Cochrane Library

Cochrane Database of Systematic Reviews

Dressings for the prevention of surgical site infection (Review)

Dumville JC, Gray TA, Walter CJ, Sharp CA, Page T, Macefield R, Blencowe N, Milne TKG, Reeves BC, Blazeby J

Dumville JC, Gray TA, Walter CJ, Sharp CA, Page T, Macefield R, Blencowe N, Milne TKG, Reeves BC, Blazeby J.
Dressings for the prevention of surgical site infection.
Cochrane Database of Systematic Reviews 2016, Issue 12. Art. No.: CD003091.
DOI: 10.1002/14651858.CD003091.pub4.

www.cochranelibrary.com

Copyright © 2016 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

WILEY

[Intervention Review]

Dressings for the prevention of surgical site infection

Jo C Dumville[1], Trish A Gray[1], Catherine J Walter[2], Catherine A Sharp[3], Tamara Page[4,5], Rhiannon Macefield[6], Natalie Blencowe[6], Thomas KG Milne[6], Barnaby C Reeves[7], Jane Blazeby[8]

[1]Division of Nursing, Midwifery & Social Work, School of Health Sciences, Faculty of Biology, Medicine & Health, University of Manchester, Manchester, UK. [2]Colorectal Surgery, Gloucestershire NHS Foundation Trust, Cheltenham, UK. [3]The Wound Centre, Sydney, Australia. [4]Royal Adelaide Hospital, Adelaide, Australia. [5]University of Adelaide, Adelaide, Australia. [6]University of Bristol, School of Social and Community Medicine, University of Bristol, Bristol, UK. [7]School of Clinical Sciences, University of Bristol, Bristol, UK. [8]Bristol Centre for Surgical Research, School of Social & Community Medicine, University of Bristol, Bristol, UK

Contact: Jo C Dumville, Division of Nursing, Midwifery & Social Work, School of Health Sciences, Faculty of Biology, Medicine & Health, University of Manchester, Manchester, M13 9PL, UK. jo.dumville@manchester.ac.uk.

Editorial group: Cochrane Wounds Group.
Publication status and date: New search for studies and content updated (no change to conclusions), published in Issue 12, 2016.

Citation: Dumville JC, Gray TA, Walter CJ, Sharp CA, Page T, Macefield R, Blencowe N, Milne TKG, Reeves BC, Blazeby J. Dressings for the prevention of surgical site infection. *Cochrane Database of Systematic Reviews* 2016, Issue 12. Art. No.: CD003091. DOI: 10.1002/14651858.CD003091.pub4.

Copyright © 2016 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Surgical wounds (incisions) heal by primary intention when the wound edges are brought together and secured, often with sutures, staples, or clips. Wound dressings applied after wound closure may provide physical support, protection and absorb exudate. There are many different types of wound dressings available and wounds can also be left uncovered (exposed). Surgical site infection (SSI) is a common complication of wounds and this may be associated with using (or not using) dressings, or different types of dressing.

Objectives

To assess the effects of wound dressings compared with no wound dressings, and the effects of alternative wound dressings, in preventing SSIs in surgical wounds healing by primary intention.

Search methods

We searched the following databases: the Cochrane Wounds Specialised Register (searched 19 September 2016); the Cochrane Central Register of Controlled Trials (CENTRAL; the Cochrane Library 2016, Issue 8); Ovid MEDLINE (including In-Process & Other Non-Indexed Citations, MEDLINE Daily and Epub Ahead of Print; 1946 to 19 September 2016); Ovid Embase (1974 to 19 September 2016); EBSCO CINAHL Plus (1937 to 19 September 2016).

There were no restrictions based on language, date of publication or study setting.

Selection criteria

Randomised controlled trials (RCTs) comparing wound dressings with wound exposure (no dressing) or alternative wound dressings for the postoperative management of surgical wounds healing by primary intention.

Data collection and analysis

Two review authors performed study selection, 'Risk of bias' assessment and data extraction independently.

Copyright © 2016 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

Main results

We included 29 trials (5718 participants). All studies except one were at an unclear or high risk of bias. Studies were small, reported low numbers of SSI events and were often not clearly reported. There were 16 trials that included people with wounds resulting from surgical procedures with a 'clean' classification, five trials that included people undergoing what was considered 'clean/contaminated' surgery, with the remaining studies including people undergoing a variety of surgical procedures with different contamination classifications. Four trials compared wound dressings with no wound dressing (wound exposure); the remaining 25 studies compared alternative dressing types, with the majority comparing a basic wound contact dressing with film dressings, silver dressings or hydrocolloid dressings. The review contains 11 comparisons in total.

Primary outcome: SSI

It is uncertain whether wound exposure or any dressing reduces or increases the risk of SSI compared with alternative options investigated: we assessed the certainty of evidence as very low for most comparisons (and low for others), with downgrading (according to GRADE criteria) largely due to risk of bias and imprecision. We summarise the results of comparisons with meta-analysed data below:

- film dressings compared with basic wound contact dressings following clean surgery (RR 1.34, 95% CI 0.70 to 2.55), *very low certainty evidence downgraded once for risk of bias and twice for imprecision.*

- hydrocolloid dressings compared with basic wound contact dressings following clean surgery (RR 0.91, 95% CI 0.30 to 2.78), *very low certainty evidence downgraded once for risk of bias and twice for imprecision.*

- hydrocolloid dressings compared with basic wound contact dressings following potentially contaminated surgery (RR 0.57, 95% CI 0.22 to 1.51), *very low certainty evidence downgraded twice for risk of bias and twice for imprecision*.

- silver-containing dressings compared with basic wound contact dressings following clean surgery (RR 1.11, 95% CI 0.47 to 2.62), *very low certainty evidence downgraded once for risk of bias and twice for imprecision.*

- silver-containing dressings compared with basic wound contact dressings following potentially contaminated surgery (RR 0.83, 95% CI 0.51 to 1.37), *very low certainty evidence downgraded twice for risk of bias and twice for imprecision*.

Secondary outcomes

There was limited and low or very low certainty evidence on secondary outcomes such as scarring, acceptability of dressing and ease of removal, and uncertainty whether wound dressings influenced these outcomes.

Authors' conclusions

It is uncertain whether covering surgical wounds healing by primary intention with wound dressings reduces the risk of SSI, or whether any particular wound dressing is more effective than others in reducing the risk of SSI, improving scarring, reducing pain, improving acceptability to patients, or is easier to remove. Most studies in this review were small and at a high or unclear risk of bias. Based on the current evidence, decision makers may wish to base decisions about how to dress a wound following surgery on dressing costs as well as patient preference.

PLAIN LANGUAGE SUMMARY

Dressings for the prevention of surgical site infection

Review question

This review aimed to assess whether use of different wound dressings (or leaving a wound exposed without a dressing) has an impact on the number of people who get wound infections following surgery where the wound is closed with stitches, staples, clips or glue. We also investigated whether different dressings resulted in less pain, less scarring or were more acceptable to patients and health professionals.

Background

Millions of surgical procedures are conducted globally each year. The majority of procedures result in wounds in which the edges are brought together to heal using stitches, staples, clips or glue; this is called 'healing by primary intention'. Afterwards, wounds are often covered with a dressing that acts as a barrier between it and the outside environment. One possible advantage of a dressing may be to protect the wound from infection (surgical site infection). Many different dressing types are available for use on surgical wounds. However, it is not clear whether one type of dressing is better than any other in preventing surgical site infection, or, indeed, whether it is better not to use a dressing at all.

Study characteristics

Copyright © 2016 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

We conducted a review of all available, relevant evidence about the impact of dressings on the prevention of surgical site infections in surgical wounds healing by primary intention. This review examined data from 29 randomised controlled trials (which provide the most reliable evidence). These investigated the use of dressings in surgery that had a low risk of surgical site infection (clean surgery) and surgery with a higher risk (potentially contaminated surgery).

Key results

We found no clear evidence to suggest that one dressing type was better than any other at reducing the risk of surgical site infection, nor that covering wounds with any dressing at all reduced the risk of surgical site infection. Additionally, there was no clear evidence that any dressing type improves scarring, pain control, patient acceptability or ease of removal. Currently decision makers may opt to make decisions about whether and how to dress a wound based on patient and clinician preferences and dressing costs.

Certainty of the evidence

It is important to note that many trials in this review were small and the evidence was of low or very low certainty meaning that current information is uncertain.

Assessed as up to date September 2016.

Copyright © 2016 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.