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A survey of patients with surgical wounds healing by secondary intention; an assessment of prevalence, aetiology, duration and management

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ABSTRACT

Background: Surgical wounds healing by secondary intention (SWHSI) are often difficult and costly to treat. There is a dearth of clinical and research information regarding SWHSI. The aim of this survey was to estimate the prevalence of SWHSI and to characterise the aetiology, duration and management of these wounds.

Methods: Anonymised data were collected from patients with SWHSI receiving treatment in primary, secondary and community settings. Over a two weeks period, data were collected on the patients, their SWHSI, clinical and treatment details.

Results: Data were collected from 187 patients with a median age of 58.0 (95% CI = 55 to 61) years. The prevalence of SWHSI was 0.41 (95% CI = 0.035 to 0.047) per 1000 population. More patients with SWHSI were being treated in community (109/187, 58.3%) than in secondary (56/187, 29.9%) care settings. Most patients (164/187, 87.7%) had one SWHSI and the median duration of wounds was 28.0 (95% CI = 21 to 35) days. The most common surgical specialities associated with SWHSI were colorectal (80/187, 42.8%), plastics (24/187, 12.8%) and vascular (22/187, 11.8%) surgery. Nearly half of SWHSI were planned to heal by secondary intention (90/187, 48.1%) and 77/187 (41.2%) were wounds that had dehisced. Dressings were the most common single treatment for SWHSI, received by 169/181 (93.4%) patients. Eleven (6.1%) patients were receiving negative pressure wound therapy.

Conclusions: This survey provides a previously unknown insight into the occurrence, duration, treatment and types of surgery that lead to SWHSI. This information will be of value to patients, health care providers and researchers.

1. Introduction

More than six million surgical operations are performed annually in the United Kingdom (UK) National Health Service (NHS), with the vast majority involving an incision [1]. Whilst most incised surgical wounds will heal by primary intention, some will heal by secondary intention, usually because the wound has intentionally been left open or has dehisced following primary closure [2,3].

In the UK, surgical wounds healing by secondary intention (SWHSI) are thought to be common and have been estimated to comprise between 26 and 28% of all prevalent surgical wounds [4,5]. They are potentially difficult and costly to treat as they may remain open for an extended time period and are prone to infection, require on-going treatment [6] and may result in prolonged hospitalisation, re-admission and further surgeries.

Despite the potentially large impact of SWHSI, there is a paucity of information regarding the characteristics of patients who have SWHSI, the duration of SWHSI, their surgical aetiology, treatment and management. This lack of information limits our understanding of the clinical and service requirements of this patient population [7,8] and also makes programmes of research difficult to prioritise, plan and implement.

We therefore conducted a cross-sectional survey in order to provide this information about SWHSI, which aimed to determine:

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i) The characteristics of patients with SWHSI;
ii) The number and prevalence of patients with SWHSI and the setting in which their wound care was delivered;
iii) The proportion of SWHSI, which were intentional or resulted from dehiscence of a wound closed primarily;
iv) The surgery that preceded the SWHSI (e.g. elective vs. emergency, surgical specialty and surgical procedure) and
v) The duration of SWHSI and the types of treatments patients received for SWHSI.

2. Methods

This cross-sectional survey was conducted during a two-week period in community, primary and secondary care settings within Hull and East Riding of Yorkshire, UK.

2.1. Inclusion and exclusion criteria

Data were collected on patients aged 18 years and older, with at least one SWHSI being treated within Hull and East Riding. A SWHSI was defined as any wound resulting from a surgical incision, which was healing by secondary intention (a fully or partially open surgical wound healing from the bottom upwards) and where the fully or partially open nature of the wound necessitates its treatment.

This definition included patients with:

i) wounds that had been left open due to contamination, swelling, infection or insufficient tissue to close the wound;
ii) wounds that had been closed following surgery, but had partially or completely dehisced and
iii) open wounds resulting from surgical debridement, even if these were non-surgical in origin prior to surgery (e.g. surgical debridement of a grade III/IV pressure ulcer).

Patients with the following wounds were excluded from this survey:

i) closed wounds healing by primary intention or with delayed primary closure;
ii) SWHSI which were surgically closed;
iii) stoma;
iii) split skin donor graft sites, nail avulsions or sockets resulting from dental extractions;
iv) surgery which did not involve an incision on the skin surface (e.g. tonsillectomy, dilation and curettage);
v) wounds resulting from operations involving the eyeball (i.e. cataract surgery and removal of the eyeball) and
vi) wounds resulting from minor dermatology, plastics or diagnostic procedures.

2.2. Data collection

Data collection forms were distributed to health care providers treating patients with SWHSI and working within community, primary and secondary care settings. During the survey period, health care providers completed one form for each eligible patient on their caseload. Only those health care providers who were treating patients with SWHSI were requested to respond. Postage-paid pre-addressed envelopes were provided for the return of forms.

Patients could be at any stage of their wound treatment and be treated in any primary, secondary or community care setting (e.g. in-patient hospital stay, out-patient clinic, community treatment centre, home visit, General Practitioner (GP) surgery) within the survey geographical area. Data collection forms included 18 questions regarding the job title of the health care provider, the patient and clinical details of their wound. Forms were designed and piloted in collaboration with Vascular and Tissue Viability Nurses located within Hull.

If a patient had more than one SWHSI, data were collected on the wound the health care provider considered to be the largest. Wound duration was defined as the length of time (in days) which had elapsed since: i) the surgical intervention which resulted in the planned SWHSI, ii) the closed wound had spontaneously either fully or partially dehisced, or iii) the primarily closed surgical wound had been re-opened and left to heal by secondary intention. The time to healing of wounds was not able to be assessed due to the cross-sectional nature of this survey.

All data were collected from routine data sources, i.e. patient's case notes or electronic sources such as SystmOne: both sources contain information about patient clinical details and treatments received. Data were collected away from the patient and no wounds were inspected for the purpose of the survey. To ensure patient confidentiality, no patient identifiable data were collected and the patients' current health care provider recorded all data.

To ensure the highest possible response rate for the return of forms from health care providers, a number of awareness raising methods and follow-up systems were employed.

Key senior nursing personnel were appointed to coordinate the study within each Trust and to inform relevant health care professionals of the survey. The Local Research Network publicised the survey via newsletters, flyers and verbally at relevant meetings. The survey was advertised at local Trust Committee meetings, nurse meetings in the area (senior nurse days, Tissue Viability group meetings, District Nursing team meetings, Team Leader meetings, Link nurse meetings) and flyers were mailed out to practice nurses at GP surgeries.

Once the survey was underway, follow-up contact included postal and email reminders to relevant staff. Additionally, a vascular research nurse (AO) made reminder telephone calls to treatment rooms and District Nursing Offices to remind them to check for eligible patients. Visits were also made to each GP practice within the area. The research nurse was also available to complete data capture forms for those unable to do so (due to heavy workloads).

2.3. Research approvals

The Research Ethics Committee (REC) advised that this survey did not require review as it was considered to be "Research limited to secondary use of information previously collected in the course of normal care (without an intention to use it for research at the time of collection), provided that the patients or service users are not identifiable to the research team carrying out the research" (National Research Ethics Service, 2011, p4 [9]). Approval for the survey was obtained from the appropriate NHS trusts and the Governance Committee of the coordinating centres Higher Educational Institution.

2.4. Data analysis

Duplicate cases were identified using patients age and ethnicity, and wound characteristics. Forms identified as duplicates were removed from the analysed dataset.

Data analyses were performed using IBM SPSS Statistics v21 (International Business Machines Corporation, Armonk, New York, USA). Categorical variables were summarised as a frequency (n) and proportion (%). Continuous variables were summarised

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