

Evaluation Of Prophylactic Negative Pressure Wound Therapy Versus Standard Surgical Dressings On Wound Outcomes In Posterior Spinal Surgery Patients: A Systematic Review And Meta-Analysis

Orthopaedics / Spine / Miscellaneous

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Background

Negative pressure wound therapy has frequently been used in a variety of surgical specialities, yet its effectiveness as a prophylactic therapy in spinal surgery remains unclear. A comprehensive systematic review and meta-analysis was performed, incorporating the most recent evidence, addressing this paucity in the literature.

Objectives

Previous reviews have been powered insufficiently to establish a strong relationship because of limited sample sizes. The meta-analyses have also been flawed, because they incorporated both anterior and posterior wounds, which heal differently. In addition to this, their data included both infection treatment and prophylaxis, increasing its heterogeneity.

To address this issue, this comprehensive review incorporates the most recent evidence, including only studies comparing negative pressure dressings with standard dressings, as a prophylactic therapy, for posterior spinal incisions only.

Our outcomes of interest were surgical site infection, wound dehiscence and return to theatre for incisional reoperation.

Study Design & Methods

A systematic search of the literature from inception to June 2023 was conducted using the following databases: Ovid Medline, EMBASE, Cochrane Register of Controlled Trials (CENTRAL) and Web of Science. All included studies assessed primary wound closure for posterior spinal surgical incisions. Evidence was quality assessed and outcomes of interest were meta-analysed using odds ratios, comparing negative pressure wound therapy and standard dressing groups.

Results

Seven studies (n = 1319, mean age = 59.9 years, 55.8% male) were included. Patients with negative pressure dressings had a reduced risk of surgical site infection (odds ratio = 0.45, 95% CI 0.29 to 0.72, p < 0.001). Wound dehiscence approached significance favouring negative pressure dressings (odds ratio = 0.53, 95% CI 0.26 to 1.06, p = 0.07). Patients requiring a return to theatre for wound related complications showed no significant difference between groups (odds ratio = 0.66, 95% CI 0.37 to 1.18, p = 0.16).

Conclusions

Negative pressure wound therapy reduces the risk of surgical site infection in posterior spinal surgery patients. Given that surgical site infection in spine surgery is associated with significant morbidity and financial costs, implementation of prophylactic negative pressure wound therapy for this patient demographic may be beneficial.