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A PROPOSED TREATMENT TECHNIQUE FOR PJIs USING NEGATIVE PRESSURE WOUND THERAPY (NPWT) WITH INSTILLATION – TECHNICAL NOTE

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ABSTRACT

Joint replacement, especially total hip and knee arthroplasty, is becoming more and more popular as the years go by. They constitute a significant improvement in the treatment of chronic refractory joint pain in patients that do not respond to conservative treatment modalities. However, there has also been observed an increase in the incidence of the periprosthetic joint infections (PJIs). PJIs are a devastating complication following a total joint replacement since they are associated with increased morbidity especially among older patients. They can lead to loss of mobility, function and independency or even to death. The greatest risk period for PJIs are the first two years following a total joint arthroplasty with the majority of them, approximately 70%, occurring that time.

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INTRODUCTION

The diagnosis of a PJI after a total joint arthroplasty constitutes a confusing and a challenging process. The signs and symptoms of a PJI are non-specific and include pain, effusion or swelling in the joint, erythema or warmth around the joint, presence of a sinus tract, drainage, fever and chills. For these reasons it is used a combination of serological, histological and microbiological tests to diagnose a PJI according to the MSIS and IDSA criteria.

Treatment of PJIs depends on the time that has elapsed since the joint replacement surgery. For acute infections it is recommended the DAIR approach which includes debridement, antibiotic administration, irrigation and implant retention. If the physician deals with a chronic PJI it is usually recommended the two-stage approach. The implants are removed concomitantly with a thorough surgical debridement of all infected tissues, along with the sinus tract if present, placement of a cement-loaded spacer (articulated or non) and after a long period of targeted antibiotic therapy, implantation of the new prostheses.

PURPOSE

We aim to provide a novel treatment technique for PJIs using NPWT with instillation that is of utmost importance in elderly patients who are unable to undergo the proper surgical management due to their unacceptably high surgical and anesthetic risks.

MATERIALS & METHODS

A 79-year-old female patient presented to our orthopaedic department with erythema and a sinus on the lateral aspect of the right thigh, following a right THA 3 years ago. The patient was not a candidate for major surgery due to the unacceptably high surgical and anesthetic risk. For this reason, she underwent, under local anesthesia, surgical debridement of the sinus (which was in communication with her THA) and the surrounding inflamed tissue. Intraoperatively five tissue samples for culture were obtained and NPWT (V.A.C. VERAFLORTM) in conjunction with instillation of Microdacyn60[®] was applied. The washout protocol was as follows: the volume of instillation was according to the wound requirements; the instillation dwell time was 15 minutes every 2h and NPWT in continuous setting (-125mmHg) except for the interval of the instillation dwell time. These were continued until two consecutive tissue cultures were negative for infection. At the final step of the whole procedure, PREVENATM was applied over the surgical incision. Moreover, the patient received targeted antibiotic therapy for 3 months according to the culture results (MRSA and Enterococcus faecalis).

REFERENCES

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RESULTS

The patient was free of pain and had no signs of infection, local and systematic at the final follow-up.

CONCLUSION

It has been well established and approved that surgical debridement is essential in cases where the infection is localized to deep structures or where abscesses are created or tend to infiltrate deep spaces and diffuse proximally: Its role is to eliminate all the infected tissue and pus, thus reducing the infective burden. Though essential, surgical debridement is not always sufficient to eradicate infection, and lesions are left open for a long time to drain and systemic antibiotic therapy is given until both clinical signs and cultural exams are negative. The use of antiseptics in this phase is aimed at minimizing the chance of reinfection and furthermore, at reducing the bacterial activity, creating an unfavorable environment for bacteria. Thus, NPWT along with instillation of an antiseptic agent may be a viable option for non-surgical candidates.

Statement	Yes / No	Consensus
NPWT with instillation can be used over infected implants (total and hemi-joint implants)	92%	Yes
An appropriate instillation solution is Microdacyn60 [®]	89%	Yes
An appropriate instillation dwell time is 10 minutes	92%	Yes
An appropriate instillation dwell time is 20 minutes	91%	Yes
An appropriate NPWT pressure setting is -125mmHg	100%	Yes

Table: International Consensus Guidelines