount of control over who carries out dressing application and removal. Post-surgical dressing selection is guided by the risk of SWCs, which is dependent on patient factors and surgery type (i.e. general, orthopaedic and trauma).

Following surgery, where there is a very low risk of SWCs, the surgeons discussed the use of a sterile wound dressing when covering the closed incision that:

- Prevents wound contamination
- Maintains a moist wound environment
- Minimises risk of skin damage (e.g. blistering)
- Does not disturb patient mobilisation
- Stays in place for as long as possible, until sutures or staples are removed.

For moderate risk cases following surgery where a longer post-operative hospital stay is required, a dedicated wound dressing that absorbs and

retains large volumes of fluid and exudate, allows visibility of the skin and helps reduce the risk of SSIs was proposed, as it can reduce dressing change frequency and dressing-related costs and enable surgeons to observe the surrounding area.

For surgical incisions that are at high risk of SWCs (e.g. a septic or severely contaminated wound), it was agreed that primary delayed suture and/or negative pressure wound therapy (NPWT), or the 'French Fry' vacuum assisted closure (VAC) technique (Box 2) may be beneficial in reducing exposure to the environment and risk of infection.

Box 2. The 'French Fry' VAC technique (Chopra et al, 2016)

A hybridisation of the traditional VAC therapy whereby the incision is first closed in an interrupted partially open manner.

Leaving the dressing in place until patient discharge can prevent wound disturbance and therefore facilitate wound healing (Berg et al, 2019), as well as prevent waste of resources and inefficient use of dressings. Optimising the patient prior to surgery and taking steps during surgery and post-surgery can reduce individual risk of complication (Table 1).

For example, patients receiving planned, elective surgery can be assessed and prepared more accurately than patients requiring emergency surgery. This can include patients showering/bathing on the day of surgery, using

Table 1. Factors to optimise at the preoperative, intraoperative and postoperative stages (WHO, 2016; WUWHS, 2018; Morgan-Jones et al, 2021)

Preoperative optimisation	Intraoperative optimisation	Postoperative optimisation
Assessment and management/optimisation of comorbidities (e.g. obesity, malnutrition, diabetes mellitus, chronic obstructive pulmonary disease, anaemia, cardiovascular disease, smoking and drug misuse)	Maintenance of normothermia (i.e. avoidance of hypothermia, unless otherwise indicated)	Undisturbed wound healing for at least 48 hours unless there are signs and symptoms indicating earlier inspection is warranted; rapid mobilisation after surgery, especially for older individuals; prevention of a catabolic metabolism
Screening for Methicillin-resistant <i>Staphylococcus aureus</i> and <i>vancomycin resistant enterococci</i>	Covering of the incision(s) with a dry absorbent sterile dressing under sterile conditions	
Showering or bathing on the day of surgery using a plain or antimicrobial soap/cleanser	Cleaning and protecting the incision with a dressing without contaminating the wound area	
Use of clippers (rather than a razor) for hair removal on the day prior to the procedure	Maintaining a sterile environment	
Adequate administration of prophylactic antibiotics		

Box 3. Dressing wear time among the group

- Until stitches are removed
- For as long as possible
- 48 hours
- 2–3 days
- When the dressing is saturated/leaking
- When the dressing is full of bloody discharge.

Box 4. Concept of undisturbed wound healing

Using a dressing with an increased wear time and keeping the dressing *in situ* to allow the migration of new cells and the wound to progress towards healing.

a plain or antimicrobial soap/cleanser, and using clippers (rather than a razor) for hair removal prior to the procedure.

Dressing wear time

Many surgeons recommend keeping dressings in place for 7 days post-surgery, although this varies according to local protocol (Brindle and Farmer, 2019). Dressing wear time among the group varied (Box 3); however, they all agreed that the wound status, surgery type and patient cooperation levels can influence dressing wear time.

The group agreed that many dressing change protocols can be dependent on routine habit and a 'ritualistic' approach, which has been recognised as a wider issue in wound care (Berg et al, 2019). Hence, a change in mindset is required when approaching incision care that considers the concept of undisturbed wound healing (UWH; Box 4).

UWH requires increased consideration in suitable surgical wounds, particularly in terms of reducing the risk of contamination (Morgan-Jones et al, 2019). The potential benefits of UWH depend on the individual patient and their circumstances; however, in appropriate patients, longer wear time can result in a range of benefits such as (Brindle and Farmer, 2019):

- Optimised healing if the wound remains undisturbed and is on a healing trajectory
- Reduced risk of contamination, potential infection and MARSIs
- Potential cost savings and clinical time.

It was agreed that dressing changes should only be carried out if there is a clinically relevant reason to do so (i.e. the dressing is saturated/leaking; there is excessive bleeding or suspected local/systemic infection; movement is restricted; or the wound is painful or itchy). Other indicators of a necessary or preferred dressing change include potential dehiscence or wound edge deterioration and loss of adherence of the dressing.

Properties of the 'ideal' post-surgical dressing

The purpose of a wound dressing for post-surgical incisions is to absorb and retain any leakage, provide ideal conditions for healing and protect the area until the wound is healed. The first international consensus reported six key requirements of an 'ideal' dressing in managing post-surgical incision wounds (Morgan-Jones et al, 2019). The Asia-Pacific and Northern European panels included additional requirements that

highlighted the importance of patient comfort and usage (Morgan-Jones et al, 2021a; 2021b).

The group of surgeons from Eastern Europe built on the work of the preceding consensus groups to determine the requirement of an ideal dressing for post-surgical incision care.

- Flexible (not impede the patient's movement), providing elasticity to avoid pulling the skin or blistering (e.g. particularly over joints)
- Well-fixed to the skin on application once the skin is dry after being disinfected and remains adhered if there is sweating (more issue of abdomen)
- Absorbent of wound exudate (retain/lock in fluid; no exudate leakage should occur from the dressing to the periwound skin)
- Protective of the surrounding skin to reduce the risk of blistering or irritation and provide patient comfort, with minimal discomfort or pain during dressing removal
- Waterproof to provide a good seal/barrier function and enable the patient to shower
- Eliminate dead space between the wound bed and wound dressing where necessary to avoid exudate pooling
- Easy to use and remove by patients and all care staff to ensure consistent care
- Transparent dressing borders to allow for observation of the surrounding skin.

Where required by the wound and individual's circumstances, further specialist dressings may be required – e.g. using closed incision negative pressure wound therapy (ciNPWT) in wounds where heavy exudate/leakage may be an issue.

In addition, ciNPWT should be considered in cases where a high risk of SWC is suspected as a preventive measure (Norman et al, 2020). In the future, smart dressings that can monitor the wound without having to remove the dressing, or that contain smart materials such as stimuli-responsive materials and self-healing materials would be beneficial.

Conclusion

Post-incisional care can vary according to region based on healthcare systems. The group of surgeons working in Eastern Europe agreed that incision care should focus on reducing the risk of infection and associated complications, and that care should be optimised prior to surgery where possible.

It was also agreed that selecting 'the right dressing for the right patient' is essential in surgical incision wounds and that dressings should be left for as long as possible as the principles of UWH are important and necessary

for wound healing to progress.

Dressing selection should be carried out according to local protocol, with special consideration given to the wound status, surgery type and individual circumstances, such as patient cooperation levels.

WINT

References

- Berg L, Martinez JLL, Serena TE (2019) Meeting report: promoting wound healing by optimising dressing change frequency. *Wounds International* 10(3): 44-51
- Brindle T, Farmer P (2019) Undisturbed wound healing: a narrative review of literature and clinical considerations. *Wounds International* 10(2): 40-8
- Cassini A, Plachouras D, Eckmanns T et al (2016) Burden of Six Healthcare-Associated Infections on European Population Health: Estimating Incidence-Based Disability-Adjusted Life Years through a Population Prevalence-Based Modelling Study. *PLoS Med* 13(10): e1002150
- Chopra K, Tadisina KK, Singh DP (2016) The 'French Fry' VAC technique: hybridisation of traditional open wound NPWT with closed incision NPWT. *Int Wound J* 13(2): 216-9
- European Centre for Disease Prevention and Control (2013) *Observed prevalence of HAIs with 95% confidence intervals and predicted prevalence of HAI in acute care hospitals based on patient case-mix and hospital characteristics, by country, ECDC PPS 2011-2012*. Available at: <https://www.ecdc.europa.eu/en/healthcare-associated-infections/acute-care-hospitals/database/prevalence-hais-andantimicrobial-use/observed>
- European Centre for Disease Prevention and Control (2018) *Annual epidemiological report for 2016: Surgical site infections*. Available at: https://www.ecdc.europa.eu/sites/portal/files/documents/AER_for_2016-SSI.pdf
- Morgan-Jones R et al (2019) *Incision care and dressing selection in surgical wounds: Findings from an international meeting of surgeons*. Wounds International, London
- Morgan-Jones R et al (2021a) *Incision care and dressing selection in surgical wounds: Findings from an international meeting in the APAC region*. Wounds International, London
- Morgan-Jones R et al (2021b) *Incision care and dressing selection in surgical incisions wounds: Findings from an international meeting of surgeons from Northern Europe*. Wounds International, London
- Norman G, Goh EL, Dumville JC et al (2020) Negative pressure wound therapy for surgical wounds healing by primary closure. *Cochrane Database Syst Rev* 6: CD009261
- Sandy-Hodgetts K, Ousey K, Howse E (2017) Ten top tips: Management of surgical wound dehiscence. *Wounds International* 8(1): 11-5
- Sandy-Hodgetts K et al (2018) Surgical wound dehiscence: a conceptual framework for patient management. *J Wound Care* 27(3): 119-26
- Sandy-Hodgetts K et al (2020) *International best practice recommendations for the early identification and prevention of surgical wound complications*. Wounds International. Available at: www.woundsinternational.com
- World Health Organization (2016) *Global guidelines for the prevention of surgical site infection*. WHO, Geneva, Switzerland
- World Union of Wound Healing Societies (2016) *Closed surgical incision management: Understanding the role of NPWT*. Wounds International, London. Available at: www.woundsinternational.com
- World Union of Wound Healing Societies (2018) *Surgical wound dehiscence: Improving prevention and outcomes*. Wounds International, London. Available at: www.woundsinternational.com

