Total Joint Replacement Surgical Site Infections Eliminated by Using Multifunctional Dressing. 900 Cases Report over 4 years

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PROBLEM

Blistering as a result of use of dressings and tapes over and around surgical sites is a common experience that can often be a source of discomfort and possible surgical site infection.

Post operative surgical site infection has become a major issue both in Australia and around the world. Australian national average for Total Joint Replacement surgical site infection rates are approximately 3%. The overall post operative surgical site infection rate in Australia is currently running at approximately 8%. The cost burden to the health care system resulting from these infections is considerable. Additionally these infections have a negative impact on patient health and well being. Responding to actual and potential surgical site infections results in increased cost, as well as risk, resulting from over use of Antibiotic cover. (ACHS Clinical Indicators).

OBJECTIVES

The original motivation for the unit to move away from surgical dressings for Total Joint Replacements 4 years ago was to try and minimize the amount of skin blistering our patients were experiencing from the sheering effect caused by the dressings used at that time.

We were also interested in reducing our Post Operative infection rate so the care team developed a dressing use protocol to be implemented in conjunction with the selected dressing.

METHODS

We evaluated a large number of dressings from different manufacturers and finally settled on a multifunctional dressing that incorporates a film adhesive border that stays in place over the surgical site while reducing the risk for blistering. In the initial evaluations these dressings eliminated blistering, helped maintain a clean suture/staple closure line and appeared to improve wound healing.

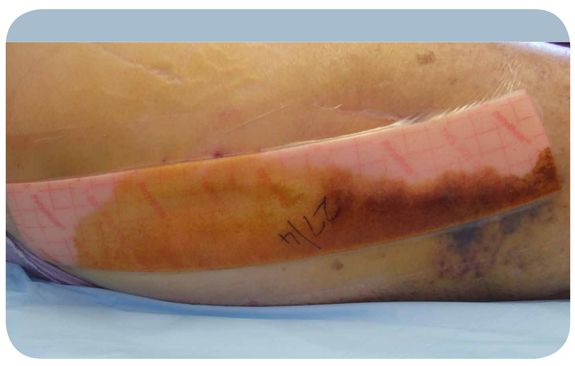
We also implemented a specific dressing change protocol developed based on the functionality of the multifunctional, polymeric membrane dressing* dressing for all Total Joint Replacement surgeries.

The dressing's core ingredients of wound cleansing surfactant, glycerine and absorbing agents maintained a moist wound environment on the surgical incision while maintaining a clean closure line while in situ. The dressing also had considerable absorption capacity so frequent changes as a result of blood and serious fluid from the incision were usually unnecessary in the first 24 hours. This allowed longer wear times from the first application in the operating theatre, where the dressing was applied in an aseptic environment. The refined protocol calls for the initial dressing to be left on the incision until it is approximately 75% saturated with wound fluid and/or blood. Usually the initial dressing is left on the incision site for 24 to 48 hours after the procedure. Skin staples were routinely used as the method of primary closure and were removed on day 10 to 14, depending on surgeon preference.

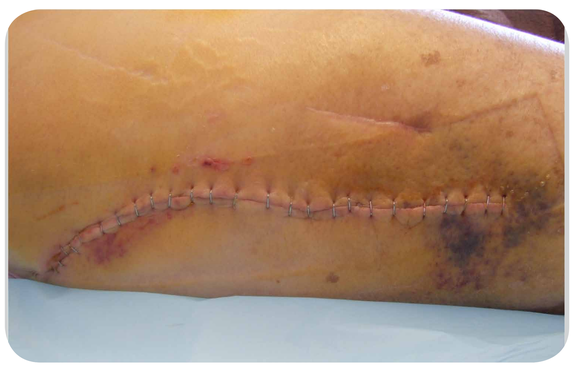
Post operatively, the patients underwent normal Analgesia protocols as set by the department of Anaesthesiology. They also underwent the unit's standard rehabilitation program as set by the Department of Orthopaedics.

During dressing changes it was not necessary to cleanse the wounds with any form of solution or manual procedure and a new dressing was applied immediately after the removal of the dressing that was previously on the incision. Due to the continuous cleansing provided by the multifunctional dressing there is no need for additional cleansing during dressing changes. We have, so far, used this protocol on 900 Total Joint Replacement patients undergoing Total Hip and Total Knee Replacement surgery.

Cases were reviewed for readmission at both 12 and 28 days as per the ACHS (Australian Council of Health Care Standards) Clinical Indicators for the measurement of Post Operative Surgical Site Infection.



Incision covered with dressing prior to initial dressing change



Incision at initial dressing change

RESULTS

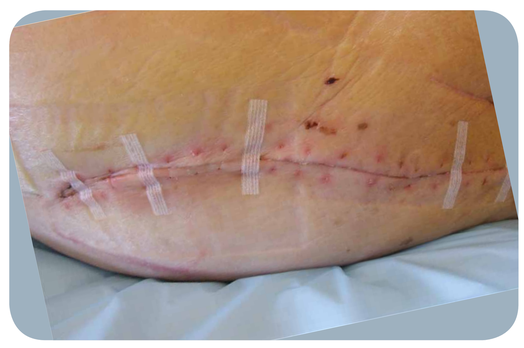
Since changing to the multifunctional polymeric membrane dressings there has been only one mild case of blistering in the 900 joint replacement surgeries reported on here. Previously blistering was common. This was the primary goal of the change to a new dressing and dressing protocol. Yet there were many other unanticipated positive benefits to this new dressing and accompanying protocol.

The unit's post operative wound infection rate dropped to virtually 0%. There were no readmissions at either 12 or 28 days due to post operative Surgical Site Infection. The time before the first dressing change was required increased considerably due to the absorbing ability of the new dressing. This extended time before changing the dressing also meant that the incisions had more time to close before being exposed after the procedure.

The incisions were very clean upon removal of the initial dressing and the skin staples were shining in the light. The traditional dressings that we used previously required the incision to be manually cleansed during the first dressing change after the procedure. The new dressing and protocol was of great benefit to both the patient in terms of comfort and the unit's staff in terms of time management.

Skin staples were able to be removed at day 10-14 due to the speed of healing that occurred using a multifunctional dressing on the surgical wounds. This allowed increased patient flow and higher surgical throughput.

Patients had a noticeable decrease in the amount of bruising visible post-operatively at the initial dressing change, 24-48 hrs after application. The patients also reported increased comfort with the dressing.



Incision on day 10, immediately after staple removal.

CONCLUSION

Multifunctional dressings combined with the accompanying dressing change protocol were found to be exceptional in Total Joint Replacement Surgery at our facility. The incidence of blistering was dramatically reduced so that blistering is no longer considered an issue. The multifunctional dressing and accompanying protocol were a considerable advancement on the traditional surgical dressings and how they were used previously. The multifunctional dressings combined with the dressing change protocol provided superior comfort to the patient and reduced the labour required to care for the incisions post operatively. They also decrease healing time and aid in the reduction of Post Operative Surgical Site Infections. The percentage of infections on 900 patients thus far has been virtually 0%. The unit is continuing to refine our incision site protocol in order to continuously improve our patient outcomes.

BIBLIOGRAPHY

1. Koval KJ, Egol KA, Polatsch DB, Baskies MA, Homman JP, Hiebert RN. Tape blisters following hip surgery. A prospective, randomized study of two types of tape. J Bone Joint Surg Am. 2003 Oct;85-A(10):1884-7.
2. American Academy of Orthopaedic Surgeons Patient Safety Committee, Evans RP. Surgical site infection prevention and control: an emerging paradigm. J Bone Joint Surg Am. 2009 Nov;91 Suppl 6:2-9.
3. Dale H, Hallan G, Hallan G, Espehaug B, Havelin LI, Engesaeter LB. Increasing risk of revision due to deep infection after hip arthroplasty. Acta Orthop. 2009 Dec;80(6):639-45.
4. ACHS – Australian Council of Health Care Standards Clinical Indicator Report 10th edition 2001 – 2008
5. Australian Council for Safety and Quality in Health Care – National Strategy to address Health Care Associated Infections Report – 2003

*PolyMem® Dressings are made by
Ferris Mfg. Corp., Burr Ridge, IL 60527 USA

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