

## Treatment Protocol For Infected Total Knee Prosthesis In Hospital Pulau Pinang

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### INTRODUCTION:

Deep tissue infection is the most disastrous complication of total knee replacement surgery. Prolonged hospital stay, multiple surgeries and high cost of treatment are among the many undesired consequences of an infected prosthesis. Two-stage surgery is still the gold standard of treatment for infected total knee prosthesis.<sup>(1)</sup> Adequate surgical wound debridement is essential to eradicate the infection. However, there is no global consensus of the method of debridement in infected knee prosthesis.<sup>(2)</sup> We report the result of treatment of infected knee prosthesis using a standardised method of wound debridement. The surgeries were done by two senior surgeons of this report (LKH and CHS) from year 2008 till 2016 in a single institution with mean follow up of 4.4 years. Good treatment outcome is defined as no recurrence of infection.

### METHODS:

Patients were diagnosed as infected total knee prosthesis by the following criteria:

- Positive culture from knee joint aspiration
- Positive culture from deep knee joint tissue
- Presence of sinus and pus discharge

Patients underwent either a single stage or two-stage operation with the aim to eradicate infection and regain function of knee with new prosthesis.

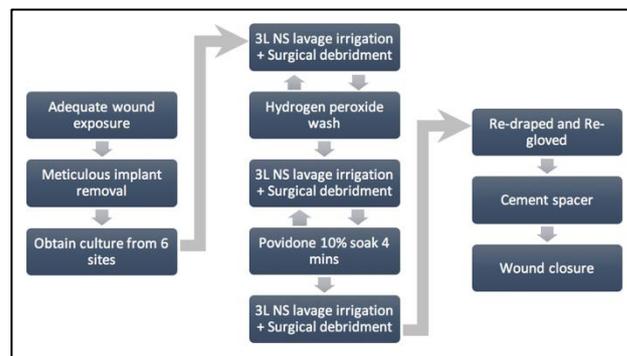
Standardised wound debridement protocol was performed during the surgeries, including the second stage surgery. (Fig. 1) Adequate wound exposure is essential to avoid excessive retraction and further soft tissue injuries. Removal of implant was done with great care to avoid bone avulsion and soft tissue injury. Visible pus, slough and necrotic tissue were removed with suction, curettage and rongeur. At least 6 samples (fluid, bone, capsule, synovium, 2 tibial membranes and 2 femoral membranes) were sent for culture and sensitivity for pyogenic, tuberculosis and fungus. Irrigation with 3 litres of normal saline with lavage gun will be followed by washing the entire surgical field with hydrogen peroxide. Rinsing and irrigation of the second

3 litres of normal saline with lavage gun will be done immediately to reduce toxic effect of hydrogen peroxide to surrounding soft tissues and bone. Further surgical debridement will be done. Then the surgical site will be soaked with pure povidone iodine (10%) for 4 minutes, after which the third round of 3 litres normal saline will be used to irrigate the wound with lavage gun.

The surgical team including the scrub nurses will then change gloves and apply extra layer of sterile draping over the surgical site. All sterile instruments will be rinsed with saline and soaked in pure povidone before reused subsequently.

In the first part of two-stage surgery, antibiotic cement (40g powder containing 1.0g Tobramycin + Vancomycin 2g) was used to fill the gap and bony defects of the affected knee joint. Wound were closed in layers with standard fashion without drain.

Combined empirical antibiotics (ie. IV Cefuroxime 1.5g, T. + Rifampicin 300mg TDS) for two weeks will be started postoperatively unless patient were critically septic preoperatively or culture were positive from preoperative knee joint aspiration. Antibiotics were switched and continued for an average of 3 months according to culture and sensitivity and continue until at least two readings of normal CRP (<5mg/L) before revision TKR were done.



**FIG. 1 Protocol for wound debridement in prosthetic infection.**

### RESULTS

Total of 68 total knee revisions were done in this institution from 2008 till 2016. 36.8% or 25 of them were infected total knee prosthesis. All