Absorbable versus nonabsorbable sutures in the management of traumatic lacerations and surgical wounds: a meta-analysis

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CRD summary
The authors concluded that there appears to be no differences between absorbable and nonabsorbable sutures, but the evidence was limited and further larger good-quality studies are required. This was a well-conducted and clearly reported review, and the authors’ conclusions are likely to be reliable.

Authors’ objectives
To compare the effects of absorbable and nonabsorbable sutures in the management of traumatic lacerations and surgical wounds.

Searching
MEDLINE (1966 to July 2004), EMBASE (1988 to July 2004) and the Cochrane Wounds Group Specialised Register were searched using the reported search terms. In addition, biographical databases and reference lists of selected studies were screened. There were no restrictions on language or publication status.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion in the review.

Specific interventions included in the review
Studies that compared absorbable versus nonabsorbable sutures were eligible for inclusion. Studies could be set in the emergency department, out-patient clinic or operating room. Studies that only evaluated suturing in deep tissues were excluded. The included studies compared various absorbable materials (plain catgut, polyglycolic acid, polydioxone, polyglyactin 910 and polyglyconate) with various nonabsorbable suture materials (nylon, silk, polyethylene and prolene/polypropylene).

Participants included in the review
Studies of patients of any age undergoing suturing of traumatic lacerations and surgical wounds at any site were eligible for inclusion. Most of the included studies were in adults; other studies included only children, or both adults and children. Sutured wounds were located in various locations, including the head and neck, trunk, limbs and multiple sites.

Outcomes assessed in the review
Studies that assessed any of the following outcomes were eligible for inclusion; cosmetic outcome, patient satisfaction, pain during the procedure, time for procedure, ease of procedure and complications. Studies that only assessed cosmetic outcomes had to use a validated cosmetic score and use blinded outcome assessment. Only data from wounds described by the authors as definitely infected were included. The included studies assessed cosmetic outcomes using the Wound Evaluation Score (WES) and the Cosmetic Visual Analog Score (CVAS) measures. Methods used to measure other outcomes were reported in a table.

How were decisions on the relevance of primary studies made?
One reviewer searched biographical databases and the reference lists of selected studies. Two reviewers independently selected the studies and resolved any disagreements on inclusions through recourse to a third author.

Assessment of study quality
Two reviewers independently assessed the validity of English language studies using the Jadad scale, which considers randomisation, blinding and handling of withdrawals. Studies scoring 3 of more out of the maximum 5 points were considered to be high quality. In addition, allocation concealment and reporting of funding sources were assessed. Any disagreements were resolved through recourse to a third author. A single reviewer assessed the validity of a non-English
Data extraction
One reviewer extracted the data from English language studies using a standardised form, which a second reviewer checked. A single reviewer extracted the data from a non-English language study. Odds ratios (ORs) with 95% confidence intervals (CI) were calculated for dichotomous data, and weighted mean differences (WMDs) with 95% CIs for continuous data.

Methods of synthesis
How were the studies combined?
The studies were grouped by outcome and combined in a narrative. The studies were pooled using a random-effects model for both ORs and WMDs. The authors stated that there were insufficient data to examine the effects of suture type, site of wound and age of patient, and too few studies for a funnel plot to be useful in assessing the potential for publication bias.

How were differences between studies investigated?
Statistical heterogeneity was assessed using the chi-squared statistic. Differences between the studies were discussed in the text.

Results of the review
Seven RCTs (n=702) were included. One study included a third group treated with a tissue adhesive (n=59), but these patients were not included in the analyses.

The studies were generally of poor methodological quality: Jadad scores ranged from 1 to 3 (2 studies scored 3 points). None of the studies were double-blinded and none reported clear allocation concealment. Two reported funding sources.

There were no significant differences between absorbable and nonabsorbable sutures for any of the following outcomes: short-term and long-term cosmesis when using the WES (1 study, n=86); long-term cosmesis when using the CVAS (2 studies, n=181; significant heterogeneity was found); patient satisfaction (1 study, n=86); scar hypertrophy (3 studies, n=303); infection (6 studies, n=616); wound dehiscence (1 study, n=95); redness at wound site (3 studies, n=241); and swelling or oedema over suture line (2 studies, n=148).

Subgroup analyses of traumatic versus non-traumatic laceration were also carried out for infection.

The authors suggested that the significant heterogeneity found for long-term cosmesis outcomes measured using the CVAS may be due to the differing times of follow-up (4 to 5 months versus 9 to 12 months).

Cost information
The authors reported on one study that was not included in the review. It found that absorbable sutures cost about $30 less than nonabsorbable sutures (based on 1993 Canadian health care costs).

Authors’ conclusions
There appears to be no differences between absorbable and nonabsorbable sutures, but the evidence was limited and further larger good-quality studies are required.

CRD commentary
The review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched and attempts were made to minimise language bias. No attempts were made to minimise publication bias; the authors adequately justified their decision not to assess publication bias. Validity was assessed using specified criteria and the results of this assessment reported. Methods were used to minimise reviewer error and bias in the study selection, validity assessment and data extraction processes. In view of the differences between the studies, the narrative synthesis was appropriate and study quality was taken into account when
considering the evidence. This was a well-conducted and clearly reported review, and the authors’ conclusions are likely to be reliable.

**Implications of the review for practice and research**

Practice: The authors did not state any implications for practice.

Research: The authors stated the need for a large good-quality study to compare the effectiveness of absorbable and nonabsorbable sutures for repair of traumatic lacerations and surgical wounds.

**Funding**

Canadian Institute of Health Research (salary award).

**Bibliographic details**


**PubMedID**

17505281

**DOI**

10.1097/01.pec.0000270167.70615.5a

**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

Absorbable Implants; Adult; Child; Cicatrix /etiology /prevention & control; Cicatrix, Hypertrophic /etiology /prevention & control; Device Removal; Esthetics; Humans; Lacerations /therapy; Randomized Controlled Trials as Topic; Stress, Psychological /etiology; Surgical Wound Dehiscence /prevention & control; Surgical Wound Infection /prevention & control; Suture Techniques; Sutures /adverse effects /economics; Treatment Outcome; Wounds and Injuries /therapy

**AccessionNumber**

12007001972

**Date bibliographic record published**

01/04/2008

**Date abstract record published**

03/11/2008

**Record Status**

This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.