A Review of Evidence for Negative Pressure Wound Therapy (NPWT) use Post Spinal Surgery

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EXTENDED ABSTRACT

Aims

To systematically search, critically appraise and summarise randomised controlled trials (RCTs) and non-RCTs assessing the effectiveness of negative pressure wound therapy (NPWT) in patients with a surgical spinal wound.

Methods

A systematic review based on search strategies recommended by the Cochrane Back and Wounds Review Groups was undertaken using the Cochrane Library, MEDLINE, EMBASE and CINAHL databases. Any publications between 1950 and 2011 were included. Funding to undertake this systematic review was received from the University of Huddersfield Collaborative Venture Fund and KCI Medical.

Results

Nine retrospective studies[1-9] and five case studies[10-14] of patients with spinal wound complication were included in this systematic review. No RCTs were found. Only one study described more than 50 patients[4]. Generally, a pressure of -100 to -125 mmHg was used in adult patients[1,8,12]. Duration of NPWT in situ ranged from three to 186 days[2,5,6,8,13]. Wound healing was assessed every two to three days and generally completed between seven days and 16 months[1-5,9-14]. NPWT is contraindicated in the presence of active cerebrospinal fluid leak[1], metastatic or neoplastic disease in the wound[9,10], in patients with an allergy to the NPWT dressing[9], and in those with a bleeding diathesis[1].

Discussion

We identified no RCTs discussing the use of NPWT in the management of surgical spinal wounds, and limited low quality evidence demonstrating that NPWT can be used effectively in this type of patient. In an RCT in obese patients undergoing total knee arthroplasty, no difference in the time taken to achieve a dry wound with NPWT as compared with a sterile gauze has been reported[15]. Importantly, that study was terminated early due to the presence of skin blisters associated with the NPWT dressing; an adverse effect which has not been reported in the spine literature. Furthermore, Dorafshar and colleagues[16] concluded that NPWT did not provide superior

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outcomes with regards to wound volume and surface area over wall suction applied to a sealed gauze dressing in patients with acute wounds resulting from trauma, dehiscence or surgery. However, a further study in knee arthroplasty patients found that NPWT was associated with a reduction in post-operative development of seromas and improved healing[17].

Conclusions

The evidence for NPWT use in orthopaedic surgery is ambiguous, and at best low quality in spine patients. Published reports are limited to small retrospective and case studies, with no reports of NPWT being used as a prophylactic treatment in spinal patients. Larger, prospective RCTs of NPWT are needed to support the current evidence that it is effective in treating spinal wound complications. In addition, future studies should investigate the use of NPWT as a prophylactic treatment to promote wound healing and prevent infection, and report data relating to safety and health economics.

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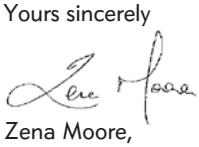

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