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Literature review on negative pressure wound therapy: evidence based practice applying to orthopaedic patients in Queen Mary Hospital

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Introduction

Negative pressure wound therapy (NPWT) is widely used in managing and accelerating wound healing. It is a noninvasive system that creates a localized controlled sub-atmospheric pressure environment which promotes wound healing by delaying primary or secondary intention, preparing the wound bed for closure, reducing oedema, and promoting formation and perfusion of granulation tissue. However, the role of the NPWT in wound management is controversial. By reviewing literatures, there is no strong evidence to prove that the NPWT expedites wound healing. Some literatures have noted that the NPWT increases wound bed vascularity and cell proliferation thus improve the size of wound and wound bed quality. Therefore, it still has been widely used.

Objectives

- 1.To review current literature of efficacy on NPWT
- 2.Identify update trend if possible
- 3.Explore the possibility of applying evidence based practice in orthopaedic patients

Methodology

A electronic data base search of current literatures from 2005 to 2015, using the phase "negative pressure wound therapy and trauma, bed sore or diabetic foot ulcer" through OVID, Medline, PubMed and eKg, in addition to "NPWT and infected wound" through Cochrane systematic review and Google.

There were 7 systematic reviews concluded that there was lack of strong evidence to prove that NPWT in accelerate wound healing is better than using other dressing materials since wound healing process are affected by multiple factors.

300 literatures of NPWT were identified, with 18 literatures related with pressure ulcer, 8 related with diabetic foot ulcers, 5 related with trauma wound were sorted out and reviewed.

49 literatures supported NPWT promoting wound healing.

5 literatures demonstrate NPWT as adjunctive therapy for reduce edema of acute orthopaedics trauma wound.

One recent study on adjustable pressure (-50mmHg to -150mmHg) according to wound type and exudate (Hasan, Teo, & Nather, 2015) and one on using hypertonic saline dressing in combination with NPWT for treating chronic wound with heavy exudate and slough. (Fraccalvieri, Ruka, Morozzo, Scalise, & Salomone, 2015).

Reducing of slough and wound bed appeared cleansed with presence of granulation tissue was noted.

Result

Evidence-based practice is important to improve patients' quality of care to achieve better clinical outcomes. The combination of NPWT with hypertonic saline dressing has been applied to 52 orthopaedic patients in Queen Mary Hospital since early 2015 to December 2016. We have tried using -25mmHg to -50mmHg pressure according to wound types and condition, all wounds noted with a significant improvement. The success of NPWT relies on accurate wound assessment, appropriate application of dressing, ongoing monitoring of wound progress and also patient and staff education as well.